



CMFRI SPECIAL PUBLICATION

Number 50

**ANNOTATED BIBLIOGRAPHY OF
THE SILVERBELLIES
(PISCES : FAMILY LEIOGNATHIDAE)**

P. S. B. R. James

M. Badrudeen

V. Edwin Joseph



CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

(Indian Council of Agricultural Research)

P. B. No. 2704, Dr. Salim Ali Road,
Cochin - 682 031, India

APRIL, 1992

**ANNOTATED BIBLIOGRAPHY OF
THE SILVERBELLIES
(PISCES : FAMILY LEIOGNATHIDAE)**

P. S. B. R. James

M. Badrudeen

V. Edwin Joseph

CMFRI SPECIAL PUBLICATION

Number 50



CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

(Indian Council of Agricultural Research)

**P. B. No. 2704, Dr. Salim Ali Road,
Cochin - 682 031, India**

APRIL, 1992

Published by

Dr. P. S. B. R. James
Director

Edited by

Dr. K. J. Mathew
Dr. P. Bensam
Mr. K. N. Krishna Kartha
and
Mr. K. Kanakasabapathy

PREFACE

Fishes of the family Leiognathidae, popularly called silverbellies, ponyfishes, slipmouths and toothponies are small to medium sized fishes living at the bottom in shallow coastal waters. They are widely distributed in the Indo-Pacific region. These fishes are captured in several types of fishing gear including bottom trawls, shore seines, gillnets, bagnets etc. Some species occur in dense schools offering great potentialities for commercial exploitation, especially along the coasts of India and Sri Lanka. A few species enter brackishwaters and estuaries. Being small and scanty of flesh, they are consumed very little in fresh condition but mostly sun dried or salt cured. As such they are an important source of food and fish meal.

Till date 21 species of the family are on record in their entire range of distribution. Literature on various aspects of individual species on their taxonomy, distribution, biology, fishery etc. is very extensive, widely scattered and published in various scientific and other journals from several countries. Pauly *et al.* (1981: *ICLARM Bibliographies*, 2, 62 pp.) covered 941 references on this group in an annotated bibliography. It was felt necessary to supplement this list with all those publications not covered in it as well as to include the recent ones after that date. Many of the annotations also required elaboration. Therefore, the present authors made an exhaustive list of 1,442 references, annotating 1,418 of them in fair detail. The other 24 could not be annotated for want of access to original publications. It is hoped this uptodate and detailed annotated bibliography would be an useful source of information to all those interested in the study of this group of small tropical marine fishes of considerable economic importance.

The authors are grateful to Mr. K. Krishna Kartha, Principal Scientist (Retired), Dr. P. Bensam, Principal Scientist, Dr. K. J. Mathew, Senior Scientist and to Mr. K. Kanakasabapathi, Librarian (Retired), CMFRI, Cochin for all their help in the preparation and editing of this publication.

P. S. B. R. JAMES
DIRECTOR

CONTENTS

Preface	i
I. Bibliography	1 - 214
II. Additions without Annotations	215 - 216
III. Subject Index	217 - 220

I. BIBLIOGRAPHY

1. AAGAARD, J., J.G. DISNEY, K.M. JAYAWARDENA, R.G, POULTER 1980.
Studies on the preparation of fish silage. 4. Economics of production. *Bull. Fish. Res. Stn. Sri Lanka*, 30 (1-2): 37-39.
Economic aspects of producing liquid and dried silages from *Leiognathus splendens* in Sri Lanka are considered. A discounted cash flow analysis for the production of a dried fish silage/rice-bran product suitable for use in compounded poultry feeds showed that the internal rate of return for a 10 year project would be 34 - 77% and for a 5 year project it would be 26 - 78%. It is concluded that the project would be extremely profitable.
2. ABE, T. 1939.
A list of the fishes of the Palao Island. *Palao Trop. Biol. Stn. Stud.*, 4: 523-584.
P. 537 lists *Gazza minuta*.
3. ABE, T. AND Y. HANEDA 1972.
Description of two new species of the ponyfish genus *Leiognathus* from Indonesia. *Sci. Rep. Yokosuka City, Mus.*, 19: 1-7.
Leiognathus hataii and *L. aureus* from Ambon are described.
4. ABRAHAM, J. G. 1962.
A survey of the hydrobiology and fisheries of the Cooum River. *Madras J. Fish.*, 1 (1): 50-69.
Equula sp. is recorded from the catches of trial nettings. Desmids, diatoms, green algae etc. were noted as its food items.
5. ABRAHAM, J. G. AND V. RAMAMOORTHY 1968.
Statistic of marine fisheries of Madras State 1965 - '66. *Madras Fisheries Statistics Report*, No. 65, p. 1-25. Govt. of Madras.
District-wise landings of silverbellies during 1964-'65 and 1965-'66 and their landings and values from the places of fish landings are included.
6. ABRAHAM, J. G. AND V. RAMAMOORTHY 1969.
Statistics of marine fisheries of Madras State 1966-'67. *Madras Fisheries Statistics Report* No. 65, p. 1-94. Govt. of Madras.
District-wise landings of silverbellies in the Madras State during 1965-'66 and 1966-'67 and landing and value of silverbellies from different places during the period April, 1966 to March, 1967 are given.
7. AGARWAL, A., M. R. RAGHUNATH AND K. K. SOLANKI 1986.
Frozen storage stuides of composite fish mince from Dhoma (*Sciaenid* sp.)

- and *Lactarius (Lactarius lactarius)*. *Fish. Technol.*, **23** (2): 129-133.
p. 129. Silverbellies among low priced fish.
8. AGASSIZ, L. 1837.
Recherches sur les Poissons Fossiles. Vol. 5, Neuchatel.
Skeleton of *Leiognathus fasciatus* is given under *Equula setigera* on p. 24.
 9. AGASSIZ, L. 1846.
Nomenclator Zoologicus. Pisces. Soloduri.
Emendation of *Leiognathus* to *Liognathus*
 10. AHMAD, J. 1982.
On a new species of the genus *Opechona* Looss, 1907 (Digenea : Lepocreadiidae) from a marine fish, *Leiognathus (Leiognathus daura)* (Cuv.), from the Arabian Sea. *Proc. Indian Sci. Congr.*, **69** (3): 126.
Opechona thapari a new parasite is reported from *Leiognathus daura*.
 11. AHRENS, G. 1965.
Untersuchungen am Leuchtorgan Von *Leiognathus klunzingeri* (Steindachner). *Z. Wiss. Zool.*, **173** (1/2): 90-113.
Basic work on light organ of *L. klunzingeri*.
 12. AKYUZ, E. 1957.
Observation on the Iskenderun red mullet (*Mullus barbatus*) and its environment. *Proc. Gen. Fish. Counc. Mediterr.*, **4**, Tech. Pap. **38**, p. 305-328.
Leiognathus klunzingeri is reported from Iskenderun Gulf, Turkey.
 13. ALAGARAJA, K. 1989
A brief appraisal of marine fisheries in India. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 44 (Part 1), p. 36-41.
Reported on contribution of silverbellies in commercial catch during 1983 with its percentage.
 14. ALI-KHAN, J. 1985.
Occurrence and distribution of fish larvae in Gulf of Aden during October-November, 1966, and February-March, 1967. *Indian J. Fish.*, **32** (2): 198-214.
Three leiognathid larvae in the Strait of Babal-Mandab in February are recorded.
 15. AMATO, J. F. R. 1983.
Digentic trematodes of percoid fishes of Florianopolis, Southern Brasil —Homalometridae, Lepocreadiidae and Opccoelidae, with the description of seven new species. *Revista bras. Biol.*, **43** (1): 73-98.

Eucinostomus melanopterus a digenean parasite and *Opecoeloides melanopteri* a new species from South West Atlantic are described.

16. ANGOT, M. 1950.
Poissons littoraux de Soalara. *Mem. Inst. Sci. Madagascar, Ser. A*, 4 (1): 175-196.
Gazza minuta, *G. equulaeformis* and *Equula edentula* are listed from a poikilohaline biotope, with muddy waters.
17. ANNAM, V.P. AND S.K. DHARMA RAJA 1981.
Trends in the catch of silverbellies by mechanised boats in Tamil Nadu during 1971-'75. *Indian J. Fish.*, 28 (1 & 2): 87-95.
Catch trends of silverbellies landed by the mechanised boats in Tamil Nadu during the period 1971 to '75 and the relation between the index of abundance and the total fishing effort both in respect of total landings and landings of silverbellies are reported.
18. ANON. 1915.
Papers from 1899 relating chiefly to the development of the Madras Fisheries Bureau. *Bull. Madras. Fish. Bur.*, 1 (1): 1-237.
List of Tamil names of *Equula splendens*, *E. fasciata*, *E. insidiatrix*, *E. edentula*, *E. daura*, *E. ruconius*, *E. bindus* and *E. dussumieri* is given.
19. ANON. 1929.
Liste de poissons de l' indochine envoyes, par le Doctem Gilbert Tirant, an, Museum des Sciences Naturelles de Lyon. In: (Reimpression) *Oeuvre ichthyologique de G. Tirant. Serv. Oceanogr - de l' Indochine* 6 ieme p. 167-175. Note.
Lists *Equula brevirostris* and *E. edentula* collected in Hue' 1882.
20. ANON. 1930.
Report on a systematic survey of the Madras deep sea fishing grounds by S.T. "Lady Goschen" in 1930. *Madras Fisheries Bulletin*, No. 28 (Part 2), 27-95.
Leiognathus edentula, *L. insidiator*, *L. dussumieri* and *L. lineolatus* occurred in almost every haul as major quantity in the east coast. In the west coast the silverbellies occurred in small quantity. Scientific, popular Tamil, Malayalam and Kanarese names of these species are given.
21. ANON. 1948.
Brochure on the marketing of fish in India. p. 1-34. Ministry of Agriculture, Directorate of Marketing and Inspection, Govt. of India.
Landings of silverbellies in the different coastal areas with popular names of *E. splendens* in Bengali, Canarese, Malayalam, Marathi, Tamil and Telugu are given.

22. ANON. 1951.
 Preliminary guide to Indian fish and fisheries, methods of fishing and curing. *Agricultural Marketing in India, Marketing Series*, No. 66, 37 pp.
 General morphological description and vernacular names of silverbellies are given.
23. ANON. 1951.
 Report on the Marketing of Fish in the Indian Union. *Agricultural Marketing in India*, 165 pp.
 Names of *Equula splendens* in English, Bengali, Canarese, Malayalam, Marathi, Tamil and Telugu and silverbellies landed in different coastal areas are reported.
24. ANON. 1951.
 Annotated list of animals and plants of Mie Prefecture, Japan. *The Committee of the Biological Survey of Mie Prefecture*.
 Lists *Leiognathus nuchalis* (T & S) and *L. rivulatus* (T & S).
25. ANON. 1953.
 Annual Report of the Chief Research Officer for the Year Ending 31st March, 1953. *Indian J. Fish.*, 1: 377-402.
 p. 382 gives percentage of yield of silverbellies for 1950, 1951 and 1952. The prominent species in catches of silverbelly in Rameswaram Island was *Leiognathus splendens*.
26. ANON. 1955.
 Annual Report of the Chief Research Officer, for the Year Ending 31st March, 1954. *Indian J. Fish.*, 2 (1): 373-404.
 Gives the catch data and percentage of silverbellies for nine centres. Bulk of the catch of silverbelly during the year 1953 was from Rameswaram Island. Contributed 52.59% in total landing of the Island.
27. ANON. 1955.
Fisheries Station Reports and Year Book 1955. Department of Fisheries, Madras.
 Landings of silverbelly in West Hill, Calicut are given. *L. bindus*, *L. insidiator* and *L. ruconius* formed the food of *Lactarius lactarius*.
28. ANON. 1955.
Marine Fishes of Karachi and the Coasts of Sind and Makran. Central Fisheries Department, Pakistan. Government of Pakistan, Karachi.
 Describes 5 species of leiognathidae.

29. ANON. 1956.
Fisheries Station Reports and Year Book. April, 1954 - March, 1955, 441 pp.
 Department of Fisheries Madras.
 At Rameswaram Island from April to October, silverbellies (*Leiognathus bindus*, *L. brevisrostris*, *L. daura*, *L. equulus*, *L. insidiator*, *L. ruconius* and *L. splendens*) formed the major fishery. General observations on the occurrence, shoaling, biometrics, feeding, breeding etc. and detailed studies on the biology of local commercially important fishes including *Leiognathus* spp. around Krusadai Island are given. Occurrence of *L. ruconius* and *L. fasciata* in Ennur estuary throughout the year and occurrence of *Leiognathus* spp. in Pulicat Lake are reported.
30. ANON. 1956.
 Annual Report of the Chief Research Officer for the Year Ending 31st March, 1955. *Indian J. Fish.*, 3: 387-435.
 Percentage composition of silverbelly landings for the years 1950, 1951, 1952, 1953 and 1954 is given in table on p. 398.
31. ANON. 1957.
 Annual Report of the Chief Research Officer for the Year Ending 31st March, 1957. *Indian J. Fish.*, 5: 402-439.
 Annual landing of silverbelly for 1955 and 1956 was 6,856 and 17,709 tonnes respectively. Zone-wise landings are also discussed. Landings of silverbelly by light fishing at Mandapam and by boat seines at Madras, Waltair and at Kozhikode are presented.
32. ANON. 1957.
Administration Report of the Department of Fisheries, Madras - 1955-'58. Government Press, Madras, 150 pp.
 Silverbelly fishery was the major monsoon fishery in July along Malabar coast. At Rameswaram Island, deep sea fishing unit operated both in Palk Bay and Gulf of Mannar brought *Equula* spp. among other fishes. Technical, popular and local names of silverbellies are given in Tamil and Malayalam.
33. ANON. 1957.
 Annual Report of the Chief Research Officer for the Year Ending 31st March, 1956. *Indian J. Fish.*, 4: 387-418.
 Table on p. 397 gives landing of silverbelly for the year 1954 and 1955 with percentages. Bulk of the silverbelly catch at Rameswaram Island was represented by *L. splendens* (about 42.406%). *Leiognathus* sp. formed the bulk of the catch at Ratnagiri in some months.
34. ANON. 1958.
A Guide to the Fisheries of Ceylon. Fish. Res. Stn., Dep. Fish. Ceylon, Bull., No. 8, p. 1-72.

Ponyfishes found in lagoons are listed. English, Sinhalese and Tamil names are given.

35. ANON. 1958.
Administration Report of the Department of Fisheries, Madras for the Year 1956-'57. Government of Madras, 233 pp.
Leiognathus spp. was the most common in the catches at various centres along the coast of Rameswaram Island. Rich silverbelly ground was located by Mr. G. S. Illugason while conducting exploratory fishing off Madras. Total landings and value of silverbellies for the year 1956-'57 from west coast and from Kanyakumari district are given. Monthly variations in occurrence of silverbellies and popular and local names in Tamil are also given.
36. ANON. 1958.
Hydrobiological and Faunistic Survey of Godavari Estuarine System. Department of Zoology, Andhra University, Waltair.
Fauna of Godavari estuary is listed on page 16. Appendix-D presents *Equula edentula* and *Equula splendens*.
37. ANON. 1959.
Annual Report of the Chief Research Officer of Central Marine Fisheries Research Institute for the Year Ending 31st March, 1959. *Indian J. Fish.*, 7: 187-232.
Tables give annual landings of *Leiognathus* and *Gazza* for the year 1957 and 1958. Availability of *Leiognathus* in Kerala, Madras and Andhra is discussed.
38. ANON. 1959.
Annual Report of Central Marine Fisheries Research Institute - 1958. *Indian J. Fish.*, 6: 416-460.
Table gives the landings of silverbellies for the period 1956 and 1957. p. 428 discusses the occurrence of silverbelly at Mandapam and Kozhikode.
39. ANON. 1959.
Administration Report of the Department of Fisheries, Madras for the Year 1957-58. Government of Madras, 177 pp.
Presents silverbelly fishery of Cape Comorin. Season falls during February, March and April, September, October and November. Caught in boat seines. Month-wise landings of silverbellies for 1957-'58 from Cape Comorin, Rameswaram Island and departmental deep sea fishing unit at Pamban are included.
40. ANON. 1959.
Administration Report of the Department of Fisheries, Madras for the Year 1957-'58. Government of Madras, 177 pp.

- Gives Tamil and scientific names of *Leiognathus* spp. and its landing in 1957-'58 on p. 176.
41. ANON. 1960.
Administration Report of the Department of Fisheries, Madras for the Year 1959-'60. Government of Madras, 126 pp.
Landings data of *Leiognathus* by trawl net in March, 1960 are given on p. 90.
42. ANON. 1960.
Administration Report of the Department of Fisheries. Government of Kerala, 160 pp.
Lists *Secutor insidiator*, *S. ruconius*, *L. bindus*, *L. splendens* and *G. minuta* with common and vernacular names and month-wise landings for the years 1964-'65.
43. ANON. 1960.
Administration Report of the Department of Fisheries, Madras for the Year 1958-'59. Government of Madras, 187 pp.
Good catches of silverbellies occurred at Cape Comorin during January and February only. Landings of silverbelly from Rameswaram Island and Cape Comorin during 1958-'59 was at a rate of 183 and 35, 250 pound respectively. Silverbellies are used for production of fishmeal or fish manure in different months.
44. ANON. 1960.
Annual Report of the Chief Research Officer of Central Marine Fisheries Research Institute for the year ending 31st March, 1960. *Indian J. Fish.*, 7 (2): 496-552.
Landings of *Leiognathus* and *Gazza* for the years 1958 and 1959 are given. Fluctuations in the catch of *Leiognathus* in West Bengal, Andhra Pradesh and Mysore State are discussed.
45. ANON. 1961.
Annual Report of the Director for the Year Ending 31st March, 1961. Central Marine Fisheries Research Institute, Mandapam Camp.
Includes estimated annual landings of silverbelly for the period 1959 and 1960. Occurrence of silverbellies in exploratory trawl is reported.
46. ANON. 1961.
Annual Report of the Director for the Year Ending 31st March, 1961. Central Marine Fisheries Research Institute, Mandapam Camp. *Indian J. Fish.*, 8 (2): 449-525.
Annual landings of *Leiognathus* and *Gazza* are given in table on P. 457 for the year 1959 and 1960. Increase in the landing was noticed in Andhra and

Madras states. *Leiognathus* spp. landings by offshore fishing catch at Calcutta was 34,837.05 kg. Classified as 'B' class fish.

47. ANON. 1962.

Annual Report of the Director for the Year Ending 31st March, 1962. Central Marine Fisheries Research Institute, Mandapam Camp.

Annual landings of silverbellies for the period 1960 and 1961 and landings of leiognathids from exploratory shrimp trawl are reported.

48. ANON. 1962.

Kerala Fisheries. Government Press, Trivandrum.

Landing of *Leiognathus* is given.

49. ANON. 1962.

Administration Report of the Fisheries Department, Madras for the Year 1941-'42. *Madras Fisheries Bulletin*, No. 29, p. 211-275. Government of Madras.

Food of silverbellies is described. In the east coast *Leiognathus* sp. and *Gazza minuta* formed bulk of the catch (70%). The species composition was *L. bindus* 40%, *L. equulus* 15%, *L. daura* 10%, *L. ruconius* 5% and *G. minuta* 30%. Silverbelly diet consisted of plankton but *G. minuta* fed on fingerlings of white-bait (*Stolephorus* sp.).

50. ANON. 1962.

The Wealth of India. Raw Materials. Vol. 4. Supplement. Fish and Fisheries, 132 pp.

Description of some characters, vernacular names in Marathi, Telugu, Tamil, Kannada, Malayalam and Oriya are given for *Leiognathus equulus*, *L. insidiator*, *L. ruconius*, *L. splendens* (with figure) and *Gazza minuta*.

51. ANON. 1962.

Report of the Fisheries of Madras for the Year Ending 30th June, 1947. *Madras Fisheries Bulletin*, No. 29 (Part 12), p. 323-339. Government of Madras.

Studies of the commercially important food fishes and silverbellies were made at West Hill, Calicut and Krusadi Marine Biological Station.

52. ANON. 1962.

Report on the Fisheries of Madras for the Year Ending 31st March, 1948. *Madras Fisheries Bulletin*, No. 29. Part 12, p. 341-359. Government of Madras.

The bionomics of *Leiognathus oblonga* and *L. insidiatrix* were studied at the Marine Biological Station at Tuticorin.

53. ANON. 1962.
Indian Fisheries Bulletin, No. 9 (1), 57 pp. Ministry of Food and Agriculture, Government of India.
 Total landings of silverbellies for the year 1959 and 1960 are reported.
54. ANON. 1963.
 Annual Report of the Director for the Year Ending 31st March, 1962. Central Marine Fisheries Research Institute, Mandapam Camp. *Indian J. Fish.*, 9 (2): 746-82.
 Catch trends of *Leiognathus* and *Gazza* in West Bengal, Orissa and Andhra are discussed on p. 750. Landings of *Leiognathus* and *Gazza* for the years 1960 and 1961 are also given.
55. ANON. 1963.
 Annual Report of the Director for the year ending 31st March, 1963. Central Marine Fisheries Research Institute, Mandapam. *Indian J. Fish.*, 10 A (2): 667-717.
 Silverbelly landings for the periods 1961 and 1962 and landings of *Leiognathus* spp. by offshore trawls are reported.
56. ANON. 1963.
Indian Fisheries Bulletin, No. 10(3): 51 pp. Ministry of Food and Agriculture, Government of India.
 Total landings of silverbellies in India during 1961 and 1962 are estimated.
57. ANON. 1963.
Indian Fisheries Bulletin, No. 10 (4): 33 pp. Ministry of Food and Agriculture, Government of India,
 Total landings of silverbellies in India during the second quarter of 1962 and 1963 are given.
58. ANON. 1963.
 Annual Report of the Director, Central Marine Fisheries Research Institute, for the Year Ending 31st March, 1963. *Indian J. Fish.*, 10 (2): 667-717.
 Table gives annual silverbelly landings for the year 1961.
59. ANON. 1964.
Annual Report of the Director, Central Marine Fisheries Research Institute, for the Year Ending 31st March, 1964. C.M.F. R. I., Mandapam Camp.
 Landings of silverbellies for the year 1962 and 1963 were 18,268 and 17,833 tonnes respectively. Occurrence of 12 species was reported. Biological aspects like size, stages of maturity and food and feeding habits were studied for *Leiognathus splendens* and *L. lineolatus*.

60. ANON. 1964.
Administration Report of the Department of Fisheries, Madras for the Year 1961-'62. Government of Madras, 179 pp.
 p. 154 gives landings of silverbellies during 1961-'62.
61. ANON. 1964.
Annual Report of the Department of Fisheries - 1963-'64. Maharashtra State, Bombay, 62 pp.
 Exploratory vessels MFV *Savitri* and MFV *Shivaneri* operated between Mithbrao and Vengurla and miscellaneous catches comprised of leiognathids and other fishes.
62. ANON. 1964.
Indian Fisheries Bulletin, 11 (1): 44 pp. Ministry of Food and Agriculture, Government of India.
 Silverbellies landings in the third quarter of 1962 and 1963 was estimated as 9,690 and 8, 230 tonnes respectively in all India landings.
63. ANON. 1964.
Indian Fisheries Bulletin, 11 (1): 59 pp. Ministry of Food and Agriculture, Government of India.
 Total landings of silverbellies in India in 1962 and 1963 were estimated as 18,268 and 17,833 tonnes respectively.
64. ANON. 1964.
Indian Fisheries Bulletin, 11 (3): 53 pp. Ministry of Food and Agriculture, government of India.
 Total silverbellies landings for the first quarter of 1963 and 1964 are estimated as 3,727 and 2,026 tonnes respectively.
65. ANON. 1965.
Indian Fisheries Bulletin, 11 (1): 88 pp. Ministry of Food and Agriculture, Government of India.
 Landings of silverbellies for the 3rd quarter of year 1963 and 1964 were 8,230 and 12,409 tonnes respectively.
66. ANON. 1965.
Indian Fisheries Bulletin, 11 (2): 98 pp. Ministry of Food and Agriculture, Government of India.
 Silverbelly (*Leiognathus* and *Gazza*) landings of India for 1963 and 1964 were 17,833 and 26,336 tonnes respectively.
67. ANON. 1965.
Indian Fisheries Bulletin, 11 (3): 71 pp. Ministry of Food and Agriculture, Government of India,

Silverbelly (*Leiognathus* and *Gazza*) landings for 1st quarter of 1964 and 1965 were 2,206 and 2,261 tonnes respectively.

68. ANON. 1965.

Administration Report of the Fisheries Department for the Year 1963-'64. Government of Kerala.

Catches of silverbellies during 1963-'64 are shown as 4,003.6 tonnes (8th rank in the marine fish landing).

69. ANON. 1965.

Annual Report for the Period Ending 31st March, 1965. Central Marine Fisheries Research Institute, Mandapam Camp.

Silverbelly landings for the year 1963 and 1964 were 17,833 and 28,336 tonnes respectively. Occurrence of 11 species of *Leiognathidae* was reported at Mandapam. Biological aspects like size ranges, sex ratio, stages of maturity and food were studied.

70. ANON. 1966.

Report on the Marine Fishery Statistics for the Period 1961-'62 to 1965-'66 in Madras State, 50pp. Department of Statistics, Madras.

Silverbellies are caught in large quantities along the southwest coast mostly along the coast bordering Kanyakumari district. Catch data of silverbellies are given on p. 12.

71. ANON. 1965.

Statistics of marine fisheries of Madras State - 1964-'65. *Madras Fisheries Statistics Report*, No. 63, 1-93. Government of Madras.

Catch data of silverbellies in the state as a whole during 1964-'65 are given on p. 4. Retail price range per kilogram of silverbellies in Madras state is given on p. 11.

72. ANON. 1967.

Results of the joint Thai-Malaysian-German trawling survey off east coast of the Malay Peninsula. *Mar. Fish. Lab. Bangkok/Fish. Res. Inst. Malaysia*, 64 pp.

Catch data for leiognathids per area and depth ranges with species list are given.

73. ANON. 1967.

Administration Report for the Year 1965-'66. Fisheries Department, Government of Kerala, 26 pp.

Monthly landings of estuarine fish *Equula* spp. from April, 1965 to March, 1966 are given with percentage of landing in total catch. The total silverbelly catch during the year was 5,355.4 tonnes.

74. ANON. 1968.
 Statistics of marine fisheries of Madras State - 1965-'66. *Madras Fisheries Statistics Report*, No. 65, 30 pp. Government of Madras.
 Catch data of silverbellies are given for the state and districts during 1965-'66 on p. 3.
75. ANON. 1968.
Administration Report for the Year 1966-'67, 175 pp. Fisheries Department, Government of Kerala.
 Common English names and vernacular names of the species of the family Leiognathidae and landings of silverbellies for the year 1966-'67 are presented.
76. ANON. 1968.
Report on the Marine Fishery Statistics for the Period 1961-'62 to 1965-'66 in Madras State. Department of Statistics, Madras, 50 pp.
 Silverbellies are caught in large quantities along the south west coast mostly along the coast bordering Kanyakumari district. Percentage catch of silverbelly during the period 1961-'62, 1962-'63, 1963-'64, 1964-'65 and 1965-'66 was 7.3, 5.3, 9.2, 1.8 and 3.2 respectively. Trawl net and shore seine were the gears used. Popular and Tamil names are given.
77. ANON. 1968.
Indian Fisheries Bulletin, Statistical Number. Ministry of food, Agriculture, Community Development and Co-operation, Government of India.
 Landings of silverbellies are given for the period from 1962 to '67 and state-wise landings of silverbellies are given from 1950 to '67.
78. ANON. 1969.
Annual Administration Report—1968-'69 (1st April, 1968 to 31st March, 1969). Department of Fisheries, Government of Andhra Pradesh.
 Landings and value of silverbellies are given for East Godavari, Guntur, Krishna, Nellore, Srikakulam, Visakhapatnam and West Godavari districts.
79. ANON. 1969.
Annual Administration Report—1968. Central Marine Fisheries Research Institute, Mandapam Camp.
 Landings of silverbellies for 1967 and 1968 were 43,823 and 36,480 tonnes respectively. Osteological studies on *L. splendens*, *S. insidiator* and *G. minuta* showed some similarities in certain characters and differences in certain others. Studies on size, stages of maturity and food were carried out for the species *L. bindus* and *L. splendens* at Calicut and for *S. insidiator* at Madras.

80. ANON. 1969.
 Marine fish production in India - 1950-'68. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 13, 144 pp.
 Quarter-wise landings of *Leiognathus* and *Gazza* in each state during 1960-'68 and state-wise and quarter-wise trawler landings during 1960-'68 are given. All-India marine fish landings for 1950-'68 are also given.
81. ANON. 1969.
Administration Report for the Year 1967-'68. Fisheries Department, Government of Kerala, 194 pp.
 Among the marine fishes of Kerala, *Secutor insidiator*, *S. ruconius*, *L. bindus*, *L. splendens* and *Gazza minuta* are given with common English and vernacular names. Landings for the year 1967-'68 are estimated to 3,028.8 tonnes the value being Rs. 9,97,455.
82. ANON. 1969.
 Statistics of Marine Fisheries of Madras State - 1966-'67. *Madras Fisheries Statistics Report*, No. 65, 94 pp. Government of Madras.
 Catch data of silverbellies in district level to state level are given.
83. ANON. 1969.
Annual Report of Phuket Marine Fisheries Station. 210 pp. (in Thai).
 Description and figures of *Leiognathus bindus*, *L. brevisrostris*, *L. elongatus*, *L. equulus*, *L. leuciscus*, *L. smithursti*, *L. splendens* and *Secutor ruconius* are given.
84. ANON. 1969.
Marine Animals used as Food by Thai People. Exploratory Fishing Division, Department of Fisheries, Bangkok (in Thai).
 Photographs, description and miscellaneous data for *Leiognathus daura*, *L. splendens*, *L. equulus*, *L. smithursti*, *Leiognathus* sp. *Secutor insidiator* and *Gazza minuta* are given.
85. ANON. 1968.
Kerala Fisheries - Facts and Figures - 1966-'67. The Director of Fisheries, Government of Kerala, Trivandrum.
 Landings of silverbellies during the year 1966-'67 was 7,132 tonnes and the value was Rs. 16,49,148.
86. ANON. 1970.
Quarterly Bulletin of Fishery Statistics for the Quarter Ending September, 1969. Director of Fisheries, Government of Kerala, Trivandrum.
 Silverbellies landings of current quarter, previous quarter, corresponding quarters of previous year and value are given.

87. ANON. 1970.
Quarterly Bulletin of Fishery Statistics for the Quarter Ending September, 1970. Director of Fisheries, Government of Kerala, Trivandrum.
Silverbellies landings of current quarter, previous quarter, corresponding quarters of previous year, value in rupees and percentage of current quarter are given.
88. ANON. 1970.
Annual Report for 1969. Central Marine Fisheries Research Institute, Cochin.
Landings of silverbellies for 1968 and 1969, fishery potential, size, stages of maturity and food and feeding habits of silverbellies namely *L. bindus*, *L. splendens*, *L. dussumieri*, *L. lineolatus*, *G. minuta*, *L. bindus* and *S. insidiator* were studied for the 1st half year.
89. ANON. 1970.
Administration Report for the Year 1968-'69. Fisheries Department, Government of Kerala, 216 pp.
Landings of silverbellies for the year 1963-'69 were 2,163.5 tonnes and the percentage and value were 0.61 and Rs. 11,37,533 respectively. Landings for the years 1967-'68 and 1968-'69 were 3,028.1 and 2,163.5 tonnes the value being Rs. 9,97,455 and Rs. 11,37,533 respectively.
90. ANON. 1970.
Inventory of biological statistics for the fish stock assessment. *FAO Fish. Cir.*, No. 123, 86 pp.
Length and age distribution of *Leiognathus bindus* (1957-'61), *L. blochii* (1957-'60), *L. daura* (1957-'60), *L. insidiator* (1957-'61), *L. leuciscus* (1957-'58), *L. ruconius* (1957-'61) and *L. splendens* (1957-'63) from Philippines in Western Central Pacific are given.
91. ANON. 1971.
Quarterly Bulletin of Fishery Statistics for the Quarter Ending 31st December, 1970. Director of Fisheries, Government of Kerala, Trivandrum.
Landings of silverbellies for the quarter ending 31st December, 1970 in current quarter, previous quarter and corresponding quarter of previous year are given, including value of the fish and percentage in total landings.
92. ANON. 1971.
Quarterly Bulletin of Fishery Statistics for the Quarter Ending March, 1971. Director of Fisheries, Government of Kerala, Trivandrum.
Catch data of silverbelly is given for quarter ending 31st March, 1971. Silverbelly landings for current quarter, previous quarter, corresponding quarter of the previous year and value are given including percentage in the total for the current quarter.

93. ANON. 1971.
Quarterly Bulletin of Fishery Statistics for the Quarter Ending 30th June, 1971. Director of Fisheries, Government of Kerala, Trivandrum.
 Catch data of silverbelly is given for the quarter ending 30th June, 1971. Silverbelly landings for the current quarter, previous quarter, corresponding quarter of previous year and value and percentage of the total for the current quarter are given.
94. ANON. 1971.
Quarterly Bulletin of Fishery Statistics for the Quarter Ending 30th September, 1971. Director of Fisheries, Government of Kerala, Trivandrum.
 Catch data of silverbellies is given for the quarter ending 30th September, 1971. Silverbelly landings for the current quarter, previous quarter, corresponding quarter of previous year, value and percentage of the total for the current quarter are given.
95. ANON. 1971.
Souvenir issued on the occasion of the 9th Anniversary of the Fish Exporters Chamber, Tuticorin, 1971.
Leiognathus landings in India, Andhra Pradesh, Kerala, Mysore, Pondicherry and Tamil Nadu are given for the period 1962-'69.
96. ANON. 1971.
Quarterly Bulletin of Fishery Statistics for the Quarter Ending 31st December, 1971. The Director of Fisheries, Government of Kerala, Trivandrum.
 Silverbelly landings is given for the quarter-ending 31st December, 1971. Landings for the current quarter, previous quarter, corresponding quarter of previous year, value and percentage of total for the current quarter are given.
97. ANON. 1972.
 A review of the trawling industry in the West Malaysia. *Proc. Indo-Pacific Fish. Coun.*, 13 (3): 541-545.
 Estimated landing of *Leiognathidae* by trawlers in 1967- was 1,057.79 tonnes, the percentage in total catch being 1.8.
98. ANON. 1972.
 Survey by the R. V. *Tabularasa* in the years 1971-'72. Lembaga Penelitian Perikanan Laut. (In Indonesian).
 Catch data for *Leiognathidae* for the year 1971-'72 are given.
99. ANON. 1973.
 Report of the North-Sumatra Provincial at Marine Fisheries Service. *Annual Report* (In Indonesian), 50 pp.
 Catch and landing data for *Leiognathidae* are given.

100. ANON. 1973.
Report of exploratory operation of trawl in the Gulf of Siam and the Java Sea. Fish. Res. Dev. Agency, Office of Fisheries, Busan, Korea, 131 pp.
Leiognathus rivulatus reported in catch is probably a misidentification.
101. ANON. 1974.
Progress Report No. 6. UNDP/FAO Pelagic Fishery Project in India, 141 pp.
 Silverbellies (*Leiognathus* sp.) are reported among 'shallow water mix'. Young *L. bindus* with modal sizes at 15 and 35 mm were taken in May and adult fish with modal size at 50 and 65 mm were caught mainly during February to July. Still bigger adults (modal size 75 and 95 mm) were caught mainly during November/December. Adult fishes with fully developed gonads were found in November/December.
102. ANON. 1974.
Annual Report—1973. East Java Provincial Fisheries Office, Java Timur, 119 pp. (In Indonesian) (mimeo.).
 Monthwise landing data are given for Leiognathidae in East Java Province.
103. ANON. 1975.
Progress Report No. 10. UNDP/FAO Pelagic Fishery Project in India, 14 pp.
 Young fishes of silverbellies were caught among other fishes in pelagic catches over a number of months on the inner shelf, mostly in depths less than 50 m.
104. ANON. 1975.
Annual Report for 1975. Central Marine Fisheries Research Institute, Cochin.
 Annual silverbelly landings for 1974 and 1975 were 51,247 tonnes and 40,237 tonnes respectively. The total catch of silverbellies from Mandapam for 1975 was 4,825 tonnes and from Madras (Rayapuram) 600 tonnes. Biological data like size ranges and stages of maturity for *L. jonesi* from Mandapam and for *L. bindus* and *L. dussumieri* from Madras are given.
105. ANON. 1975.
CMFRI News Letter, No. 2. Central Marine Fisheries Research Institute, Cochin.
 Estimated landings of silverbellies in India during 1970 to 1974 are given on p. 6.
106. ANON. 1975.
A guide to the Collection, Interpretation and Presentation of Fisheries Statistics. Book 1. Standard Fisheries Statistical Directorate General of Fisheries, 207 pp. (In Indonesian).

General description of Leiognathidae with a figure of *Leiognathus bindus* and sketches of the protrusible mouth are given.

107. ANON. 1975.

Report on Cruise Nos. 1 and 2 of R/V Dr. Fridtjof Nansen. Indian Ocean Fish. Dev. Progr., Pelagic Fish Assessment Survey, North Arabian Sea (Subcontractor: Inst. of Mar. Res., Bergen, Norway) (mimeo.), 89 pp.

Stationwise and specieswise catch data (mainly *Leiognathus bindus*) are reported.

108. ANON. 1975.

The Three Bays Multidisciplinary Environmental Project—Cleveland Bay, Halifax Bay, Bowling Green Bay - 1st Report. James Cook University of North Queensland (Australia) (mimeo.), 102 pp.

Leiognathus splendens and *L. bindus* are reported (p. 80) dominant in numbers in trawl catches. Also reports (p. 82) on abundance of *Equula novaehollandiae* and *Gazza minuta*.

109. ANON. 1976.

Report on Cruise No. 3 of the R/V Dr. Fridtjof Nansen. Indian Ocean Fish. Dev. Progr., Pelagic Fish Assessment Survey, North Arabian Sea (Subcontractor: Inst. of Mar. Res., Bergen, Norway) (mimeo.), 49 pp.

Gives catch data of Leiognathids (*Leiognathus bindus*).

110. ANON. 1976.

Report on Cruise No. 3 of the R/V Dr. Fridtjof Nansen. Indian Ocean Fish. Dev. Progr., Pelagic Fish Assessment Survey, North Arabian Sea (Subcontractor: Inst. of Mar. Res., Bergen, Norway) (mimeo.), 30 pp.

Stationwise and specieswise catch data are reported mainly for *Leiognathus bindus*.

111. ANON. 1976.

Progress report No. 13. UNDP/FAO Pelagic Fishery Project, India, 107 pp.

Among 'shallow water mix' silverbellies of species *Leiognathus bindus*, *L. splendens* and *Gazza minuta* were the common and contributed 30% of the catches in the May/June period. Young *L. bindus* under 2 cm in length were abundant from December to July in the central area. In southern area, small specimens were in May and in the northern area in February and June. Adults were caught in all months in wide area. Majority of fishes were in ripe and spawning condition from November to April. The growth pattern indicated that fish reach an average of 9 cm within the first year of life. Young specimens of *L. splendens* were found in December and March in the central area. Fishes of 9 cm were mostly caught together with *L. bindus*.

112. ANON. 1976.
Progress Report No. 12. UNDP/FAO Pelagic Fishery Project, India, 116 pp.
Leiognathus sp. is grouped as 'shallow water mix' staying near the bottom during day and ascending during night. *Leiognathus bindus* and *L. splendens*, their dominant size, occurrence of matured fish and young fishes are reported.
113. ANON. 1976.
CMFRI News Letter, No. 4. June-October, 1976. Central Marine Fisheries Research Institute, Cochin.
 State-wise landings of silverbellies for 1975 are given.
114. ANON. 1977.
Annual Report for 1976. Central Marine Fisheries Research Institute, Cochin.
 Estimated annual landings of silverbelly for the years 1975 and 1976 were 40,237 and 43,411 tonnes respectively. There was an increase of about 3,000 tonnes. Estimated landings of silverbelly from Mandapam was 2,055.29 tonnes and from Madras about 448.8 tonnes. *L. jonesi* formed dominant catch and the fall in size suggested overfishing in the past few years. Silverbellies formed 9.7% of the total at Madras and the dominant species were *L. bindus* and *L. dussumieri*.
115. ANON. 1977.
 Results of exploratory fishing conducted during 1976-'77. *Bull. Expl. Fish. Proj.*, No. 6, 50 pp., Government of India.
 Leiognathids constituted 13% in Madras. The highest catch rate was obtained in respect of leiognathids (33 kg/hr) followed by other fishes. At Madras leiognathids were common in 20-39 m and 40-59 m depths and in Andaman and Nicobar waters in the depths of 40-59 m and 60-79 m.
116. ANON. 1977.
Indian Fisheries 1947-'77. The Indian Ocean Fishery Commission held at Cochin from 19th to 20th October, 1977.
 Silverbellies belonging to the general *Leiognathus* and *Gazza* contributed 4 to 5% of the total annual marine fish catches. These small fishes form good raw material for the fish meal plants, fish protein concentrate and other fish products. They are generally included in the category of 'trash fish'. The catches comprised mostly of fish less than one year old (O-group); their life span seems to be less than two years.
117. ANON. 1978.
CMFRI News Letter, No. 7, 19 pp. Central Marine Fisheries Research Institute, Cochin.

Provisional estimated landing of *Leiognathus* and *Gazza* during 1977 is 35,565 tonnes.

118. ANON. 1978.

Report on Marine Fisheries Statistics in Tamil Nadu for the Quarter Ending 31-12-1977. Department of Statistics, Tamil Nadu.

Percentage landings of *Leiognathus splendens* in Tamil Nadu for the quarter ended 31-12-1977 was 8.1 compared to 7.8 of the quarter ended 30-9-1977.

119. ANON. 1978.

Report on Marine Fisheries Statistics in Tamil Nadu During 1976-'77, 28 pp. Department of Statistics, Tamil Nadu.

Landings of *Equula splendens* in Tamil Nadu with popular local names are given.

120. ANON. 1978.

Report on Marine Fisheries Statistics in Tamil Nadu for the Quarter Ended 30-6-'78. Department of Statistics, Tamil Nadu.

Percentage landings of *Equula splendens* during the quarter ended 30-6-'78 was 8.0 compared to 10.0 of the previous quarter.

121. ANON. 1978.

Report on Marine Fisheries Statistics in Tamil Nadu for the Quarter Ended 30-9-'78. Department of Statistics, Tamil Nadu.

Landings of *Equula splendens* in percentage for the quarter ended 30-9-'78 was 9.0 and for the previous quarter the percentage was 8.0.

122. ANON. 1978.

Report on Marine Fisheries Statistics in Tamil Nadu During 1976-'77. Department of Statistics, Tamil Nadu.

p. 13-28. Percentage landings of *Equula splendens* for the period 1976-'77 was 21.3 and 7.0 for the previous year. Popular and Tamil names of the species are given.

123. ANON. 1978.

Trends in total marine fish production - 1977. *Mar. Fish. Infor. Serv., T&E Ser., No. 2*, p. 2-3.

Total maritime state landings of *Leiognathus* and *Gazza* are given.

124. ANON. 1978.

Results of exploratory fishing conducted during 1977-'78. *Bull. Expl. Fish. Proj., No. 8*, 56 pp.

Leiognathids were the main constituents of the trawl catch of Madras and Port-Blair region and the percentage composition was 16 and 39 respectively followed by other fishes. In Madras the highest catches of *leiognathids* were 90 kg/hr in December.

125. ANON. 1978.
Some scientific problems of multispecies fisheries. *FAO Fish. Tech. Rep.*, No. 181, 42 pp.
Leiognathidae were among the major species in the Gulf of Thailand showing decline in the abundance.
126. ANON. 1978.
Marine fish production in India during January to June 1978. *Mar. Fish. Infor. Serv., T&E Ser.*, No. 2, p. 4-12.
State-wise and species-wise landings of silverbelly are given for the period January to June, 1978. For the above period, landings of *Leiognathus* and *Gazza* were estimated at 19.5 and 8 tonnes respectively.
127. ANON. 1979.
Annual Report—1979. Central Marine Fisheries Research Institute, Cochin.
The landings of silverbellies continued to show a rise during 1979, the increase in the total catch during the year being about 14,000 tonnes over that of 1978. Silverbelly landing by both night and day fishing from the Palk Bay and Gulf of Mannar off Mandapam and by night fishing at Rameswaram and Pamban are given. Landings of silverbellies at Mandapam and Kakinada were also recorded. Biological data for *Leiognathus jonesi* at Mandapam and Rameswaram, *L. dussumieri* at Pamban and *L. bindus* at Kakinada were collected. Silverbelly landings during 1979 and 1978 were 55,463 and 41,881 tonnes respectively.
128. ANON. 1979.
Report on Marine Fisheries Statistics in Tamil Nadu—1978-'79. Department of Statistics, Tamil Nadu, 32 pp.
Popular Tamil names and other general names of *Equula splendens* are given.
129. ANON. 1979.
Trends in total marine fish production in India—1978. *Mar. Fish. Infor. Serv., T&E Ser.*, No. 9, p. 7-22.
State-wise landings of *Leiognathus* and *Gazza* for the year 1978, estimated landings of the silverbelly during 1969 to 1978 and state-wise landings during the period 1969-'78 are given.
130. ANON. 1979.
Report on Marine Fisheries Statistics in Tamil Nadu—1977-'78. Department of Statistics, Tamil Nadu.
Percentage landing of *Equula splendens* during the period 1977-'78 was 0.5 and that for the previous year was 21.3.

131. ANON. 1979.
Report on Marine Fisheries Statistics in Tamil Nadu for the Quarter Ended 31-3-78. Department of Statistics, Tamil Nadu.
 Percentage landing of *Equula splendens* during the quarter ended 31-3-78 were 10.0 and that for the previous quarter was 8.1.
132. ANON. 1979.
Report on Marine Fisheries Statistics in Tamil Nadu for the Quarter Ended 31-3-79. Department of Statistics, Tamil Nadu.
 Percentage composition of *Equula splendens* during the quarter ended 31-3-79 was and that for the previous quarter was 22.5.
133. ANON. 1979.
Report on Marine Fishery Statistics in Tamil Nadu for the Quarter Ended 31-12-1978. Department of Statistics, Tamil Nadu.
Equula splendens landing in percentage for the quarter ended 31-12-78 was 22.5 and that for the previous quarter was 9.0.
134. ANON. 1979.
 Marine fish production in India during January to June, 1979. *Mar. Fish. Infor. Serv., T&E Ser.*, No. 11, p. 1-9.
 Total all India landings of *Leiognathus* and *Gazza* for the period January to June, 1979 and state-wise and month-wise catches are given.
135. ANON. 1979.
 Small-scale fisheries at Lawson's Bay Waltair. *Mar. Fish. Infor. Serv., T&E Ser.*, No. 6, p. 10-13.
 Estimated catches of *Leiognathus* sp. from gill net (2,901 kg), shore seine (20,094 kg) and boat seine (11,503 kg) formed a total of 34,498 kg which was equal to 0.9% in total catch. It occupied 17th rank in the fishery.
136. ANON. 1979.
 Demersal resources of the Gulf and Gulf of Oman. *FAO/RAB/71/278/6*, 44 pp. FAO, Rome.
 Discusses the distribution of *Leiognathidae* in the Gulfs where they are the most abundant demersal fishes. *Leiognathidae* are listed among the "unmarketable" or "non-commercial groups". Data on seasonal and day/night differences in *Leiognathid* catch rates are given. Standing stock of *Leiognathidae* is estimated.
137. ANON. 1979.
 Marine fish production in India, during July to September, 1978. *Mar. Fish. Infor. Serv., T&E Ser.*, No. 5, p. 1-9.

State-wise and species-wise landings of silverbelly are given for the period July to September, 1978. Total landings of *Leiognathus* and *Gazza* were 14,265 and 57 tonnes respectively. Catch of silverbellies is reported from all maritime states except Maharashtra and Gujarat.

138. ANON. 1980.

Marine Fisheries Research Department Annual Report—1979. 31 pp. Southeast Asian Fisheries Department. Centre, Singapore.

Lists ponyfish (*Leiognathus elongatus*) among trash fish used for the production of fish-jelly.

139. ANON. 1980.

The present state of mangrove ecosystems in Southeast Asia and the impact of pollution - Singapore. *SCS/80/WP/ d*, 76 pp. South China Sea Fish. Dev. Coord. Progr., Manila.

p. 69. lists the fish species recorded from Singapore mangrove swamps. *G. minuta*, *L. brevirostris*, *L. dussumieri*, *L. equulus*, (which are listed among the spp. important to sustenance fishery) *L. fasciatus* and *L. ruconius* are listed.

140. ANON. 1980.

Report of the consultation on stock assessment for small-scale fisheries in the Bay of Bengal. *Bay of Bengal Programme, Development of Small-scale Fisheries, 2*, BOBP/REP/10.2, SIDA, FAO, 43 pp.

p. 37. State-wise landings of *Leiognathus* and *Gazza* during 1975-'79 and their percentage in the east coast and percentage of catch in depth range along the Indian Ocean coast of Thailand in 1966-'78 survey by R. V. Pramong-3 are given.

141. ANON. 1980.

Report on Marine Fisheries Statistics in Tamil Nadu—1978-'79. Department of Statistics, Tamil Nadu.

Percentage landing of *Equula splendens* during 1977-'78 was 8.5.

142. ANON. 1980.

Industrial fisheries off Visakhapatnam coast based on exploratory surveys during 1972-'78. *Mar. Fish. Infor. Serv., T&E Ser.*, No. 15, p. 1-15.

Leiognathus spp. contributed 13.4%. Among small miscellaneous fishes, *Leiognathus* spp. ranked 2nd and among big miscellaneous fishes *Leiognathus equulus* ranked 12th.

143. ANON. 1980.

Trends in total marine fish production in India—1979. *Mar. Fish. Infor. Serv., T&E. Ser.*, No. 22, p. 1-19.

All India estimated landings of *Leiognathus* and *Gazza* for the year 1979 and from 1969-'79 are given with state-wise landing of the above species during 1969 to '79. Landings of *Leiognathus* and *Gazza* showed an increase of about 14,000 tonnes over that of 1978. An increase was brought about in the landings in Tamil Nadu by about 12,700 t. The minimum of 32,463 t in 1972 and the maximum of 55,463 t in 1979 are reported.

144. ANON. 1981.

Trends in total marine fish production in India—1980. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 32, p. 1-6.

Estimated landings of *Leiognathus* and *Gazza* during 1980 amounted to 54,400 and 186 tonnes respectively. The landings of silverbelly showed a minor decline of about 900 t during 1980 while Tamil Nadu, Maharashtra and Orissa recorded reduced landings of silverbellies. Karnataka, Goa, Kerala and Andhra Pradesh recorded comparatively higher landings.

145. ANON. 1981.

Hand Book of Fisheries Statistics—1981. Dept. Agri. Cooperation, Ministry of Agri., Govt. of India, 31 pp.

p. 8. *Leiognathus* and *Gazza* are included among the state-wise marine fish catches during the year 1975-'79.

146. ANON. 1981.

Annual Report—1980-'81. Central Marine Fisheries Research Institute, Cochin.

Landings of silverbellies during 1979 and 1980 were 55,463 tonnes and 54,586 tonnes respectively. Silverbelly landings at Mandapam, Rameswaram and Pamban were estimated at 11,637 tonnes, for Kakinada at 569 tonnes and for Madras at 214 tonnes. Biological data for *L. jonesi* from Mandapam and Rameswaram, for *L. dussumieri* from Pamban and for *L. bindus* and *S. insidiator* from Kakinada and Madras are given.

147. ANON. 1981.

Report on Marine Fisheries Statistics in Tamil Nadu—1979-'80. Department of Statistics, Tamil Nadu, 1-32.

Catch data of *Equula splendens* for the years 1978-'79, 1979-'80, in Tamil Nadu are given.

148. ANON. 1981.

Commercial Trawl fisheries off Kakinada during 1969-'78. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 31, p.1-6.

An average of about 500 tonnes were landed annually forming about 7.5% (4th rank) of total landings. The catches of these fishes showed decline during 1977 and 1978. Although contributed to the fishery throughout the year, they were most abundant during January-March period. Out of 10 species, *Leiognathus bindus* and *Secutor insidiator* were the most abundant.

149. ANON. 1982.
Annual Report 1981-'82. Central Marine Fisheries Research Institute, Cochin.
 Estimated landings of silverbelly for 1981-'82 are reported with higher landings from Tamil Nadu and Andhra Pradesh. Landings were also reported from Mandapam, Rameswaram, Pamban, Kakinada and Madras with biological data on *Leiognathus jonesi*, *L. dussumieri* and *L. bindus*.
150. ANON. 1982.
Report on Marine Fisheries Statistics in Tamil Nadu—1980-'81. Dept. of Statistics, Tamil Nadu, Madras, 1-29.
 p. 15, 16, 25 give percentage of landings of *Equula splendens* during the period 1979-'80 and 1980-'81 as 19.8 and 9.0 respectively. Silverbellies were dominant at Ramanathapuram coast. Popular and Tamil names of *Equula splendens* are also given.
151. ANON. 1982.
Report on Marine Fisheries Statistics in Tamil Nadu—1980-'81. Department of Statistics, Tamil Nadu, p. 1-29.
 Catch data of *Equula splendens* in Tamil Nadu for 1979-'80 and 1980-'81 are given.
152. ANON. 1982.
 Management concepts for small-scale fisheries: Economic and social aspects. *FAO. Fish. Tech. Paper*, No. 228, 53 pp.
 Flat fishes in the Gulf of Thailand had been kept in check by *Leiognathidae* despite the superior reproductive capacity of the former.
153. ANON. 1982.
 Trends in marine fish production in India—1981. *Mar. Fish. Infor. Serv., T & E Ser.*, No. 41, p. 1-33.
 Estimated landings of *Leiognathus* and *Gazza* in the maritime states for the year 1981 and all India and state-wise landings of silverbelly during the period 1971 to 1981 are given. An increase of about 15,000 t (27%) in the total catch of silverbellies was seen during 1981 as compared to 1980. While the maximum landings were recorded in 1981, the minimum catch was in 1972. Landings of silverbellies from mechanised boats at major fish landing centres along the west coast of India are given.
154. ANON. 1983.
 Some simple methods for the assessment of tropical fish stocks. *FAO Fisheries Technical Paper*, No. 234, 51 pp.
 The curve in figure 5, which interconnects most of the peaks of the 1957 *Leiognathus bindus* samples of Balan (1967) can be used to estimate the growth parameters of that species of slipmouth.

155. ANON. 1983.
Trends in marine fish production in India. *Mar. Fish. Infor. Serv., T & E Ser.*, No. 52, p. 1-21.
Estimated landings of *Leiognathus* in India during 1982-'83 and calendar year 1982 are given. An increase of about 21,000 t in the catch of silverbellies was observed during 1982-'83 as compared to 1981-'82, the yield for the two years being about 70,100 and 68,000 t respectively.
156. ANON. 1983.
Report on Marine Fisheries Statistics in Tamil Nadu—1981-'82. Department of Statistics, Tamil Nadu, 37 pp.
Catch data of *Equula splendens* in Tamil Nadu for 1980-'81 and 1981-'82 are given.
157. ANON. 1983.
Marine small-scale fisheries of Andhra Pradesh. A general description. *Bay of Bengal Programme, Development of Small-scale Fisheries, BOBP/INF/4/SIDA/FAO, Madras*, 42 pp.
Given on p. 27 is the landings of *Leiognathus* and *Gazza* from 1972-'79 and month-wise landings in 1977.
158. ANON. 1983.
A code list of common marine living resources of the Indian seas. *CMFRI Spl. Publ.*, No. 12, 150 pp.
Groups, genera, species, common names and code numbers of *G. achlamys*, *G. minuta*, *L. berbis*, *L. bindus*, *L. blochii*, *L. brevirostris*, *L. daura*, *L. dussumieri*, *L. equulus*, *L. fasciatus*, *L. jonesi*, *L. leuciscus*, *L. lineolatus*, *L. splendens*, *S. insidiator* and *S. rucomius* are given.
159. ANON. 1983.
Marine small-scale fisheries of India: A general description. *Bay of Bengal Programme, Development of Small-scale Fisheries, BOBP/INF/3/SIDA/FAO, Madras*, 69 pp.
Composition of landings of *Leiognathus* and *Gazza* during 1977-'80 and state-wise landings during 1980 are given on p. 51.
160. ANON. 1983.
Report on Marine Fisheries Statistics in Tamil Nadu—1981-'82. Dept. of Statistics, Tamil Nadu, 37 pp.
Percentage composition of *Equula splendens* during the period 1980-'81 and 1981-'82 and silverbelly catch were dominant in Ramanathapuram District. Popular and Tamil names are also given.

161. ANON. 1983.
A profile of Indonesian fisheries. *Bay of Bengal News*, No. 11, FAO, 32 pp.
A Publication of the Bay of Bengal Programme for Fisheries Development.
Ponyfish are mentioned among demersal species of Indonesia.
162. ANON. 1984.
Marine small-scale fisheries of Orissa, India — a general description. *Bay of Bengal Programme, Development of Small-scale Fisheries, BOBP/INF/7, SIDA/FAO, Madras*, 40 pp.
Landings of *Leiognathus* and *Gazza* in Orissa during 1976 to '81 are given on p. 30.
163. ANON. undated.
Common species of fish found in Tonga (mimeo).
Lists *Leiognathus equulus* and gives body length (14 cm) and spawning period (lay eggs in June).
164. ANON. 1984.
Annual Report—1983-'84. Central Marine Fisheries Research Institute, Cochin, 114 pp.
Tamil Nadu coast dominated in the large scale exploitation of silverbelly resources, its share in the total catch being 69.36%. The landings from Kerala and Andhra Pradesh formed 10.46% and 7.82% respectively. The landings from the rest of the coast were poor.
165. ANON. 1984.
Annual Report—1983-'84. Central Institute of Fisheries Nautical and Engineering Training, Cochin.
Catch data (catch per hour and percentage) of leiognathids and seasonal and qualitative variation of bottom fish as assessed by *Master Fisherman* along south west coast during 1983-'84 are given in Annexure XII and XII-A.
166. ANON. 1985.
Report of the FAO/SEAFDEC Workshop on shared stocks in Southeast Asia, Bangkok, 18-22 February, 1985. *FAO Fish. Rep.*, No. 337, 97 pp.
The information was presented in the form of 19 charts of the region and a series of tables summarizing the biological data. The charts covered the ponyfish among demersal fishes and other groups of fishes.
167. ANON. 1985.
Annual Report—1984-'85. Central Institute of Fisheries Nautical and Engineering Training, 32 pp.
Month-wise and species-wise catches of silverbellies per unit effort of M.V. *Skipper-2* are given.

168. ANON. 1985.
Review of the state of world fishery resources. *FAO Fish. Cir.*, No. 710 (Revision 4), 61 pp.
Catch data of ponyfishes from India in the Western Indian Ocean (Area 51) from 1980 to 1983 is given on p. 50.
169. ANON. 1986.
Annual Report—1983-'84. Central Marine Fisheries Research Institute, Cochin.
Silverbellies contributed 70,122 tonnes in 1982-'83 and 87,772 tonnes in 1983-'84 in the total marine fish landings. Tamil Nadu coast dominated in the large scale exploitation of silverbelly resources, its share in the total catch being 69.36%. The landings from Kerala and Andhra Pradesh formed 10.46% and 7.82% respectively. The landings from the rest of the coast were poor.
170. ANON. 1986.
Annual Report—1984-'85. Central Marine Fisheries Research Institute, Cochin, 96 pp.
All India and state-wise landings of silverbellies during 1984-'85 are given.
171. ANON. 1986.
Marine fish production in India, 1983-'84 and 1984-'85. *Mar. Fish. Infor. Serv., T & E Ser.*, No. 67, p. 79.
Year, state, gear and major fish landing centre wise landings of silverbellies and other fish during the period 1983-'84 and 1984-'85 are given. Tamil Nadu contributed 69.36% of total silverbelly catch.
172. ANON. 1986.
Report on the Marine Fisheries of Tamil Nadu—1983-'84 and 1984-'85. Department of Statistics, Tamil Nadu, 54 pp.
Catch data of *Equula splendens* in Tamil Nadu for 1982-'83, 83-'84 and 84-'85 are given.
173. ANON. 1986.
Report on the Marine Fisheries in Tamil Nadu—1983-'84 and 1984-'85. The Commissioner of Statistics, Madras, 54 pp.
Landings of silverbellies during different years from Tamil Nadu are given.
174. ANON. 1986.
Fishing Chimes, 6 (4): 75.
Lower east coast was observed to be a major source of silverbellies. On an average it constituted 9% of the catch of the region. A maximum catch rate of 51 kg/hr was obtained between 20-50 m depth in the month of

January, 1985 at 11° to 11°30'N. In the Gulf of Mannar region it constituted 6% of the catch during the year as per the report.

175. ANON. 1986.
Research Highlights—1984-'85. Central Marine Fisheries Research Institute (ICAR), Cochin, 12 pp.
Population dynamics of *Secutor insidiator* is given on page 4.
176. ANON. 1989.
Marine fish production in India, 1985-'86. *Mar. Fish. Infor. Serv., T & E Ser.*, No. 91, p. 1-32.
Gear, year and state-wise landings of silverbelly are reported for the period 1985-'86.
177. APRIETO, V. AND E. VILLOSO 1977.
Fishes caught by otter trawl in the Visayan Sea. *Fish. Res. J. Philipp.*, 2 (2): 40-49.
Lists leiognathid species caught by otter trawl.
178. APPA RAO, T. 1966.
On some aspects of the biology of *Lactarius lactarius* (Schneider). *Indian J. Fish.*, 13 (2): 334-349.
Leiognathus sp. was observed as food.
179. ARORA, H. L. 1952.
Contribution to the biology of the silverbelly *Leiognathus splendens* (Cuv.). *Proc. Indo-Pacific Fish. Counc.*, 3, Tech. Pap. 4, p. 75-80.
Length at first maturity, spawning frequency, fecundity, growth and length/weight relationship of *L. splendens* are given.
180. ARSENIS, S. DE JESUS AND RUPERTO R. DEANON 1977.
Survey of Bangus and Sugo fry grounds and other marine resources of Quezon and Bicol provinces. *Philippiae J. Fish.*, 14 (1): 95-99.
Slipmouths in the San Miguel Bay caught by trawl net are presented on p. 97.
181. ARIFIEN, S. 1972.
Composition of the fish catch of lift nets from Tanjungpasir, Naga Bay, Tangesang. Bogor Agri. Inst. Indones., *Thesis*, 66 pp. (Indonesian).
Catch data and length frequencies of leiognathids are given.
182. ARAI, R. AND T. YAMAMOTO 1981.
Chromosomes of six species of percoid fishes from Japan. *Bull. natn. Sci. Mus., Tokyo (Zool.)*, 7 (2): 87-100. Illustrated.
Chromosomes of *Leiognathus nuchalis* are described.

183. AVERY, A. 1950.
Fish processing handbook for the Philippines. *Res. Rep. U.S. Fish. Wildl. Serv.*, 26: 1-149.
Presents figures for *Leiognathus equulus*, *L. fasciatus*, *L. daura*, *Secutor ruconius* and *S. insidiator*. Discusses processing of leiognathids.
184. AZETA, M., R. IKEMOTO AND M. AZUMA 1980.
Distribution and growth of demersal 0 - age Red Sea bream, *Pagrus major* in Shijiki Bay. *Bull. Seikai Reg. Fish. Res. Lab.*, No. 54, p. 259-278.
Leiognathus rivulatus is among the fish community in the inner part of the bay caught by beam trawl (p. 266).
185. AZUMA, MIKIO, MASANORI AZETA AND KAZUAKI MITSUMARU 1983.
Feeding inter-relationships between young Red Sea bream and cohabiting fishes in Shijiki Bay. *Bull. Seikai Reg. Fish. Res. Lab.*, No. 59, p. 101-118.
Leiognathus rivulatus is listed among fishes caught with beam trawl at 14 sampling sites in inner part of Shijiki Bay (p. 104).
186. BAASCH, H. P. JARCHAU, H. V. WESTERNHAGEN AND M. ZURECK 1976.
Fischerei auf den Philippinen und Möglichkeiten ihrer Förderung. *Projekt Nr. 7425127 - 000603. Fed. Min. Econ. Coop. (BMZ)*.
Mentions leiognathids among important fish groups.
187. BADRUDIN, M. 1977.
Catch rate distribution of ponyfishes - Leiognathidae. In: *Peta Beberopa Sumber Perikanan Demersal (Dasai) Di Laut Jawa Dan Laut Cina Selatan*. A. Dwiponggo (Ed.), Marine Fisheries Research Institute, Jakarta, p. 22-23.
Maps showing catch rates of Leiognathidae in Jawa and South China Seas in 1975-'76 are given.
188. BAISSAC, J. de. 1952.
Contribution 'a l'etude des poissons de l'île Maurice. V. *Proc. R. Soc. Arts Sci. Mauritius*, 1: 185-240.
Descriptions of *Leiognathus equulus*, *L. fasciatus*, *Gazza minuta* and another undetermined species are included.
189. BAISSAC, J. de. 1976.
Poissons de Mer des Eaux de l'île Maurice. *Proc. R. Soc. Arts Sci., Mauritius*, 3: 191-226.
Listed from Mauritius are *Secutor insidiator* (Petite mangouste) *L. equulus* (sap-sap): *L. fasciatus* (Sap-sap) *L. elongatus* (Sap-sap long) and *G. minuta* (sap-sap lesdents).

190. BAL, D.V. AND K.V. RAO 1984.
Marine Fisheries. Tata Mcgraw - Hill Publishing Company Ltd., New Delhi, 470 pp.
Common names, synonyms, diagnostic characters and biology of *Leiognathus splendens*, *L. equulus*, *L. dussumieri*, *L. fasciatus*, *L. bindus*, *L. jonesi*, *Secutor ruconius*, *S. insidiator*, *Gazza minuta* and *G. achlamys* are given.
191. BAL, D.V. AND L.B. PRADHAN 1945.
First Progress Report on "Investigation of Fish Eggs and Fish Larvae from Bombay Waters", 1944-'45. Dept. of Zoology. The Royal Institute of Science, Bombay, p. 1-15.
General description of the characters of silverbelly is given. Specimens of *Equula fasciata* (*Leiognathus fasciatus*) were collected in August and September and the smallest of them was 8 mm and the largest 10 mm. The body of the young fish has a silvery colour but irregular vertical streaks in more advanced specimens. A brownish spot is very faintly seen at the base of pectoral fin. Fins are colourless.
192. BAL, D.V. AND L.B. PRADHAN 1946.
Investigation of fish eggs and fish larvae from Bombay waters. *Second Progress Report* : 1945-'46. Govt. Central Press, Bombay.
Eggs and larvae obtained were attributed to *L. fasciatus*.
193. BAL, D.V. AND L.B. PRADHAN 1947.
Investigation of fish eggs and fish larvae from Bombay waters. *Third Progress Report*, 1947-'48. Govt. Central Press, Bombay.
Eggs and larvae obtained were attributed to *Leiognathus fasciatus*.
194. BAL, D.V. AND L.B. PRADHAN 1951.
Occurrence of fish larvae and postlarvae in Bombay waters during 1944-'47. *J. Univ. Bombay, New Ser.*, 208, p. 1-15.
Larvae and postlarvae obtained were attributed to *Leiognathus* and *Gazza* spp.
195. BALAKRISHNAN, G. AND K. ALAGARAJA 1984.
Regulated mechanised and traditional fishing in Tamil Nadu - An approach to end clashes. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 58, p. 10-13.
Reports that the coastal area from Jagathapattinam (south) in Pudukottai District to Mallipattinam (north) in Thanjavoor District is a rich ground for important fisheries such as prawns, silverbellies locally called 'kaaral' and other fishes. Among fishes, leiognathids sciaenids and crabs were the major components.

196. BALAKRISHNAN, K.P. 1959.
 Marine zoology and fisheries in the Indian Ocean. 1. Fish eggs and larvae of the Kerala coast. *Proc. 1st All India Congr. Zoology* (Jabalpur).
 Eggs and larvae encountered were attributed to *Leiognathus brevirostris*.
197. BALAKRISHNAN NAIR, N., K. KRISHNA KUMAR, J. RAJASEKHARAN NAIR, P.K. ABDUL AZIS, K. DHARMARAJ AND M. ARUNACHALAM 1983.
 Ecology of Indian estuaries - XI. A preliminary survey of the fishery resources of the Ashtamudi estuarine system. *Fish. Technol.*, 20 (2): 75-83.
Leiognathus equulus, *L. lineolatus*, *L. splendens*, *Secutor ruconius* and *S. insidiator* are reported among the fish fauna of the Ashtamudi estuarine system.
198. BALAN, V. 1963.
 Biology of the silverbelly, *Leiognathus bindus* (Val.) of the Calicut coast. *Indian J. Fish.*, 10 (1): 118-134.
L. bindus yielded a fairly good fishery along Calicut coast from April to December, August to November being the peak season. Boat-seines are mainly employed for the fishery. The food and feeding habits, maturation, fecundity, growth in length and length weight relationship were studied.
199. BALSUBRAMANYAN, R. 1964.
 On the use of different natural baits for sea-fishing in India. *Fish. Technol.*, 1 (1): 41-47.
Equula (= *Leiognathus*) sp. is among the most common baits used.
200. BALDWIN, W.J. 1977.
 A review of the use of live baitfishes to capture skipjack tuna *Katsuwonus pelamis*, in the tropical Pacific Ocean with emphasis on their behaviour, survival and availability, p. 8-35. In: *Collection of Tuna Baitfish Papers*, NOAA Tech. Rep. R.S. Shomura (Ed.), NMFS Circ. 408, 167 pp.
 Discusses suitability of leiognathids, especially *Gazza minuta*, as live bait resource. Suggests low attraction rate and reports of schooling behaviour at or near surface.
201. BANASOPIT, T. AND T. WONGRATANA 1967.
 A check list of fishes in the reference collection maintained at the Marine Fisheries Laboratory. *Contrib. Mar. Fish. Lab. Bangkok*, No. 7, 73 pp.
 Lists 13 species of leiognathidae with Thai, English and scientific names.
202. BANERJI, S. K. 1958.
 Fishery survey and statistics. Fisheries of the west coast of India. Central Marine Fisheries Research Institute, Mandapam Camp, p. 68-73.
 p. 73. gives average catch of silverbellies for 1950-'57 as 12,758 tonnes which was equal to 2.04% of total catch.

203. BANERJI, S. K. AND A. V. V. SATYANARAYANA 1958.
 A note on the general trend of marine fish catch in India. *Indian J. Fish.*, 5: 195-200.
 Average fish landings of 1950-'56 is given on p. 198 as 11,838 tonnes with percentage for silverbellies at 2.04%.
204. BAPAT, S. V. AND D. V. BAL 1952.
 The food of some young fishes from Bombay. *Proc. Indian. Acad. Sci.*, 35 B : 78-92.
 Reported 45 specimens of *E. fasciata* measuring 9-18 mm. The stomach contents included copepods, gastropods and digested food. 127 specimens of *E. insidiatrix* were studied whose food consisted of polychaetes, copepods, gastropods and crustacean remains. Ten specimens of *L. ruconius* contained polychaete and crustacean remains.
205. BAPAT, S. V. AND N. RADHAKRISHNAN 1972.
 A survey of the trawl fish resources off Karwar, India. *Proc. Indo-pacific Fish. Coun.*, 13th Session, Section III, p. 354-383.
 The monthly catches, catch rates and seasonal variations in abundance of silverbellies are given.
206. BAPAT, S. V., V. M. DESHMUKH, B. KRISHNAMOORTHY, C. MUTHIAH, P. V. KAGWADE, C. P. RAMAMIRTHAM, K. J. MATHEW, S. KRISHNA PILLAI AND C. MUKUNDAN 1982.
 Fishery resources of the Exclusive Economic Zone of the northwest coast of India. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 33, 108 pp.
Leiognathus bindus and *Gazza minuta* are reported among other fishes.
207. BARNARD, K. H.
A Pictorial Guide to South Africa Fishes—Marine and Freshwater. Maskew Miller Ltd., Cape Town, 226 pp.
 Descriptions of *Leiognathus equula*, *Leiognathus insidiator* and *Gazza minuta* are given.
208. BARRY, J. M. AND J. O'ROURKE 1959.
 Species specificity of fish mucus. *Nature, London*, 184: 2039.
 Refers Viswanathan and Krishna Pillai (1956) who used tissue crushes from fishes that had been dead for some time. Demonstrated differences between pairs of species in *caranx* and *Leiognathus*.
209. BARUS, H. R. 1968.
Leiognathus spp. Caught by Trawl off Batang, Central Java. Bogol. Agric. Insti., Indonesia, Thesis (In Indonesian).
 About 60% of the catch consisted of *Leiognathus equulus*, *L. splendens*, *L. dussumieri*, *L. daura*, *L. insidiator* and *L. ruconius*.

210. BARNARD, K. H. 1925.
 A Monograph of the Marine Fishes of South Africa. *Ann. South African Museum*, 21, 1065 pp.
 Described *L. equula*, *L. insidiator* and *G. minuta*. Mentioned that members of the family ascending rivers, are consumed by people, but of no commercial value.
211. BASHEERUDDIN, S. AND K. NAGAPPAN NAYAR 1961.
 A preliminary study of the juvenile fishes of the coastal waters off Madras city. *Indian J. Fish.*, 8 (1): 169-188.
 Table on p. 174 gives occurrence of *Leiognathus insidiator* (Bloch), *Leiognathus ruconius* (Ham Buch), *Leiognathus splendens* (Cuv.), *Leiognathus fasciatus* (Lacepede), *Leiognathus equulus* and *Gazza minuta* in March and April. Size ranges, number of species, food components, percentage composition of the juvenile fishes of Leiognathidae occurring from March-April, 1954 and 1955 are given.
212. BASSOT, J.M. 1966.
 On the comparative morphology of some luminous organs. In: *Bioluminescence in Progress*. F.H. Johnson and Y. Haneda (Eds.), p. 557-610. Princeton. Univ. Press, Princeton.
 As per title, includes observations on Leiognathidae.
213. BASSOT, J.M. 1975.
 Les organes lumines a bacteries symbiotiques de quelques teleost'eens leiognathides. *Arch. Zool. Exp. Gem.*, 116 (3): 359-373.
 Describes light organ and bacterial symbionts in *Leiognathus equulus*, *E. novaehollandiae*, and *Secutor ruconius*,
214. BAUMANN, P. AND L. BAUMANN 1981.
 The Marine Gram-negative *Eubacteria* spp. 1302-1331. In: *The Prokaryotes*. M. P. Starr, H. Stolp, H. G. Truper, A. Balows and H. G. Schlegel (Eds.), Springer - Verlag, New York.
215. BAYOUMI, A. R. 1972.
 Recent biological investigations in the Red Sea along the ARE coast. On some demersal fishes of economic importance from the Red Sea with notes on migration of fishes through the Suez Canal. *Bull. Inst. Oceanogr. Fish., Cairo*, 2: 159-183.
Leiognathus bindus of the family Leiognathidae was collected during the investigation. Synonym and description of characters of this species are given. Specimens of *Leiognathus* were recorded from the Suez Canal or its lakes. It is said that it has penetrated through the canal into the Mediterranean coast upto Turkey. *L. klunzingeri* is one of the most common bottom species in the eastern Mediterranean.

216. BEAN, T. H. AND A. C. WEED 1912.
Notes on a collection of fishes from Java made by Omer Bryant and William Palmer in 1909, with description of a new species. *Proc. U. S. Nat. Mus.*, 42, p. 587-611.
Gazza argentaria (Majalibit Bay, Waigin) is reported.
217. BEAUFORT, L. F. DE. 1913.
Fishes of the eastern part of the Indo-Australian Archipelago, with remarks on its zoogeography. *Bijdr. Nederl. Dierk.*; 19: 95-163, 1 pl.
Gazza argentaria (Majalibit Bay, Waigin) is reported on p. 120.
218. BACK, U. AND A. SUDRAJAT 1978.
Variation in size and composition of demersal trawl catches from the north coast of Java with estimated growth parameters for three important food fish species. *Contri. Demersal Fish. Proj. Mar. Fish. Res. Inst., Jakarta*, 4: 1-80.
Discusses seasonal occurrence, depth distribution and growth of *Leiognathus splendens*, with L_{∞} (cm) = 15.6 and K (yearly) = 1.745. Correcting data in Pauly (1977 a).
219. BENNET, P. SAM AND G. ARUMUGHAM 1989.
The present status of small scale traditional fishery at Tuticorin. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 99, p. 1-15.
Authors reported the leiognathids landings from 'Chala valai', 'Kara valai' and 'Thallumadi' (Prawn net).
220. BENSAM, P. 1985.
Observations on a few early developmental stages in some fishes of Portonovo Coast, India. *Ph.D thesis*. Annamalai University, 182 pp.
Species of *Leiognathus* and *Secutor* are common in Portonovo waters.
221. BEN-TUVIA, A. 1953.
Fishes caught off Caesarea on the Mediterranean coast of Israel. *Bull. Res. Counc. Israel*, 2 (4): 439-440.
Lists *L. klunzingeri* and states its erythrean origin.
222. BEN-TUVIA, A. 1953.
Mediterranean fishes of Israel. *Bull. Sea. Fish. Res. Str. Caesarea*, 8: 1-40.
p. 2, 24. *Leiognathus klunzingeri*, p. 25. *L. mediterraneus*. *L. klunzingeri*, which came from the Red Sea through the Suez Canal is reported to be common in the eastern Mediterranean upto the Turkish coast.
223. BEN-TUVIA, A. 1963.
Systematics and ecology of Indo-Pacific fishes recently established in the

- eastern Mediterranean. *Proc. Int. Congr. Zool., Wash. D. C.*, 16 (1): 115.
Lists *L. klunzingeri* in the Eastern Mediterranean.
224. BEN-TUVIA, A. 1966.
Red Sea fishes recently found in the Mediterranean. *Copeia*, 2: 254-275.
Complete synonymy is given for *Leiognathus klunzingeri* from Mediterranean Sea. It occurs in great numbers in trawlers working not exceeding 100 m. Size 50-70 mm occurs in fishery. Predators like *Saurida undosquamis* and other fishes feed on this fish. Its food consists of small invertebrates mostly Copepoda, Tanaidacea, Amphipoda, Cumacea and Ostracoda. Ripe gonads were found in fish collected during summer. Distributed in Red Sea, Suez Canal and Eastern Mediterranean from Port Said to Mersin and Aegean Sea.
225. BEN-TUVIA, A. 1973.
Man made changes in the Eastern Mediterranean and their effects on the fishery resources. *Mar. Biol.*, 19: 197-203. also in *J. Ichthyol.*, 1970: 179-185.
Lists *L. klunzingeri* among the Red Sea fishes having penetrated into the Mediterranean by means of a "Lessepsian" migration. *L. klunzingeri* also an immigrant now forms the main food item of *S. undosquamis*.
226. BEN-YAMI, M. AND T. GLASER 1974.
The invasion of *Saurida undosquamis* (Richardson) into the Levant Basin - an example of biological effect of interoceanic canals. *Fish. Bull.*, 72 (2): 359-373.
Leiognathus klunzingeri forms food of Red Sea lizard fishes.
227. BERG, L. S. 1940.
Classification of fishes, both recent and fossil. *Trav. Inst. Zool. Acad. Sci., USSR*, 5 (2): 87-517.
Classification of family Leiognathidae (Leiognathidae + Gerridae Jordan) is given.
228. BERG, L. S. 1947.
Classification of Fishes Both Recent and Fossil. (English and Russian), 517 pp. J. W. Edwards Ann Arlzt, Michigan.
Leiognathidae (Leiognathidae + Gerridae Jordan) is described on p. 311.
229. BERG, L. S. 1958.
System der rezenten und fossilen Fischartigen und Fische. VEB, Verlag der Wissenschaften, Berlin, (German translation of 2nd Russian edition).
Lists the family "Leiognathidae", consisting of Leiognathidae + Gerridae Jordan (same as in Berg 1940 and 1947).

230. BERG, S. E. 1971.
Investigation on the bottom conditions and the possibilities for marine prawn and fish trawling on the north and east coast of Ceylon. *Bull. Fish. Res. Stn., Ceylon*, No. 22. p. 53-88.
Data on the seasonal abundance of Leionathidae are given.
231. BERNACSEK, G. M. 1984.
Approaches to analysing the relationship between catch and effort in tropical artisanal estuarine fisheries using the example of Tanzania. *Studies and Reviews*, No. 61, Vol. 1, F.A.O, 197-231.
Leiognathus equula is recorded from Tanzanian estuaries.
232. BERTIN, L. 1958.
Glands cutanees et organes luminescents. In: *Traite' de Zoologie*, 13. P. Grasse' (Ed.), p. 459-481. Masson et Cie, Paris.
Distribution of luminous organs in *Equula* and *Leiognathus* is described.
233. BERTIN, L. 1958.
Ecologie. In: *Traite de Zoologie*, 13. P. Grasse' (Ed.), p.1885-1933, Masson et Cie, Paris.
Suggestion is made on p. 1902 that the light organs in *Equula* allow the fishes to illuminate the water surrounding them.
234. BERTIN, L. AND C. ARAMBOURG 1958.
Super-ordre de Teleosteenos (Teleostei). In: *Traite de Zoologie*, 13. P. Grasse (Ed.), p. 2204-2500, Masson et Cie, Paris.
Combines Leionathidae with the Lutjanidae and discusses the mechanism which makes the mouth slips (p. 2390).
235. BERTIN, L. AND C. ARAMBOURG 1958.
Systematique des Poissons. In: *Traite de Zoologie*, 13. Grasse (Ed.), 1967-1983, Masson et Cie, Paris.
Included Leionathidae in the sub-order Percordei, on page 1980.
236. BHIMACHAR, B. S, S. K. BANERJI AND G. VENKATARAMAN 1957.
A study of the variability in the fish catches taken by successive hauls in the inshore waters off Calicut. *Indian J. Fish.*, 4: 1-19.
Gives mean number of *Leiognathus* spp. from zone 1 to 4 and gives the mean length of *Leiognathus splendens* for every three hauls in 3 zones.
237. BHIMACHAR, B. S. AND P. C. GEORGE 1950.
Abrupt set-backs in the fisheries of Malabar and Kanara coasts. "Red water" phenomenon as their probable cause. *Proc. Indian. Acad. Sci.*, 31 (B): 337-350.
Listed *Leiognathus bindus* among dead fishes due to 'Red water' at Hosdurg.

238. BHIMACHAR, B. S. AND G. VENKATARAMAN 1952.
 A preliminary study of the fish populations along the Malabar coast. *Proc. Nat. Inst. Sci., India*, 18 (6): 627-655.
 The author states that the family Leiognathidae was represented by six species of *Leiognathus*, *L. splendens*, *L. insidiator*, *L. blochi*, *L. ruconius*, *L. equulus* and *L. bindus* in Malabar coast.
239. BIANCHI, G. 1985.
 Field guide to the commercial marine and brackishwater species of Pakistan. *FAO Species Identification Sheets for Fishery Purposes*, 200 pp., 24 plates.
 Synonyms, local names, FAO names, size, fishing gear, habitats and biology of *Gazza minuta*, *Leiognathus splendens* and other species namely *L. berbis*, *L. bindus*, *L. blochii*, *L. brevisrostris*, *L. daura*, *L. dussumieri*, *L. equulus*, *L. fasciatus*, *L. leuciscus*, *L. lineolatus* and *S. insidiator* are given with figures.
240. BIANCHI, G. 1985.
 Field guide to the commercial marine and brackishwater species of Tanzania. *FAO Species Identification Sheets for Fishery Purpose*, 199 pp, 32 plates.
 Synonyms, local names, FAO names, size, fishing gear and habitat of *Gazza minuta*, *Leiognathus elongatus*, *Leiognathus leuciscus*, *L. berbis*, *L. equulus*, *L. fasciatus*, *L. splendens* and *Secutor insidiator* are given with figures.
241. BIKOV, A. (Ed.) 1972.
 (Technico-chemical properties of ocean fishes) Food Industries Edition, Moscow (In Russian).
 p. 138-139 give main body constituents and a figure of *Leiognathus rivulatus*.
242. BIRTWISTLE, W. 1935.
Annual Report of the Fisheries Department for 1934. Singapore S. S. & F. M. S., 22 pp.
 Landing data for leiognathids ("Kikek") is given.
243. BIRTWISTLE, W. 1938.
Annual Report of the Fisheries Department for 1937. Singapore S. S. & F. M. S., 43 pp.
 Landing data for "Kikek" (leiognathids) is given.
244. BIRTWISTLE, W. 1939.
Annual Report of the Fisheries Department for 1938. Singapore S. S. & F. M. S., 39 pp.
 Landing data for "Kikek" (leiognathids) is given.

245. BISWAS, K. P. 1979.
Inshore demersal fisheries off Orissa coast. *Fish. Technol.*, 16 (2): 101-107.
p. 105 gives total catch, composition of the catch and catch per hour of silverbellies in Paradeep.
246. BLABER, S. J. M. 1980.
Fish of the Trinity Inlet System of North Queensland with notes on the ecology of fish faunas in tropical Indo-Pacific estuaries. *Aust. J. Mar. Freshwater Res.*, 31: 137-146.
List of fishes from Trinity Bay and estuary includes *Equulites berbis*, *E. novaehollandiae*, *Gazza minuta*, *Leiognathus equulus*, *L. fasciata*, *Secutor insidiator* and *S. ruconius*, with indices of relative abundance and main food items (plankton and benthos for all except *G. minuta*, where invertebrate benthos and fish were predominant).
247. BLABER, S. J., J. W. YOUNG AND M. C. DUNNING 1985.
Community structure and zoogeographic affinities of the coastal fishes of the Dampier Region of North-Western Australia. *Aust. J. Mar. Freshw. Res.*, 36 (2): 247-66.
p. 262 contains *Gazza minuta*, *Leiognathus decorus* and *L. equulus* which were found in mangrove habitat and small creeks.
248. BLANC, M. AND P. FOURMANOIR 1964.
Etudes preliminaries des poissons de la cote Cambodgienne. *Cah. Pac.*, 6: 33-46.
Reports *Leiognathus elongatus* as a new record for the Ream area. Listed also is *Leiognathus equulus*.
249. BLAXTER, J. H. S. 1971.
Light fishes. In: *Marine Ecology*, 1 (1), p. 213-320. O. Kinne (Ed.), Wiley Interscience, London.
Mentions luminescence in leiognathids.
250. BLEEKER, P. 1844.
Bijdragen tot de geneekundige topographie Van Batavia. Generisch Overzicht der Fauna. *Nat. and Geneesh. Arch. Ned. Ind.*, 1: 551-553.
Mentioned *Equula* and *Gazza* on p. 553.
251. BLEEKER, P. 1845.
Bijdragen tot de geneeskundige topographie Van Batavia. Generisch Overzicht der Fauna. *Nat. and Geneesh. Arch. Ned. Ind.*, 2: 505-528.
Recorded on p. 518 are *Equula brevirostris*, *E. caballa*, *E. ensifera*, *E. filigera*, *E. gomorah*, *E. insidiatrix* and *Gazza equulaeformis*.

252. BLEEKER, P. 1848.
 A contribution to the ichthyology of Sumbawa, *Jour. Ind. Arch.*, 2 (9): 632-639.
 Mentioned on p. 633 is *Equula caballa*.
253. BLEEKER, P. 1849.
 Bijdrage tot de Kennis der' ichthyologische fauna Van het eiland Maudra, met beschrijving Van eenige nieuwe species. *Verh. Bat. Gen.*, 22: 1-16.
Equula brevirostris, *E. caballa* and *E. insidiatrix* are mentioned on p. 5.
254. BLEEKER, P. 1850.
 Bijdrage tot de Kennis der ichthyologische fauna Van Middenen oost-Java, naet beschrijving Van eenige nieuwe species. *Verh. Bat. Gen.*, 23: 1-23.
 p. 9. *Equula brevirostris* and *E. caballa* are listed.
255. BLEEKER, P. 1851.
 Visschen Van Banka. *Nat. Tijdschr. Ned. Ind.*, 1: 159-161.
 p. 160. *Equula gomorah*.
256. BLEEKER, P. 1851.
 Over eenige nieuwe geslachten en soorten Van Makreelachtige Visschen Van den Indischen Archipel. *Nat. Tijdschr. Ned. Ind.*, 1: 341-372.
 p. 371. *E. gerroides*, p. 372. *Equula bindoides*, *E. caballa* and *E. coma*.
257. BLEEKER, P. 1851.
 Vierde bijdrage tot de Kennis der ichthyologische fauna Van Borneo, met beschrijving Van eenige nieuwe soorten Van Zoetwater Visschen. *Nat. Tijdschr. Ned. Ind.*, 2: 193-208.
 p. 195. *Equula ensifera*.
258. BLEEKER, P. 1851.
 Derde bijdrage tot de Kennis der ichthyologische fauna Van Borneo, met beschrijving Van eenige nieuwe soorten Van Zoetwater Vizzchen. *Nat. Tijdschr. Ned. Ind.*, 2: 57-70.
 p. 59. *Equula ensifera*.
259. BLEEKER, P. 1851.
 Nieuwe bijdrage tot de Kennis der ichthyologische fauna celebés, *Nat. Tijdschr. Ned. Ind.*, 2: 209-224.
 p. 213. *Equula bindoides*, *E. caballa*, *E. ensifera*, *E. gomorah*, *E. insidiatrix* and *E. oblonga*.

260. BLEEKER, P. 1851.
 Vijfde bijdrage tot de Kennis der ichthyologische fauna Van Borneo, met beschrijving Van eenige nieuwe soorten zoetwater Visschen. *Nat. Tijdschr. Ned. Ind.*, 2: 415-442.
Equula ensifera.
261. BLEEKER, P. 1851.
 Bijdrage tot de Kennis der ichthyologische fauna Van Riouw. *Nat. Tijdschr. Ned. Ind.*, 2: 469-497.
 p. 471. *Equula filigera* and *Gazza minuta.*
262. BLEEKER, P. 1852.
 Bijdrage tot de Kennis der ichthyologische fauna Van Riouw. *Nat. Tijdschr. Ned. Ind.*, 3: 51-86.
Equula caballa and *E. dacer.*
263. BLEEKER, P. 1852.
 Bijdrage tot de Kennis der ichthyologische fauna Van Timor. *Nat. Tijdschr. Ned. Ind.*, 3: 159-174.
 p. 165. *Equula filigera.*
264. BLEEKER, P. 1852.
 Bijdrage tot de Kennis der ichthyologische fauna Van de Moluksche eilanden. Visschen Van Ambonia en Ceram. *Nat. Tijdschr. Ned. Ind.*, 3: 229-309.
 p. 237. *Equula ensifera.*
265. BLEEKER, P. 1852.
 Zesde bijdrage tot de Kennis der ichthyologische fauna Van Borneo. Visschen Van Pamangkat, Bandjermassing, Baraboekarta en Sampit. *Nat. Tijdschr. Ned. Ind.*, 3: 407-442.
 p. 412. *Equula ensifera*, *E. filigera* and *E. gerreoides.*
266. BLEEKER, P. 1852.
 Bijdrage tot de Kennis der Makreelachtige Visschen Van den soenda-Molukschen Archipel. *Verh. Bat. Gen.*, 24: 1-93.
 p. 83. *Equula bindoides*, p. 81. *E. caballa*, *E. coma*, *E. dacer*, p. 80. *E. ensifera*, p. 79. *E. filigera*, p. 81. *E. gerreoides*, p. 82. *E. gomorah*, p. 84. *E. insidiatrix*, p. 85. *E. interrupta* and *E. lineolata.*
267. BLEEKER, P. 1852.
 Bijdrage tot de Kennis der ichthyologische fauna Van het eiland Banka. *Nat. Tijdschr. Ned. Ind.*, 3: 443-460.
 p. 445. *Equula gomorah* and *E. lincolata.*

268. BLEEKER, P. 1853.
Nalezingen op de ichthyologie Van Japan. *Verh. Batavia. Gen.*, 25: 1-56.
p. 39. *Equula gerreoides*, p. 38. *E. lineolata*, *E. nuchalis*, *E. oblonga* and
E. rivulata.
269. BLEEKER, P. 1853.
Diagnostische beschrijvingen Van nieuwe of weinig bekende vizchsoorten
Van Sumatra Tiental V-x. *Nat. Tijdschr. Ned. Ind.*, 4: 243-302.
p. 259. *Gazza minuta*, p. 260. *G. tapeinosoma* and p. 261. *G. equulaeformis*.
270. BLEEKER, P. 1853.
Nalezingen op de ichthyologische fauna Van Bengalan en Hindostan.
Verh. Batavia Gen., 25: 1-164, with addendum in 1854. *Verh. Batavia Gen.*,
26: 165-166.
p. 46 reports *Equula bindus*, *E. blochii*, *E. brevirostris*, *E. caballa*, *E. coma*, *E.*
dacer, *E. dussumieri*, *E. ensifera*, *E. filigera*, *E. gomorah*, *E. insidiatrix*, *E.*
interrupta, *E. oblonga*, *E. ruconius* and *Gazza minuta*, p. 96. *E. ruconius*.
271. BLEEKER, P. 1854.
Visschen Van Batjan. *Nat. Tijdschr. Ned. Ind.*, 7: 133-135.
p. 134. *Equula ensifera*.
272. BLEEKER, P. 1854.
Vijufde bijdrage tot de Vennis der ichthyologische fauna Van celebes. *Nat.*
Tijdschr. Ned. Ind., 7: 225-260.
p. 249. *Equula gracilis*.
273. BLEEKER, P. 1854.
Eenige zoetwater Visschen, Verzameld to perdana en tjibilong door den
Heer Kalfsterman. *Nat. Tijdschr. Ned. Ind.*, 7: 468-469.
p. 468. *Equula ensifera*
274. BLEEKER, P. 1854.
Vischsoorten van Java. *Nat. Tijdschr. Ned. Ind.*, 7: 482-484.
p. 484. *Equula ensifera*.
275. BLEEKER, P. 1855.
Over eenige visschen van den diemensland. *Verh. Akad. Amsterdam*, 2: 1-
30.
p. 11. *Equula serrulifera*.
276. BLEEKER, P. 1855
Visschen Van Tikoe, Sumatra's Westkust. *Nat. Tijdschr. Ned. Ind.*, 8: 345.
p. 345. *Equula interrupta* and *Gazza equulaeformis*.

277. BLEEKER, P. 1857.
 Bijdrage tot de Kennis der Ichthyologische fauna van Nias. *Nat. Tijdschr. Ned. Ind.*, 2: 211-228.
 p. 215. *Equula ensifera*, *E. filigera*, *E. gomorah*, *E. lineolata* and *Gazza tapeinosoma*.
278. BLEEKER, P. 1858.
 Elfde bijdrage tot de Kennis der ichthyologische fauna van Borneo. Visschen Van Simkawang. *Act. Soc. Sc. Indo-Neerl.*, 3: 1-4.
279. BLEEKER, P. 1858.
 Bijdrage tot de Kennis der Visch-fauna Van den Goram Archipel. *Nat. Tijdschr. Ned. Ind.*, 15: 197-218.
 p. 200. *Equula filigera* and *Gazza equulaeformis*.
280. BLEEKER, P. 1858-'59.
 Visschen van Tikoe verzameld door E. A. Ludeking. *Nat. Tijdschr. Ned. Ind.*, 16: 26.
 p. 26. *Equula ensifera*.
281. BLEEKER, P. 1858-'59.
 Over eene nieuwe verzameling vischsoorten van Benkoelen van A. J. W. van Ophuysen. *Nat. Tijdschr. Ned. Ind.*, 16: 273-275.
 p. 274. *Equula gomorah*.
282. BLEEKER, P. 1858-'59.
 Vischsoorten van Banjoewangi en Buitensorg, Verzameld door H. Zollinger, H. von Rosenberg en O. J. U. F. Huguenin. *Nat. Tijdschr. Ned. Ind.*, 16: 47-48.
 p. 48. *Equula ensifera*, *E. lineolata* and *Gazza tapeinosoma*.
283. BLEEKER, P. 1858-'59.
 Vischsoorten gevangen bij Benkoelen en aangeboden door A. J. W. van Ophuysen. *Nat. Tijdschr. Ned. Ind.*, 16: 243-244.
 p. 243. *Equula interrupta*.
284. BLEEKER, P. 1858-'59.
 Vischsoorten gevangen bij Japara verzameld door S. A. Thurkow. *Nat. Tijdschr. Ned. Ind.*, 16: 406-409.
 p. 407. *Equula ensifera*, *E. gerroides*, *E. gomorah* and *Gazza tapeinosoma*.
285. BLEEKER, P. 1850.
 Bijdrage tot de Kennis der ichthyologische fauna Van Middenen oost-Java. naet beschrijving Van eenige nieuwe species. *Verh. Bat. Gen.*, 23: 1-23.
 p. 9. *Equula brevirostris* and *E. caballa*.

286. BLEEKER, P. 1858.
Sixie'me notice Sur la faune ichthyologique de l'île de Bintang. *Versl. Akad. Amsterdam*, 11 (2): 289-294.
p. 293. *Leiognathus fasciatus*.
287. BLEEKER, P. 1858-'59.
Vierde bijdrage tot de Kennis der Ichthyologische fauna van Timor Visschen van Atapoepoe. *Nat. Tijdschr. Ned. Ind.*, 17: 129-140.
p. 133. *Equula filigera*, *E. gomorah*, *E. oblonga* and *Gazza tapeinosoma*.
288. BLEEKER, P. 1858-'59.
Derde bijdrage tot de Kennis der Ichthyologische fauna van Bali. *Nat. Tijdschr. Ned. Ind.*, 17: 141-175.
p. 147. *Equula filigera*, *E. gomorah*, *S. insidiatrix* and *E. oblonga*
289. BLEEKER, P. 1859.
Bijdrage tot de Kennis der vischfauna Van Bawean. *Nat. Tijdschr. Ned. Ind.*, 18: 351-358.
p. 353. *Equula gomorah*, and *Gazza tapeinosoma*.
290. BLEEKER, P. 1859.
Negende bijdrage tot de Kennis der vischfauna Van Banka. *Nat. Tijdschr. Ned. Ind.*, 18: 359-378.
p. 367. *Equula bindoides*, *E. dacer*, *E. ensifera*, *E. filigera* and *E. gerreoides*.
291. BLEEKER, P. 1859.
Over eenige vischsoorten Van de zuidkust - wateren Van Java. *Nat. Tijdschr. Ned. Ind.*, 19: 329-352.
p. 331. *Equula bindoides*.
292. BLEEKER, P. 1859.
Derde bijdrage tot de Kennis der vischfauna Van Soembawa. *Nat. Tijdschr. Ned. Ind.*, 19: 434-440.
p. 437. *Equula bindoides*.
293. BLEEKER, P. 1859-'60.
Vischsoorten Van Badjoa, Verzameld, door E. Netscher. *Nat. Tijdschr. Ned. Ind.*, 20: 140-142.
p. 141. *Equula ensifera*, *E. insidiatrix*, *E. oblonga* and *Gazza equulaeformis*.
294. BLEEKER, P. 1859-'60.
Soorten Van Visschen Van Badjoa, Verzameld Van. E. Netscher. *Nat. Tijdschr. Ned. Ind.*, 20: 197-198.
p. 198. *Equula bindoides*, *E. oblonga* and *Gazza minuta*.

295. BLEEKER, P. 1859-'60.
 Vischoorten Van Bali. Verzameld door P. L. Van Bloemen Waanders. *Nat. Tijdschr. Ned. Ind.*, 20: 205-207.
 p. 206. *Equula gomorah*, *E. gracilis*, *E. oblonga* and *Gazza tapeinosoma*.
296. BLEEKER, P. 1859-'60.
 Visschen vit de omstreken Van Tandjang aan de Samangka-baai, Verzameld door den l'eer Hunnius. *Nat. Tijdschr. Ned. Ind.*, 20: 219-220.
 p. 219. *Equula ensifera*.
297. BLEEKER, P. 1859-'60.
 Nieuwe Vischsoorten Van Singapore, Verzamled door Fr. Graff de castelnau. *Nat. Tijdschr. Ned. Ind.*, 20: 236-239.
 p. 237. *Equula gomorah*.
298. BLEEKER, P. 1859-'60.
 Vischsoorten Van Bonthain, Verzamled door J. L. de Zeeger. *Nat. Tijdschr. Ned. Ind.*, 20: 332.
 p. 332. *Equula ensifera*.
299. BLEEKER, P. 1859-'60.
 Derde bijdrage tot de Kennis der vischfauna Van Singapore. *Nat. Tijdschr. Ned. Ind.*, 20 (2): 446-456.
 p. 449. *Equula ensifera* and *E. gomorah*.
300. BLEEKER, P. 1859.
 Enumeratio specierum piscium hucusque in Archipelago indico observatarum etc. *Act. Soc. Sci. Indo-Neeri.*, 6: 1-128.
 P. 58. Listed under Equuloidei are *Equula bindoides*, *E. dacer*, *E. ensifera*, *E. filigera*, *E. gerreoides*, *E. gomorah*, *E. gracilis*, *E. insidiatrix*, *Gazza equulaeformis*, *G. minuta*, *G. tapeinosoma*, *Mene maculata*, *E. interrupta*, *E. lineolata*, *E. oblonga*, *E. caballa*, *E. bindus* and *E. longimana*. In the appendix under Equuloidei *Equula nuchalis*, *E. rivulata*, *E. ruconius* and *Zeus japonicus* are listed.
301. BLEEKER, P. 1860.
 Achtste bijdrage tot de Kennis der vischfauna Van Sumatra. Visschen Van Benkoelen, Priaman, Tandjong, Palembang en Djambi. *Act. Soc. Sci. Indo-Neeri.*, 8: 1-88.
 p. 31. *Equula ensifera*, *E. filigera*, *E. gerreoides*, *E. gomorah*, *E. insidiatrix*, *E. interrupta* and *E. lineolata*.

302. BLEEKER, P. 1860.
 Negende bijdrage tot de Kennis der vischfauna Van Sumatra Visschen uit de Lematang - Enim en Van Benkochen. *Act. Soc. Sci. Indo-Neeri.*, 8: 1-12.
 p. 12. *Gazza minuta*.
303. BLEEKER, P. 1860.
 Dertiende bijdrage tot de Kennis der vischfauna Van Borneo. *Act. Soc. Sci. Indo-Neeri.*, 8: 1-64.
 p. 14. *Equula ensifera*, *E. filigera* and *E. gerreoides*.
304. BLEEKER, P. 1860.
 Dertiende bijdrage tot de Kennis der vischfauna Van Celebes. Visschen Van Bonthain, Badjoa, Sindjai, Lagoesi en Pompenoea. *Act. Soc. Sci. Indo-Neeri.*, 8: 1-60.
 p. 40. *Equula bindoides*, *E. ensifera*, *E. filigera*, *E. gomorah*, *E. gracilis*, *E. insidiatrix*, *E. lineolata* and *E. oblonga*.
305. BLEEKER, P. 1861.
 Over eenige vischsoorten Van Benkoelen, veryameld door A. J. W. Van Rphuysen. *Nat. Tijdschr. Ned. Ind.*, 22: 65-66.
 p. 66. *Gazza minuta*.
306. BLEEKER, P. 1861.
 Vierde bijdrage tot de Kennis der vischfauna Van Bali. *Nat. Tijdschr. Ned. Ind.*, 22: 239-242.
 p. 239. *Equula ensifera*.
307. BLEEKER, P. 1861.
 Mededeeling omtrent cischsoorten, nieuw voor de Kennis der fauna Van Singapoera. *Versl. Akad. Amsterdam*, 12: 28-63.
 p. 54. *Equula bindoides*, *E. ensifera*, *E. gerreoides*, *E. gomorah*, *E. interrupta*, *E. lineolata* and *E. oblonga*.
308. BLEEKER, P. 1861.
 Lets Over de vischfauna Van het eiland pinang. *Versl. Akad. Amsterdam*, 12: 64-80.
 p. 75. *Equula bindus*, *E. caballa*, *E. filigera*, *E. gomorah*, *E. insidiatrix*, *E. longimana* and *E. oblonga*.
309. BLEEKER, P. 1862.
 Sixieme'me'morire Sur la faune ichthyologique de l'ile Batjan. *Versl. Akad. Amsterdam*, 14: 99-112.
 p. 110. *Equula ensifera*, *E. filigera*, *E. gomorah*, *Gazza equulaeformis* and *G. tapinosoma*.

310. BLEEKER, P. 1863.
Trois'eme me'morire Sur la faune ichthyologique de l'ile de Halmahere. *Ned. Tijdschr. Dierk.*, 1: 153-159.
p. 156. *Equula ensifera*, *E. filigera* and *Gazza equulaeformis*.
311. BLEEKER, P. 1863.
Onzi'eme notice sur la faune ichthyologique de l'ile de Ternate. *Ned. Tijdschr. Dierk.*, 1: 228-238.
p. 235. *Leiognathus edentulus* and *L. gomorah*.
312. BLEEKER, P. 1863.
Onzie'eme notice sur la faune ichthyologique de l'ile d'obi. *Ned. Tijdschr. Dierk.*, 1: 239-245.
p. 242. *Gazza argentaria*, *G. equulaeformis*, *G. minuta* and *Leiognathus fasciatus*.
313. BLEEKER, P. 1863.
Septie'me me'morire Sur la faune ichthyologique de l'ile de Timor. *Ned. Tijdschr. Dierk.*, 1: 262-276.
p. 270. *Leiognathus fasciatus*, *L. oblongus* and *L. splendens*.
314. BLEEKER, P. 1865.
Notice Sur quelques poissons de labaiie de Manille. *Ned. Tijdschr. Dierk.*, 11: 30-32.
p. 31. *Leiognathus edentulus* and *L. splendens*.
315. BLEEKER, P. 1863.
Quatrieme notice Sur la faune ichthyologique de l'ile de Bouro. *Ned. Tijdschr. Dierk.*, 11: 141-151.
p.148. *Leiognathus edentulus* and *L. splendens*.
316. BLEEKER, P. 1865.
Sisie'me notice Sur la faune ichthyologique de Siam. *Ned. Tijdschr. Dierk.*, 11: 171-176.
p.174. *Leiognathus gerreoides* and *L. splendens*.
317. BLEEKER, P. 1865.
Enume'ration des espe'ces de poissons actuellement connues de l'ile de ce'ram. *Ned. Tijdschr. Dierk.*, 11: 182-193,
p.191. *Leiognathus edentulus* and *L. splendens*.
318. BLEEKER, P. 1865.
Enume'ration des especes de poissons actuellement connues de l'ile d' Amboine. *Ned. Tijdschr. Dierk.*, 11: 270-293.

- p. 290. *Leiognathus edentulus*, *L. fasciatus*, *L. insidiator*, *L. interruptus*, *L. lecuiscus*, *L. lineolatus*, *L. oblongus* and *L. splendens*.
319. BLEEKER, P. 1868.
Sixieme notice sur la faune ichthyologique de l'ile Bintag. *Versl. Akad. Amsterdam*, 2 (2): 289-294.
p. 293. *Gazza argentaria* and *Leiognathus fasciatus*.
320. BLEEKER, P. 1868.
Notice Sur la faune ichthyologique de l'ile de Waigion. *Versl. Akad. Amsterdam*, 11 (2): 295-301.
p. 279. *Leiognathus fasciatus*.
321. BLEEKER, P. 1873.
Troisie'me notice Sur la faune ichthyologique des iles Aron. *Versl. Akad. Amsterdam*, 7 (2): 35-39.
p. 37. *Leiognathus edentulus*, *L. fasciatus* and *L. splendens*.
322. BLEEKER, P. 1873.
Memoire Sur la faune ichthyologique de Chine. *Ned. Tijdschr. Dierk.*, 4: 113-154.
p.132. *Leiognathus insidiator*, *L. interruptus*, *L. nuchalis*, *L. rivulatus* and *L. splendens*.
323. BLEEKER, P. 1875.
Recherches Sur la faune de Madagascar et de ses de'pendances d'apre's les decouvertes de Francois P. L. Pollen et D. C. Van Dam. 4 Partie. Poissons de Madagascar et de l'ile de la Re'union, Leide.
p. 98. *Leiognathus dussumieri*, *L. edentulus*, *L. fasciatus*, *L. insidiator*, *L. parviceps* and *L. splendens*.
324. BLEEKER, P. 1878.
Contribution A La Fauna Ichthyologique De L'ile Maurice. p. 1-23, Amsterdam.
Under Equuloidae lists *Leiognathus edentulus* = *E. ensifera*, *L. fasciatus* = *E. fasciata*, *L. parviceps* = *E. parviceps*, *L. splendens* = *E. splendens*, *E. gomorah* and *Gazza minuta* = *E. dentex*.
325. BLEEKER, P. 1878.
Quatrie'me me'moire sut la faune ichthyologique de la Nouvelle-Guinee. *Arch. Neerl. Sci. Nat.*, 13: 35-66.
p. 50. *Gazza equulaeformis*.

326. BLEEKER, P. 1879.
 Contribution a' la faune ichthyologique de l'ile Maurice. *Verh. Akad. Amsterdam*, 18: 1-23.
 p. 19. *Leiognathus chinense*, p. 18. *L. edentulus* and *L. fasciatus*. p. 19. *Leiognathus (Gazza) minuta*, *L. parviceps* and *L. splendens*.
327. BLEEKER, P. 1879.
 Enume'ration des espe'ces de poissons actuellement connues du Japon et description de trois espe'ces inedites. *Verh. Akad. Amsterdam*, 18: 1-33.
 p. 16. *Leiognathus nuchalis* and *L. rivulatus*.
328. BLEEKER, P. 1880.
Reis Door de Minahassa en Den Molukschen Archipel. Batavia Lange Sco., 364 pp.
 p. 340. *Gazza equulaeformis*, *G. minuta*, *G. tapeinosoma*, *Equula bindoides*, *E. ensifera*, *E. gomorah*, *E. gracilis*, *E. insidiatrix*, *E. lineolata* and *E. oblonga*.
329. BLEGVAD, H. AND B. LOPPENTHIN 1944.
 Fishes of the Iranian Gulf. *Dan. Sci. Invest. Iran*, 3: 247 pp.
 Erroneously attributes light emission by *L. bindus* to ingested bioluminescent zooplankton.
330. BLINDHEIM, J., D. CHAKRABORTY AND M. DEVIDAS MENON 1975.
 The pelagic fishery resources off the southwest coast of India. In: *Proc. Symp. Fish Processing Industry in India*, p. 3-11.
 Silverbellies are one among the shallow water mix and these are confined to less than 15 m depth most of the time (p. 8).
331. BLOCH, M. E. AND J. G. SCHNEIDER 1801.
 M. E. Blochii, systems ichthyologiae. Iconibus CX illustratum. Post obitum auctoris opus indicatum absolutum, correxit, interpolavit, Io. Gottlob Schneider, Saxo. Berolini. Sumtibus Auctoris Impressum.
 p. 95. *Z. insidiator*, p. 96. *Z. argentarius* (type loc. Pacific Ocean).
332. BOESEMAN, M. 1947.
 Revision of the fishes collected by Burger and Von Siebold in Japan. *Overge druket uit zoologische Mededeel ingen.*, 28: 1-242. Leiden.
 Description of *Equula nuchalis* and *E. rivulatus* with figures is given.
333. BOGRAD-ZISMANN, L. 1965.
 The food of *Saurida undosquamis* in the Eastern Mediterranean in comparison with that in Japanese waters. *Rapp. P. V. Reun. Comm. Int. Explor. Sci. Mer. Me' diterr.*, 18: 251-252.
 Lists *L. klunzingeri* as food of *S. undosquamis*.

334. BOLSVERT, H., R. CHATELAIN AND J. M. BASSOT 1967.
 Etude d'un photobacteriumisolo de l'organe lumineux de poissons
 Leiognathidae. *Ann. Inst. Pasteur (Paris)*, 112 (4): 520-524.
 Describes *Photobacterium leiognathi*.
335. BOND, C. E. 1970.
Biology of Fishes. W. B. Saunders Company, Philadelphia, London and
 Toronto, 514 pp.
 Slipmouths (Leiognathidae) are capable of extending the mouth to half the
 resting length of the head to siphon in small prey (p. 32).
336. BONNATERRE, J. P. 1988.
 Tableau encyclopedique et methodique. *Ichthyologie, Paris*, 4: 1-205.
Equula equula is mentioned.
337. BORGSTROM, G. (Ed.) 1961-'65.
Fish as Food. Vol. 1-4. Academic Press, New York and London.
Leiognathus bindus and *L. equula* are listed as common food fishes in India.
338. BORODIN, N. A. 1930.
 Scientific results of the yacht "Ara" Expedition during the years 1926 to
 1930. *Fish. Bull. Vanderbilt. Mar. Mus.*, 1 (2): 39-64.
 p. 294. *E. ruconia*.
339. BORODIN, N. A. 1932.
 Scientific results of the yacht "Ara" world cruise July, 1931-March, 1932 in
 command of William K. Vanderbilt. *Bull. Vanderbilt Mar. Mus.*, 1 (3): 65-
 101.
 p. 78. *E. ruconius* and *G. equulaeformis*.
340. BOTROS, G. A. 1971.
 Fishes of the Red Sea. In: *Oceanography and Marine Biology, Annual Review*.
 H. Barges (Ed.), Volume 9, p. 221-348. George Allen and Unwin, London.
 Listed under Scombridae are *Equula berbisi*, *E. equula*, *E. fasciata*,
E. klunzingeri, *G. equulaeformis* and *G. argentaria* with some data on their
 distribution.
341. BOULENGER, G. A. 1904.
 Fishes (Teleostei). In: *Hemichordata, Ascidian Fishes*. S. Harmer, W. Hard-
 man, T. Bridge and A. Boulenger (Eds.), Macmillan and Co, London.
 Lists *Equula* and *Gazza* among the Gerridae and comments on osteology
 on p. 663.

342. BRANCH, G. M. AND J. R. GRINDLEY 1979.
 Ecology of southern African estuaries. Part XI. Mngwezana: a mangrove estuary in Transkei. *S. Afr. J. Zool.*, **14** (3): 149-170.
 Reports a few *L. equulus* caught in the middle reach of the estuary in summer. Classified species as subtropical and tropical.
343. BREMNER, ALLAN H. AND P. J. I. SNELL 1978.
 Chemical and taste panel tests on the mechanically separated flesh of six tropical species. *Proc. Indo-Pacific Fish. Comm.*, **18** (3): 288-302.
Leiognathus splendens and six other species are common in Malaysian waters. The results of the chemical determinations for crude protein, moisture, total lipid, saline extractable protein, trimethylamine oxide, dimethylamine, formaldehyde, trimethylamine, free fatty acid, thiobarbituric acid value, and bone content are reported and discussed.
344. BRIGGS, J. C. 1961.
 Emendated generic names in Berg's classification of fishes. *Copeia*, **2**: 161-166.
 p. 163. *Leiognathus* Lacepede (1803). This genus was spelled as above by Lacepede (1803, 4: 448) when he published the original description. The emendation *Leiognathus* was apparently introduced by Agassiz in 1846. Its usage has been continued by Berg (1940; 475), (1953; 236 - family names) and Duerte - Bello (1959; 84 - family name).
345. BUCHNER, P. 1965.
Endo-symbiosis of Animals with Plant Organisms. John Wiley and Sons Inc., NY, 909 pp.
 In pony fish, as in several other bioluminescent fishes, the source of light is symbiotic luminous bacteria, maintained within a special organ.
346. BUCK, J. B. 1978.
 Function and evolution of bioluminescence. In: *Bioluminescence in Action*. P. J. Herring (Ed.), p. 419-460. Academic Press, N.Y.
 Evolution of bioluminescence in leiognathidae is discussed.
347. BUDKER, P. AND P. FOURMENOIR 1954.
 Poissons de la Mer Rouge et du Golfe de Tadjours (Missions Budker: 1938-'39 et Chedeville: 1953). *Bull. Mus. Natl. Hist. Nat. Bot., Paris*, **2** (26): 322-325.
 Reports *Leiognathus equulus*.
348. BURGESS, W. AND H.R. AXELROD 1973.
Pacific Marine Fishes. Book 1. Coastal Waters of Southern Japan and the Ryukyu Islands. TFH Publ., New Jersey.
 p. 236. gives a colour photo of *L. nuchalis*.

349. BURGESS, W. AND H.R. AXELROD 1974.
Pacific Marine Fishes. Book 5. Taiwan and Adjacent Waters. TFH Publ., New Jersey.
 Discusses the biology of Leiognathidae. Drawings and photos reportedly of *L. equulus*, *L. rivulatus*, *Secutor ruconius*, *L. elongatus* and *L. dussumieri* are presented. Fig. 90 is probably not of *L. equulus* (cf. fig. 95). Figs. 91, 92 and 94 probably do not depict the same fish (reportedly *L. rivulatus*).
350. BUTLER, T.H. 1959.
 Report to the Government of Indonesia on marine fishery biology. FAO/UNDP (Tech. Assist.) Rep. Fish., 1057, 57pp., FAO, Rome.
 Reports on the predominance of *Leiognathus* sp. in trawl catches from the Java Sea. Proposes the construction of a fish meal plant at Kota Baru (southern Kalimantan) for processing the large *Leiognathus* catch made there. (The species was probably *L. splendens*).
351. BYCHOWSKY, B. E. AND L. F. NAGIBINA 1971.
 New and little known species of the genus *Haliotrema* Johnston at Tieg's, 1922 (Monogenoidea). Zool. zh., 50: 25-40 (In Russian with English summary).
 Lists *G. minuta*.
352. BYKHOVSKIJ, B. E. AND L. F. NAGIBINA 1976.
 New species of the genus *Telegaramatrix*. Biol. Morya, Vladivostok, 2: 10-15 (In Russian).
Gazza minuta is reported as host.
353. CACES-BORJA, P. 1966.
 Status of trawling data in the Philippines. Proc. Indo-Pacific Fish. Council., 12 (2): 172-177.
 Reports that slip-mouths are caught in littoral areas by small otter trawls rigged to a motorized dug-out canoe.
354. CACES-BORJA, P. 1974.
 On the ability of otter trawls to catch pelagic fish in Manila Bay. Proc. Indo-Pacific Fish. Council., 15 (3): 376-386.
 From 1957 to 1962, the catches of the trawlers were made up mostly of two demersal fish species, the "sap-sap" (*Leiognathus* spp.) and *Saurida* spp. *Leiognathus bindus*, *L. splendens*, *L. equulus* and *Gazza minuta* formed the most important species among leiognathids.
355. CACES-BORJA, P. AND R. BUSTILLO 1972.
 Further observations on the commercial trawl fishery of Manila Bay (1960-'62). Proc. Indo-Pacific Fish. Council., 13 (3): 631-637.
 Analysis of the catch for *Leiognathus* species showed a very irregular trend

of inconsistent monthly yield during the 3-year period of study. In January, 1960 while these fishes gave the highest percentage of catch, it gave the lowest percentage of 0.47 and 1.4 for the same month in 1961 and 1962 respectively. Similarly, for the months of March, April, June and July, 1960, high percentage of catch was observed but yielded a low percentage in the same months in the two succeeding years.

356. CACES-BORJA, P. 1975.
The biology of some important Philippine commercial fishes. In: *Second Fisheries Forum*, p. 52-62. Philippine Council for Agriculture and Resources Research, Los Banos, Laguna, Philippines.
Review of various aspects of Leiognathid biology, including identification, bionomics, population dynamics and food and feeding habits is given.
357. CANAGARATNAN, P. 1965.
Coastal fisheries. *Bull. Fish. Res. Stn. Ceylon*, 18 (2): 53-55.
Silverbellies ("Karalla") caught by beach seine in the coastal areas of Ceylon are reported.
358. CANAGARATNAN, P. AND J. C. MEDCOF 1956.
Ceylon's beach seine fishery. *Bull. Fish. Res. Stn. Ceylon*, 4 : 1-32.
Scientific, common, English, Sinhalese and Tamil names, mean length and length at maturity of *Leiognathus ruconius*, *L. insidiatrix*, *L. blochii*, *L. lineolatus*, *L. splendens*, *L. equulus*, *L. dussumieri* and *Gazza minuta* are given in table.
359. CANTOR, T. E. 1849.
Catalogue of Malayan fishes. *Jour. Asiat. Soc. Bengal*, 18 (2): 963-1042.
Descriptions of *Equula caballa*, *E. bindus*, *E. splendens*, *E. insidiatrix*, *E. longimana*, *Gazza* sp. and *G. equulaeformis* are given.
360. CANTOR, T. E. 1966.
Catalogue of Malayan Fishes. A. Asher & Co., Amsterdam, 1443 pp.
Synonyms of *Equula caballa*, *E. bindus*, *E. splendens*, *E. daura*, *E. filigera*, *E. insidiatrix*, *E. longimana* and *Gazza equulaeformis* are given on p. 1128.
361. CASTELNAU, F. L. 1872.
Contributions to the ichthyology of Australia. *Proc. Zool. Acclim. Soc. Victoria*, 2: 37-158.
p. 114. *E. caballa*.
362. CHABANAUD, P. 1926.
Inventaire de la faune ichthyologique de l'Indochine, Premie're liste. *Inst. Oceanogr. Indochine*, premie're note.
Lists *L. equula* from Poulo-Condore.

363. CHABANAUD, P. 1933.
 Sur divers poissons de la Mer Rouge et du Canal de Suez. Description de deux espèces nouvelles. *Bull. Inst. Oceanogr., Monaco*, No. 627, p. 1-12.
 Describes *L. klunzingeri* as new to the Suez Canal.
364. CHABANAUD, P. 1934.
 Poissons recueillis dans le Lac Timsah (Isthme de Suez) par M. le Professeur A. Gruvel en 1933. *Bull. Mus. Nat. Hist.*, 6: 156-160.
 p. 158. records *L. klunzingeri* from Lake Timsah.
365. CHABANNE, J. AND R. PLANTE 1969.
 The benthic populations (endofauna, penaeid shrimps and fishes) of a bight of the north west coast of Madagascar: ecology, biology and fishery. *Cah. ORSTOM (Oceanogr.)*, 7 (1): 41-71. (In French).
 Length-frequency data for silverbelly is given.
366. CHACKO, P. I. 1944.
 The silverbellies of Pamban. *Proc. 31st Ind. Sci. Cong:* 86.
 Six species of *Leiognathus* and one species of *Gazza* contribute to the fishery of silverbellies in the shallow sea around Pamban, from November to May. These fish are plankton feeders, but *Gazza minuta* occasionally feeds on fingerlings of white-bait (*Stolephorus* sp.). The spawning season extends from November to February. There are eight species of carnivorous fishes which feed on silverbellies. Yet the fishery does not show signs of depletion.
367. CHACKO, P. I. 1944.
 On the bionomics of the Leiognathidae. *Curr. Sci.*, 13 (8): 214.
 Gives catch composition of *Leiognathus bindus*, *L. equulus*, *L. daura*, *L. ruconius*, *L. brevirostris*, *L. insidiator* and *Gazza* in the order of abundance. Diet consisted of phyto- and zooplankton and *Gazza minuta* fed on fingerlings of the white bait (*Stolephorus* sp.). There were two spawning seasons, namely November & December and April & May. Food value and enemies of silverbellies are given.
368. CHACKO, P. I. 1949.
 Food and feeding habits of the fishes of the Gulf of Mannar. *Proc. Indian Acad. Sci.*, 29 (3): 83-97.
 Food of *L. bindus* and other fishes is discussed.
369. CHACKO, P. I. 1950.
 Marine plankton from the waters around Krusadi Island. *Proc. Indian Acad. Sci.*, 31 (3): 162-174.
Leiognathus bindus (Cuv. & Val.) spawned around November - January and

April - June. Egg diameter measured 0.4 mm and had a yellow frothy yolk with broad perivitelline space. Larvae measured 10-20 mm in length.

370. CHACKO, P. I. 1956.

The commercial marine fish catch of Madras State for the year 1953-'54. *Fisheries Station Reports and Year Book, April, 1954-March, 1955*. Department of Fisheries, Madras, p. 203-242.

The silverbellies *Leiognathus bindus*, *L. ruconius*, *L. edentula*, *L. insidiatrix* and *L. brevisrostris* provided a good fishery, being the 5th best fishery of this group of fish since 1925-'26. The fishery was at its peak from July to September and again from May and June. There was no landing in December, January and February.

371. CHACKO, P. I. 1973.

An appraisal of the fisheries resources of the coastal waters of Madras State. In: *Proceedings of the Symposium on the Living Resources of the Seas around India*. Spec. Publ. Cent. Mar. Fish. Res. Inst., Cochin, p. 258-260.

Silverbelly fisheries in the districts of Madras and Ramanathapuram are reported.

372. CHACKO, P. I. 1973.

Marine fishery resources of Tamil Nadu with special reference to recent exploratory surveys. *Proc. Seminar on Mariculture and Mechanised Fishing*, p. 119-123.

Average percentage composition of silverbellies in the annual landings of Tamil Nadu is given.

373. CHACKO, P. I. AND A. ABDUL RAHIM 1967.

Survey of fishing grounds in the Palk Bay and northern sector of the Gulf of Mannar off Rameswaram, Pamban and Mandapam. *Madras J. Fish.*, 4: 47-55.

Silverbellies contributed to the bulk of the catches, being 76 to 94 per cent of total landings during 1961-'66.

374. CHACKO, P. I. AND MOHAMED SULTAN 1967.

Survey of fishing grounds in the inshore waters of the Bay of Bengal near Madras in 1965-'66. *Madras J. Fish.*, 4: 42-45.

Month-wise catch data/catch per hour of silverbellies and seasonal variation in yield are given for the year April, 1965 to March, 1966.

375. CHACKO, P. I. AND S. MAHADEVAN 1956.

Offshore fishing experiments in the Palk Bay and the Gulf of Mannar around Rameswaram Island. *Fisheries Station Reports and Year Book, April, 1954 - March, 1955*. Department of Fisheries, Madras, p. 155-162.

The most commonly used net at Thangachimadam was *Madivalai*, a boat-seine with which silverbellies (*Leiognathus splendens* and *L. bindus*) were caught in Palk Bay and Gulf of Mannar.

376. CHACKO, P. I. AND M. V. NATARAJAN 1967.
Location of fishing grounds in the inshore area of the Coromandel coast of South Arcot District in 1963-'66. *Madras J. Fish.*, 4: 46.
Silverbellies predominant in the catches.
377. CHACKO, P. I. AND E. PALANI 1959.
Statistics of fish landings of Tuticorin, Gulf of Mannar in 1955. *Fisheries Station Reports and Year Book, April, 1955-March, 1956*. Department of Fisheries, Madras, p. 203-205.
p. 204. *Leiognathus* sp. among other fishes landed at Tuticorin.
378. CHACKO, P. I. AND A. RAJAGOPAL 1962.
Hydrobiology and fisheries of the Ennore river near Madras from April, 1960 to March, 1961. *Madras J. Fish.*, 1 (1): 102-104.
Silverbellies (*Leiognathus* spp.) were present in small numbers among other fishes almost throughout the year.
379. CHACKO, P. I. AND R. SRINIVASAN 1954.
Hydrobiology and fisheries of the Vamsadare estuary, Calingapattinam, Srikakulam district. *Proc. 41st Ind. Sci. Cong., Part III. Section VII, Abstract 44*.
Forty species of the fishes were recorded in estuary including silverbelly. *Leiognathus edentula* is considered as plankton feeder.
380. CHACKO, P. I. AND S. THYAGARAJAN 1967.
Economics of operation of motor fishing vessels in the coastal waters of Madras State. *Madras J. Fish.*, 4: 56-61.
Silverbelly catches are reported from Madras and from Rameswaram to Mandapam. In Palk Bay silverbellies contributed more than 90% in the total catch.
381. CHACKO, P. I., M. J. MATHEW AND S. GEORGE 1956.
A preliminary study of the fishes of the Korapuzha estuary in Malabar. *Fisheries Station Reports and Year Book, April, 1954-March, 1955*. Department of Fisheries, Madras, p. 109-124.
Occurrence of *Leiognathus insidiator* and *L. splendens* are reported from the catch and *Leiognathus insidiator* is reported in the stomach contents of *Chirocentrus dorab*.
382. CHACKO, P. I., MOHAMMED SULTAN AND KANAKARAJ DAVID 1969.
Survey of fishing grounds in the Inshore-waters of Bay of Bengal near Madras in 1966-'67. *Madras J. Fish.*, 5: 1-119.

Silverbellies formed the major commercially important fishes along the coast as recorded in the catches of trawl nets. Silverbellies catch data and percentage in different months (April, 1966 to March, 1967) are given.

383. CHACKO, P. I., M. V. NATARAJAN AND E. EDWIN JOSEPH 1969.
Survey of inshore waters of South Arcot District coast in 1966-'67. *Madras J. Fish.*, 5: 1-123.
The trawl catches comprised of silverbellies and other fishes.
384. CHACKO, P. I., J. G. ABRAHAM, R. SRINIVASAN, N. RADHAKRISHNAN NAIR AND R. ANANTANARAYANAN 1967.
On the fish landings and fishery trend at Cape Comorin. *Madras J. Fish.*, 3: 121-139.
Month-wise and year-wise landings of *Leiognathus* from 1958 to 1963 are given.
385. CHAKRABORTY, D. 1973.
An evaluation of marine resources of India. In: *Proc. Symp. on Liv. Res. of the Seas around India*. Spec. Publ. Cent. Mar. Fish. Res. Inst., Cochin, p. 229-240.
Total landings of silverbelly (*Leiognathus* and *Gazza*) during 1968-'72 ranged from 34,836 t to 48, 776 t.
386. CHAKRABORTY, P. K. 1978.
Technical development of artificial and solar drying of fish, India. *Proc. Indo-Pacific Fish. Coun.*, 18 (3): 322-329.
The by-catch of silverbellies and other fishes are used. Fishes are spread on trays, inserted in the tunnel or solar drier and dried to a moisture level of 20-25 per cent. Small fishes are given a mild salt treatment by washing with brine to remove slime, and dried to 15% moisture level.
387. CHAKRABORTY, D. 1984.
Marine fisheries statistics in the Hashimite, Kingdom of Jordan - An expanded plan of development. Development of fisheries in areas of the Red Sea and Gulf of Aden. *RAB/81/002/24 UNDP, FAO*, 23 pp.
Statistical standard of *Leiognathus* sp. and other fishes in the Red Sea and Gulf of Aden region is given on p. 16.
388. CHAKRABORTY, D. 1984.
Fishery statistics in the people's Democratic Republic of Yemen —An expanded plan of development. Development of fisheries in areas of the Red Sea and Gulf of Aden. *RAB/81/002/19, UNDP, FAO*, 48 pp.
Statistical standard for *Leiognathus* species and other fishes in the Red Sea and Gulf of Aden region is given on p. 34.

389. CHAKRABORTY, D. 1984.
 Fish landings on the Red Sea and Gulf of Aden coasts of the member countries- a preliminary estimate. Development of fisheries in areas of the Red Sea and Gulf of Aden. *RAB/83/023, UNDP, FAO*, 26 pp.
 Landings of ponyfish and their percentage composition in trawl during 1983 are reported on p. 5.
390. CHAKRABORTY, D. 1984.
 Manual for statistical enumerators for identification of statistical items relating to commercial fishes: Red Sea and Gulf of Aden. *RAB/81/002/MAN/4, FAO, Suez, Egypt*, 86 pp.
Leiognathus spp. with illustration and vernacular names are given.
391. CHAKRABORTY, P. K. AND M. ARUL JAMES 1976.
 Pilot plant for production of fish ensilage and the economics of production. *Fish. Technol.*, 13 (2): 115-120.
 Preparation of fish ensilage from edible variety of miscellaneous fish like silverbellies (*Leiognathus* spp.) and other fishes are reported.
392. CHANDY, M. 1970.
Fishes. National Book Trust, New Delhi, India.
 p. 99. Description of the family Leiognathidae (Silverbellies) and occurrence of *L. equulus* from Bay of Bengal, *L. insidiator* from the Gulf of Mannar and *L. ruconius* from Hoogly and *L. splendens* from west and east coasts are given.
393. CHARI, S. T. 1971.
 Indo-Norwegian Project. *Souvenir issued on the occasion of the 9th Anniversary of the Fish Exporters Chamber, Tuticorin*.
 p. 112. In the Gulf of Mannar the major catch in trawl nets was silverbellies.
394. CHAUDHRI, B. L. 1923.
 Fauna of the Chilka Lake: Part 4. *Fish. Mem. Indian Mus.*, 5 (11): 711-736.
 Thirteen specimens of *Leiognathus equulus* were collected in the lake including outer channel throughout the year. Breeding occurs probably in the lake during flood seasons. *L. blochii* considered as permanent resident in the lake was found throughout the main area as well as in the outer channel during dry months.
395. CHELLAPA, D. E. 1959.
 A note on the night fishing operations from a kelong. *J. mar. biol. Ass. India*, 1 (1): 93-94.
 When the kelong was in operation, there was a noticeable dominance of species of *Gazza* and *Leiognathus* among other fishes.

396. CHERVINSKY, J. 1959.
A systematic and biological comparison between the lizard fish (*Saurida grandisquamis*) from the Mediterranean and the Red Sea. *Fishermen's Bull., Haifa*, 19: 10-14. (In Hebrew with English abstract).
Lists *L. klunzingeri* among food items of *S. grandisquamis*.
397. CHEVEY, P. 1932.
Inventaire de la faune ichthyologique, de l'Indochine Deuxieme liste. *Inst. Océanogr. Indochine*, Igiene note.
Secutor ruconius and *Leiognathus brevirostris* are listed under Gerridae.
398. CHEVEY, P. 1934.
Revision synonymique de l'oeuvre ichthyologique de G. Tirant. *Inst. Océanogr. Indochine*, 7 ieme Note.
Assigns *E. brevirostris* to *Leiognathus brevirostris* and *E. edentula* to *L. equula*.
399. CHIA-JUI, S. 1957.
Parasitic copepods from fishes of China. Part I. Cyclopoida. *Acta. Zool. Sinica*, 9 (4): 297-328.
Gazza is mentioned as host for various copepod species.
400. CHIDAMBARAM, K. 1987.
Potential resources and possibilities of exploiting the same to increase marine fish production in India. In: *Proceedings of International Seminar on Training and Education for Marine Fisheries Management and Development*, 28, 29 and 30 January, 1986, Cochin-India, p. 29-34.
p. 31. Silverbellies among low value demersal fishes.
401. CHIDAMBARAM, K. AND R. S. VENKATARAMAN 1946.
Tabular statements on the natural history of certain marine food fishes of the Madras Presidency - west coast. *Govt. of Madras*, 1-26.
Zoological, English, Malayalam and Kannada names of silverbellies, its fishery, external characters, sizes at commercial maximum and first maturity, food, breeding seasons, economic importance, nets used for capture, fishing grounds, fishing seasons, weight of silverbellies landed from 1939 to 1942, price range in rupees per maund, average of weights and value, percentage and rank in the west coast are given.
402. CHILVERS, R. M. 1974.
A preliminary report on a bottom trawl survey of the north shelf region of the South China Sea, March, 1972 to March, 1973. In: *The Kuroshio III; Proceedings of the Third Symposium on the Results of the Co-operative Study of the Kuroshio and Adjacent Regions*, 1973. P. Chcosakul et al. (Eds.), p. 367-386. Bangkok, Thailand, Mangkol. Karnpim Press and Publ., Bangkok.
Reports catch of *Leiognathus* spp. among the edible fish.

403. CHOODAMANI, N. V. 1973.
Mechanised fishing in Tamil Nadu: prospect and retrospect. *Proc. Seminar on Mariculture and Mechanised Fishing*, p. 184-189.
Annual average catch of silverbellies from 1964-'68, is given on p. 185.
404. CHU, K. Y. 1959.
A list of fishes from Pescadore Islands. *Rep. Inst. Fish. Biol. Taipei*, 1 (2): 14-23.
Leiognathus berbis recorded.
405. CHU, YAUNTING, T. 1962.
Fishes of the South China Sea.
Descriptions of *Leiognathus insidiator* (Bloch), *L. ruconius*, (Ham. & Buch.), *L. elongatus* (Gunther), *L. fasciata* (Lacepede), *L. dussumieri* (Cuv. & Val.), *L. equulus* (Forsk.) *L. splendens* (Cuv.), *L. brevirostris* (Cuv. & Val.), *L. rivulatus* (Tem. & Sch.), *L. daura* (Cuv.), *L. bindus* (Cuv. & Val.), *L. lineolatus* (Cuv. & Val.) and *L. berbis* (Cuv. & Val.) are given in p. 438-455.
406. CHU, YAUNTING, T. 1963.
Fishes of the East China Sea, 642 pp.
Descriptions of *Leiognathus* (Lacepede), *L. ruconius* (Ham. & Buch.), *L. brevirostris* (Cuv. & Val.), *L. bindus* (Cuv. & Val.), *Gazza* (Ruppell) and *Gazza minuta* (Bloch) are given in pp. 294-299.
407. CHUA, T. E. AND H. C. LAI 1978.
Fishes. In: *Coastal Resources of West Sabah*. Chua, T. E. and J. A. Mathias (Eds.), p. 49-87. Penerbit Universiti Sains Malaysia, Pulau Pinang.
Lists *G. minuta*, *L. daura*, *L. equulus*, *L. splendens*, *S. insidiator* and *S. ruconius* from West Sabah. Catch and landing data given suggested large scale dumping of leiognathids into the sea.
408. CINCO, E. 1982.
Length-weight relationships of fishes. Small-scale fisheries of San Miquel Bay, Philippines. Biology and stock assessment. *ICLAM Technical Report*, 7: 34-37.
Among Leiognathidae, *Gazza minuta*, *Secutor insidiator* and *S. ruconius* were used for the determination of the length-weight relationship with results of tests for the value of b.
409. CLEAVER, F. C. AND B. M. SHIMADA 1950.
Japanese skipjack (*Katsuwonus pelamis*) fishing methods. *Commer. Fish. Rev.*, 12 (11): 1-27.
Reported *Gazza minuta* as livebait.

410. COMMERSON, P. 1803.
In Lace'pe'de, Histoire Naturelle de Poissons. Vol. 5.
 p. 462. On *Halex*, syn. of *Leiognathus* Lac.
411. CONLU, P. V. 1977.
A guide to Philippine Flora and Fauna. Vol. I. Fishes. Nat. Sci. Res. Cent. Press., University of Philippines, Quezon City.
412. CUSHING, D. H. 1971.
 Survey of resources in the Indian Ocean and Indonesian area. *IOFC/DEV/71/2*, 123 pp. Indian Ocean Fish. Comm, FAO, Rome.
 Discusses leiognathids as a resource (presumably based on Balan, 1963).
413. CUVIER, G. L. AND A. VALENCIENNES 1835.
Histoire Naturelle des Poissons. Vol. 10, F. G. Leurault, Paris.
 p. 60-103. *Equula*; p. 66. Porte-sabre (*E. ensifera*, *Scomber edentulus*, *L. argente*); p. 73. *E. poulain* (*E. caballa*, nob. *Scomber equula*, Tottach karah); p. 76. *E. coma* nob; p. 77. *E. de dussumieri* (*E. dussumieri*, nob); p. 78. *E. bindoo* (*E. bindus*, nob); p. 79. *E. ruconii* (*E. ruconius*, nob, *C. puconius*); p. 80. *E. gomorah*, nob. (Gomorah-karah, Kotou-kare); p. 83. *E. dager* (*E. dacer*, Dacerkurah); p. 84. *E. de Bloch* (*E. blochii*, nob, *Z. notatus*); p. 85. *E. chercheur* (*E. berbis*, nob *S. equula*); p. 85. *E. alonge* (*E. oblonga*, nob); p. 86. *E. bariole* (*E. lineolata*); p. 87. *E. a petite tete* (*E. parviceps*, nob); p. 88. *E. nain*, *E. minuta* nob, *S. minutus*); p. 91. *E. dente* (*E. dentex*, nob Sourou-pinankare) p. 92. *E. port-fil.* (*E. filigera*, nob); p. 94. *E. longue-epine* (*E. longispinis*, nob); p. 95. *E. karah* (*E. cara*, nob, karah); p. 96. *E. bandes* (*E. fasciata*, nob, *Clupea*) (*Clupea fasciata*); p. 98. *E. ruse* (*E. insidiatrix*, *Z. insidiator*); p. 103. *E. a' ligne laterale interrompue* (*E. interrupta*, nob).
414. DAN, S. S. 1985.
 Marine fishery of West Bengal coast. *Mar. Fish. Infor. Serv., T & E. Ser., No. 63*, p. 6-8.
 Fish caught are mainly sciaenids *Leiognathus* and other fishes by using shore seine at Digha and Chempur area.
415. DANIL 'CHENKO, P. G. 1960.
 Bony fishes of the Maikop beds of the Caucasus. *Akad. Nauk. SSR, Tr. Paleo Inst. Moscow*, 78: 1-208. Translation 1967, *Isr. Prog. Sci. Transl.* (In Russian).
 Gives a figure and description of *Leiognathus altipinnus*.
416. DATTA, A. K. 1974.
 Observations on some biometric features of *Leiognathus splendens* (Cuvier). *J. Inland. Fish. Soc. India*, 6: 77-80.
 Biometric studies of *Leiognathus splendens*, in comparison to the standard

length were made by regression analysis for total length, fork length, maximum depth, snout to anal origin, snout to dorsal origin, snout to pelvic origin, head length, pectoral fin length, pelvic fin length, eye diameter and snout length. The 'b' values were found to be 1.223, 1.011, 0.565, 0.541, 0.493, 0.347, 0.265, 0.224, 0.143, 0.099 and 0.088 respectively. The length weight relationship was found to be $W = 0.028386 L^{3.1228}$.

417. DAVID, A.

A preliminary survey of the fish and fisheries of a five mile stretch of the Hooghly river near Barrackpore. *Indian J. Fish.*, 1: 231-255.

The young ones of *Leiognathus equulus* (10-29 mm) more or less a permanent inhabitant of the river occurred in large numbers in November and December months. Juveniles constituted 30-60% of *Leiognathus* which were unable to move against the strong drift of the currents and concentration of these fishes was found in this zone of Hooghly. *L. equulus* is given in classified lists of fishes observed within the Pultra stretch of the Hooghly.

418. DAVIDSON, A. 1976.

Seafood of South-East Asia. Federal Publications, Singapore.

Describes *Leiognathidae*, with names in various Southeast Asian languages. Suggests that *L. equulus* is considered the best ponyfish (in Thailand) and eaten fried or in fish soups. Also salted or dried.

419. DAY, FRANCIS. (1865) 1982.

The Fishes of Malabar. Bishen Singh and Mahendra Pal Singh, Dehra Dun 248 001, 203 pp.

Description of the genus *Equula* and synonyms of *Equula insidiatrix*, *E. edentula*, *E. splendens*, *E. oblonga*, *E. daura*, *E. blochii* and *E. fasciata* are given on p. 102.

420. DAY, F. 1869.

On the fishes of Orissa. *Proc. Zool. Soc. London*, 296-310.

Described *E. ruconius* on p. 302.

421. DAY, F. 1870.

On the fishes of the Andaman Islands. *Proc. Zool. Soc. London*: 689-690.

Equula fasciata, *E. dussumieri*, *E. rivulata*, *E. gerroides*, *E. splendens* and *Gazza equulaeformis* are reported.

422. DAY, F. 1875-1878.

The Fishes of India. A natural history of the fishes known to inhabit the seas and freshwaters of India, Burma and Ceylon. Vol. 1 and 2 (Reprint edition 1858). Dawson, London.

Indian *Leiognathidae* covering *L. equulus*, *L. dussumieri*, *L. splendens*,

- L. daura*, *L. bindus*, *L. blochii*, *L. lineolatus*, *S. insidiator*, *S. ruconius* and *G. minuta* with complete synonymy, descriptions and figures are given.
423. DAY, F. 1888.
Supplement to the Fishes of India. A natural history of the fishes known to inhabit the seas and freshwaters of India, Burma and Ceylon. Williams and Norgate, London.
 Description of *Equula dentex* is given with synonyms on p. 790.
424. DAY, F. 1889.
The Fauna of British India Including Ceylon and Burma Fishes. 2, 509 pp.
 p. 185. Description of characters of the genus *Equula*, distribution of *Gazza* synonyms of *Equula edentula*, *E. dussumieri*, *E. splendens*, *E. daura*, *E. bindus*, *E. blochii*, *E. brevirostris*, *E. lineolata*, *E. insidiatrix*, *E. ruconius*, *E. fasciata*, *E. oblonga*, *Gazza minuta*, *G. equulaeformis* and *G. argentaria* are given.
425. DAY, J. H. 1969.
A Guide to Marine Life of South African Shores. Balkema, Cape Town.
 p. 214. gives figures of *Gazza*, *Leiognathus* and *Secutor*. Range in S. Africa: *L. equulus* and *G. minuta* - Port Alfred to Inhambane; *Secutor* spp. - East London to Inhambane.
426. DE BRUIN, G. H. P. 1970.
 Small mesh trawling. *Bull. Fish. Res. Stn. Ceylon*, 21 (1): 35-38.
 Concentrations of *Leiognathus* and other fishes seen during the trawl operations off Colombo and in the north-west and north eastern regions of Ceylon are described on p. 35.
427. DELSMAN, H. C. 1925.
 Fishes with protrusible mouths. *Treubia*, 6 (2): 98-106.
 The protruding mouth developed strongly in the cases of species of *Equula* and *Gazza*. Description and figures of *L. dussumieri* with mouth closed and protruded are given. Important bones like parietal, maxilla and premaxilla are also figured and described.
428. DELSMAN, H. C. 1951.
Dierenleven in Indonesia. N. V. Uitgeverij W. van Hoeve, Bandung.
 Description of the fishes of the leiognathid family with figure of *L. splendens* is given.
429. DELSMAN, H. C. AND J. D. F. HARDENBERG 1934.
De indische Zeevisschen en Zeevisscherij. Vjsser & Co., Batavia.
 General description of Leiognathidae with notes on their ecology and biology is presented.

430. DEMAKWAIA, E. AND L. B. NNWANI 1988.
Aspects of the fishery and biology of small pelagic fishes at Dar Es Salaam, Tanzania. *Fishbyte*, 6 (3): 7-10.
Estimated catches and average catch rates of *Leiognathus leuciscus* and *Gazza minuta* caught by artisanal purse-seines in the Der Es Salaam area during 1986 are given.
431. DEMETROPOULOUS, A. AND D. NEOCLEOUS 1969.
The fishes and crustaceans of Cyprus. *Fish. Bull., Min. Agric. Nat. Res. Cyprus*, 1 : 3-21.
Report *L. klunzingeri* from Cyprus.
432. DE SILVA, S. S. AND E. I. L. SILVA 1979.
Fish fauna of a coastal lagoon in Sri Lanka: Distribution and seasonal variation. *Bull. Fish. Res. Stn. Sri Lanka*, 29 (1 & 2): 1-9.
Seasonal occurrence of Leiognathidae, *Leiognathus fasciatus*, *L. splendens* and *L. equulus* in the brackishwaters of Sri Lanka is given.
433. DEVASSY, V. P. 1978.
Trichodesmium phenomenon. *Indian J. mar. Sci.*, 7: 168-18.
Gut contents of *Leiognathus* sp. and other fishes showed large quantities of *Trichodesmium* filaments.
434. DEVADOSS, P. 1978.
On the food of rays, *Dasyatis uarnak* (Forsk.) and *D. alcockii* (Annandale) and *D. sephen* (Forsk.). *Indian J. Fish.*, 25 (1 & 2): 9-13.
Leiognathids formed the single largest group in the stomach contents constituting 19.05% and 16.67% in *D. uarnak* and *D. sephen* respectively.
435. DEVADOSS, P. AND P. K. MAHADEVAN PILLAI 1973.
Observations on the food of juveniles of *Psettodes erumei* (Bloch). *Indian J. Fish.*, 20 (2): 664-667.
Leiognathus spp. formed 4 to 8% of the food of *P. erumei*.
436. DEVADOSS, P., P. K. MAHADEVAN PILLAI, P. NATARAJAN AND K. MUNIYANDI 1977.
Observations on some aspects of the biology and fishery of *Psettodes erumei* (Bloch) at Porto Novo. *Indian J. Fish.*, 24 (1 & 2): 62-68.
Recorded about 22-27% of Leiognathid fish and larvae in the stomach of *P. erumei*.
437. DEVAKI, R., AND A. P. KAMALAKARA RAO 1987.
LDH profile of *Secutor ruconius* (Hamilton-Buchanan, Leiognathidae: Pisces). *Nat. Symp. on Environmental Biol.*, 2-4 April, Palayamkottai, p. 2 (Abstract).

Polyacrylamide disc gel electrophoresis was carried out to study the LDH profile of 18 tissues of *Secutor ruconius*. The eye lens, muscle, stomach, intestine, liver, spleen, kidney, fin system and skin showed the presence of a single fraction A_4 (LDH₅) whereas the vertebra revealed the presence of two fractions A_4 (LDH₅) and A_3L_1 (LDH₄). The heart and gill showed the presence of three fractions A_4 (LDH₅), A_3B_1 (LDH₄) and A_2B_2 (LDH₃). The brain and vitreous humour revealed the presence of five fractions A_4 (LDH₅), A_3B_1 (LDH₄), A_2B_2 (LDH₃), A_1B_3 (LDH₂) and B_4 (LDH₁). Eye lens, heart, gill and vertebra LDH expression could be used as biochemical markers. Genetic basis of LDH isoenzyme expression has been discussed.

438. DEVANESAN, D. W. AND K. CHIDAMBARAM 1945.

The Common Food-Fishes of the Madras Presidency, 79 pp. Department of Industries and Commerce, Govt. Press, Madras.

Systematic classification of the food fishes including Leiognathidae is given. Silverbellies formed the food of *Chirocentrus dorab*, *Trichiurus* spp., *Megalaspis* spp., *Upeneus* sp. and *Scomberomorus* spp. They followed the shoals of silverbellies and other fishes. Scientific, Tamil, Telugu, Malayalam and Kanarese names are given for silverbellies. Occurrence of 6 species under the genus *Leiognathus* and *G. minuta* in the genus *Gazza* is given. Bionomics, seasons of fishery, landing centres in the east and west coasts, methods of capture, economic importance, landing data, value and places are given.

439. DEVANESAN, D. W. AND K. CHIDAMBARAM 1953.

The Common Food Fishes of the Madras State, 79 pp. Government Press, Madras.

Leiognathus bindus, *L. ruconius*, *L. daura*, *L. edentula*, *L. insidiatrix* and *L. brevirostris* in the genus *Leiognathus* and *G. minuta* in the genus *Gazza* are common varieties of silverbellies. Distinguishing characters, feeding habits, fishing seasons in the east and west coasts, methods of capture, nets in the east and west coasts, economic importance, catch statistics from east and west coasts and places of abundance are given.

440. DEVASUNDARAN PETER, M. 1954.

A Report on the Fisheries of the Chilka Lake from 1948 to 1952, Orissa, 30 pp. Govt. Press, Cuttack.

Author reported the fluctuation and occurrence of silverbelly. *Equula edentula* was marketed as dried fish. These are always put under miscellaneous head.

441. DEVIDAS MENON, M. 1952.

The determination of age and growth of fishes of tropical and sub tropical waters. *J. Bombay Nat. Hist. Soc.*, 51 (3): 623.

Studies on growth rate of *Equula edentula* and other fishes were made by Whitehouse (1923) in the Silvatturai lagoon following the Peterson method of size analysis.

442. DE VIS, C. W. 1884.
New Australian fishes in the Queensland Museum. *Proc. Linn. soc. N. S. W.*, 9: 537-547.
Equula dispar, *E. longispina*, *E. argentea*, *E. decora*, *E. ovalis*, *E. simplex*, *E. asina* and *E. profunda* are reported from Australia.
443. DHARMA RAJA, S. K. AND VARUGHESE PHILIPOSE 1975.
Trends in the yield of major exploited fisheries of the east coast of India. *Indian J. Fish.*, 22 (1 & 2): 187-197.
The Von Neuman statistic values in respect of West Bengal and Orissa and Andhra were above the theoretical values at 1% and 5% level respectively. But in Tamil Nadu the Q value was above the theoretical value at 1% level but below 5% level. It was therefore be predicted that in West Bengal and Orissa silverbellies would continue to yield higher catches.
444. DHAMNIYOM, D. AND S. VADHANAKUL 1970.
Result of a trawling survey in the Inner Gulf of Thailand carried out by R. V. "ASA" from June 1968 to May 1969.
Gives catch data for *Leiognathidae*.
445. DHULKHED, M. H., C. MUTHIAH, G. SYDA RAO AND N. S. RADHAKRISHNAN 1982.
The purse seine fishery of Mangalore (Karnataka). *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 37.
Leiognathus splendens, *L. bindus* and *Secutor insidiator* formed incidental catches. October appeared to be the peak period when more than half (55%) of the annual catches was realised. The catches did not find ready market and as such invariably used for sun drying.
446. DHULKHED, M. H. AND G. G. ANNIGERI 1988.
Marine fish calendar - X : Karwar.
Mar. Fish. Infor. Serv., T & E. Ser., No. 88, p. 1-13.
Scientific and vernacular names, gear, peak period, depth of occurrence, length range, size at first maturity and spawning seasons of *Leiognathus bindus* and *L. splendens* are reported.
447. DILLON, V. A. KHARGIS 1983.
Monogenetic trematodes from the South Pacific. Polypisthocotyleids from Australian fishes. Polylabrinae. 1. Microcotylinae. *Zool. zh.*, 62 (6): 821-829.
Illustrated descriptions of *Polylabris carnavonesis* sp. n. from the gills of *Leiognathus fasciatus* are given.
448. DIVINO, P. K. TIEWS, I. A. RONQUILLO AND J. MARQUES 1972.
On the food and feeding habits of eight species of *Leiognathus* found in Manila Bay and San Miquel Bay. *Proc. Indo-Pacific Fish. Coun.*, 13 (3): 93-99.

The paper described and tabulated the food organisms and noted specific feeding habits of *Leiognathus splendens*, *L. bindus*, *L. insidiator*, *L. ruconius*, *L. blochii*, *L. daura*, *L. equulus* and *L. leuciscus* with notes on specific feeding habits.

449. DOIPHODE, P. V. 1985.
Local and scientific names of fishes of Goa. *Seafood Exp. J.*, 17 (4): 19-21.
Konkani, scientific and popular English names of *Secutor ruconius*, *S. insidiator*, *L. splendens*, *L. dussumieri*, *L. fasciatus*, *L. equulus*, *L. brevirostris*, *L. daura*, *L. bindus* and *L. lineolatus* are given.
450. DOIPHODE, P. V. AND N. P. DANI 1973.
Exploratory survey along the coast of Goa. *Seafood Exp. J.*, 5 (10): 15-18.
Silverbellies formed 3.2% in the total catch.
451. DOMANTAY, J. S. 1940.
The fishery industries of Zamboanga. *Philippn. J. Sci.*, 71: 81-112.
p. 100. *L. equulus*.
452. DOMANTAY, J. S. 1940.
The fishery industry of Margosatubig. *Philippn. J. Sci.*, 72 (4): 371-382.
p. 379. *L. equulus*.
453. DOMANTAY, JOSE S. 1961.
The aquatic products of Zamboangu, Basilan and the Sulu Archipelago. *Philipp J. Fish.*, 6 (1): 17-40.
Leiognathus equulus caught in fish ponds and rivers are given.
454. DONALDO, S. 1979.
Contribution to the biology of common slipmouth, *Leiognathus splendens* (Cuvier, 1829) caught from Manila Bay. 55 pp., *M. S. Thesis*. Univ. of the Philipp.
Length-weight relationship, spawning season, maturation and fecundity and general biology are described.
455. DRUZHININ, A. D. 1977.
The Pacific cornetfish *Fistularia petimba*, Family *Fistulariidae*, from the region of the Gulf of Aden. *Vopr. Ikhtiol.*, 17 (3): 542-545. (In Russian).
Mentions silverbellies.
456. DRUZHININ, A. D. AND V. PHONE HLAING 1972.
Observations on the trawl fishery of southern Burma. *Proc. Indo-Pacific Fish. Coun.*, 13th Session, Part III, 151-209.

The Leionathidae comprised a considerable part of the total catch (4.8%). Among them *Leionathus equulus* predominated. In September, 1966 and in January, 1968, respectively, 117 and 128 specimens of *L. equulus* were examined. In September, the size range was greater than in January. In September, the females were much bigger than the males. In January, a reverse picture was observed; the males were bigger than the females but the difference was negligible. The condition coefficient of the males was higher than that of the females. The males predominated in both months and the sex ratio was 1:1.7. September was apparently a part of the breeding season, while January was a part of ripening period. The intensity of feeding was low in both months (September, 1966, Jan., 1968). No fat deposition of intestine was recorded. List of leionathid species, *Leionathus splendens*, *L. equulus*, *L. bindus* and *G. minuta* are given from the trawl catches of F. V. Linzin.

457. DUNCKER, G. 1904.

Die fische der Malayischen Halbinsel. *Mitth. Naturh. Mus. Hamburg*, **21**: 133-207.

p. 157. *E. ruconius*

458. DUNLAP, P. V. 1984.

Physiological and morphological state of symbiotic bacteria from light organs of ponyfish. *Biol. Bull. Mar. Biol. Lab. Woods Hole*, **167** (2): 410-425.

Symbiotic, bioluminescent bacteria (*Photobacterium leiognathi*) within and directly removed from the light organ of freshly sacrificed Philippine and Japanese ponyfish (family Leionathidae) was analysed for light production, oxygen uptake, morphology and density. Luminescence averaged to 2.4×10^4 quanta S' cell' for bacteria from 24 fish (6 species in 3 genera) more than 10 times the maximum luminescences of *P. leiognathi* grown in culture. Light production (depending on the vivo quantum yield for luminescence, 0.1 to 1.0) accounted for 1.7 to 17% of the total oxygen utilized by bacteria from the light organ, substantially more than found for *P. leiognathi* in culture.

459. DUNLAP, P. V. 1985.

Osmotic control of luminescence and growth in *Photobacterium leiognathi* from ponyfish light organs. *Arch. Microbiol.*, **141**: 44-50.

Osmolarity was found to control the luminescence and growth of *Photobacterium leiognathi* strain LN - 1a isolated from the light organ of the ponyfish *Leionathus nuchalis* (family Leionathidae). Low osmolarity stimulated luminescence per cell 80 to 100 fold to a level equal to that of bacteria taken directly from the light organ and increased the level of luciferase per cell 8 to 10 fold compared to high osmolarity (ca. 800 mOsm). Conversely high osmolarity stimulated oxygen uptake and growth rate 2 to 4 fold compared to low osmolarity. Of 21 additional tested strains of

P. leiognathi from light organs of 9 other ponyfish species, all responded similarly. Low osmolarity may be a host control factor that functions to stimulate the luminescence and restricts the growth of ponyfish light organ bacteria in situ.

460. DUNLAP, P. V. AND M. J. MCFALL-NAGAI 1984.

Leiognathus elongatus (Perciformes: Leiognathidae): Two distinct species based on morphological and light organ characters. *Copeia*, 4: 884-992.

The morphological description of the bacterially bioluminescent elongate leiognathid, *Leiognathus elongatus*, unites those pony fishes having cheek scales and a standard length 0.33 or less in body depth. This report reassesses the taxonomic status of fish identified as *L. elongatus* by these criteria using specimens obtained in the Philippine Islands and Japan. Based on differences and on comparisons with type specimens, the authors recognise two species: *L. stercorarius* Evermann and Seale (group I), a previously buried synonym of *L. elongatus*; and *L. elongatus* (Gunther) (group II).

461. DUNLAP, P. V., AND M. J. MCFALL-NGAI 1987.

Initiation and control of the bioluminescent symbiosis between *Photobacterium leiognathi* and leiognathid fish. (Presented at Conference Endocytobiology, New York 1012, Jun., 1986). In: *Endocytobiology III.* J.J. Lee and J. F. Fredrick (Eds.). *Ann. N. Y. Acad. Sc.*, 50 (3): 269-270.

Discussed bioluminescent bacteria, common 'free living' members of planktonic and benthic microbial communities found in symbiotic associations with marine animals.

462. DUNLAP, P. V. AND H. M. STEINMAN 1986.

Strain variation in bacteriocuprein superoxide dismutase from symbiotic *Photobacterium leiognathi*. *J. Bacteriol.*, 165 (2): 393-398.

Photobacterium leiognathi ATCC 25521 (the type strain and light organ symbiont of ponyfish) is one of the few bacteria that produces a copper-zinc superoxide dismutase, termed bacteriocuprein. The authors enzymologically and immunologically characterized the bacteriocuprein superoxide dismutases in sonicates from the type strain and nine additional strains of *P. leiognathi*, each isolated from light organ of a separate ponyfish specimen representing seven ponyfish species.

463. DURAIRAJ, N. 1981.

A study of marine fishing industry in Thanjavur District. *Ph.D. Thesis*, 230 pp.

Silverbelly landings in Thanjavur and other areas of Tamil Nadu in 1977-78 are given on p. 124.

464. DURAIRAJ, S. 1976.

A study on the suitability of some of the food fishes of Cape Comorin for processing into fish protein concentrate. *Madras J. Fish.*, 7: 86-88.

- Silverbelly flour was analysed using ethanol solvent, a South African processing method. The data on percentages of yield of flour against total weight, moisture, total ash, crude fat, crude protein, XN 6.25, fat content of processed and dried cake before solvent extraction and shelf life are given.
465. DURAIRAJ, S., I. SANTHANARAJ, R. SRINIVASAN, S. T. CHARI AND G. VENKATANARASIMHA PILLAI 1985.
- Certain studies on fish silage. Harvest and post-harvest technology of fish. In: *Harvest and Post-harvest Technology of Fish*. Ravindran, K., Unnikrishnan Nair, N., Perigreen, P. A., Madhavan, P., Gopalakrishna Pillai, A. G., Panicker, P. A. and Mary Thomas (Eds.), p. 603-610. Society of Fisheries Technologists (India) Cochin.
- Proximate chemical composition of silverbelly by different fermentation methods is given on p. 606.
466. DURAND, J. AND F. LE POULAIN 1949.
- La peche le long des cotes cambodgiennes. 1 iere liste des poissons des cotes cambodgiennes. *Cybiurn*, 344 pp. Reprinted (1961) as: Report preliminaire sur la peche le long des maritimes cambodgiennes, U.S. O. M.
- List *Leiognathus equulus*, *L. splendens* and *L. brevirostris* from Kampuchean coast, with Vietnamese, Kampuchean and Chinese names. Leiognathidae is listed as the 6th quality fishes.
467. EAPEN, P. K. AND K. K. P. MENON 1973.
- Common marine and freshwater fishes of Kerala. *Seafood Exp. J.*, 5 (1): 25-38.
- Lists *Gazza minuta*, *Leiognathus bindus*, *L. blochii*, *L. insidiator*, *L. ruconius* and *L. splendens* with popular English and Malayalam names on p. 33.
468. EKMAN, S. 1953.
- Zoogeography of the Sea*. Sidgwick and Jackson, Ltd., London, 417 pp.
- p. 69. lists the Leiognathidae among the animals presently confined to the Indo-West Pacific but formerly existing also in the East Atlantic, as shown by one genus from the Miocene of Italy.
469. ERAZI, R. A. 1943.
- Leiognathus mediterraneus* nov. sp. *C.R.Soc. Turque Sci. Phys. Nat.*, 10 (10): 49-53.
- A synonym of *L. klunzingeri*.
470. ETOH, S. 1989.
- Product development in the use of shrimp by-catch in Bangaldesh. *INFOFISH, Marketing Digest*, No. 5, p. 14-16.
- Silverbelly formed about 18.3% of shrimp by-catch.

471. EVANGELINE GEMMA 1962.
Chanos culture at the brackishwater fish farm, Adyar. *Madras J. Fish.*, 3: 68-115.
Leiognathus spp. were not found to ascend the brackishwater ponds in appreciable numbers.
472. EVANGELINE GEMMA 1962.
 Occurrence of the isopod fish parasite *Cymothoa indica* in Adyar fish farm, Madras. *Madras J. Fish.*, 1 (1): 109-120.
 The marketing ponds of the farm and the reservoir contain *Leiognathus* sp. among several species of fish.
473. EVANGELINE GEMMA 1967.
 Trends in the fisheries of the Adyar estuary from April, 1963 to March, 1965. *Madras J. Fish.*, 4: 1-20.
 Size and percentage composition of *Equula* sp. from April, 1963 to March, 1965 are presented.
474. EVANGELINE GEMMA 1975.
 Hydrobiology of the estuaries and backwaters of Ramanathapuram District, Tamil Nadu., p. 193-211. In: *Recent Researches in Estuarine Biology*. R. Natarajan (Ed.), 321 pp. CAS in Marine Biology, Annamalai University, Tamil Nadu.
 Larvae of *Leiognathus* sp. were available among fry and larvae of other fishes - *Leiognathus* occurred seasonally among fish catch in Kottakudi-Malattor estuary.
475. EVANGELINE GEMMA AND K. SUBBIAH 1969.
 Hydrology and fishery of the Ennore estuary from June, 1965 to May, 1967. *Madras J. Fish.*, 5: 139.
Equula sp. is reported among other fishes with monthwise catch data from June, 1965 to May, 1967.
476. EVANGELINE GEMMA, P. MOHANAKRISHNAN AND K. R. LAKSHMI 1969.
 A preliminary hydrological survey of certain estuaries in the Chingelpet District, Madras State. *Madras J. Fish.*, 5: 123-138.
Equula sp. is reported from the estuaries of Covelong, Pudupattinam and Palar.
477. EVERMANN, B. W. AND A. SEALE 1907.
 Fishes of the Philippine Islands. *Bull. Bur. Fish.*, 26: 49-110.
 p. 67-69 describe family Equulidae. Lists *L. virgatus*, *L. dussumieri*, *L. splendens*, *L. fasciatus*, *L. edentula*, *G. tapeinosoma* and *G. minuta*. *L. stercorarius* and *L. edwardsi* are described as new species.

478. FAO. 1972.
Atlas of the Living Resources of the Seas. Food and Agriculture Organisation of the United Nations, Rome.
 Map 1. (By D. H. Cushing, West Central Pacific Demersal & Crustacean Resources) shows the depth distribution of slipmouth (*Leiognathus*) at three transects.
479. F.A.O. 1985.
Report of the Joint Sessions of the Seventh Session of the Indian Ocean Fishery Commission and the Twentieth Session of the Indo-Pacific Fishery Commission. Bali, Indonesia, p. 11-18 November, 1982, 190 pp.
 p. 89. Silverbellies among the major groups of fishes in demersal fisheries of India.
480. FAR SEA FISHERIES RESEARCH LABORATORY 1976.
Coloured Illustrations of Bottom Fishes Collected by Japanese Trawlers. Vol. 2. Japan Deep Sea Trawler Association, Tokyo, 188 pp. (In Japanese).
 p. 116. *Leiognathus* sp. from Seychelles (fig. and description). p. 90. *Secutor ruconius* and *Leiognathus equulus* from East Africa (figs. and description).
481. FERNANDO, E. F. W. 1972.
 Species composition of fish captured by trawlers in the Wadge Bank. *Proc. Indo-Pacific. Fish. Coun.*, 13 (3): 521-531.
Leiognathus fasciatus and *L. equulus* were the leiognathid species of fish observed in the Wadge Bank trawling grounds.
482. FIRTH, R. 1966.
Malay Fishermen, Their Present Economy. Rontledge & Kegan Paul Ltd., 398 pp.
Leiognathus sp. described on p. 385 is one of the commonest in the east coast of Malayan waters.
483. FIRTH, R. 1975.
Malay Fishermen, Their Present Economy. W. W. Norton & Company, New York.
 p. 385. lists "kikek" (*Leiognathus* sp.) under the fishes commonly caught by seines (*pukat tarek*).
484. FORSKAL, P. 1775.
 Descriptions Animalium, Avlum, Amphiblorum, Pisclum, Insectorum, Vermium, quae in itinere Orientali observavit Petrus Forskal-Hauniae. Post Mortem auctoris edidit Carsten Neibuhr. Havniae.
 p. 75. *Scomber equula* description.

485. FORSTER, J. R. 1844.
 Descriptiones animalium quae in ad maris Australia terras per annos 1772, 1773 et 1774 suscepto collogit observavit et delineavit Henrico Lichtenstein, Berlin.
 p. 288. *Zeus argentarius*.
486. FOURMANOIR, P. 1953.
 Notes sur la fauna de la mangrove dans la region de Majunga; Crabes, Crevettes, Poissons. *Nat. Malgache*, 5: 87-92.
 Records *Secutor insidiator* from Madagascar.
487. FOURMANOIR, P. 1957.
 Poissons te'le'oste'ens, des eaux malgaches du Canal de Mozambique. *Mem. Inst. Sci. Madagascar, Ser. F.*, 1: 1-316.
 Lists and describes *Secutor insidiator*, which occurs down to 15 m above mud, *L. equula* (upto 26 cm) same habitat, little food value. *L. leuciscus* and *Gazza minuta* are also listed.
488. FOURMANOIR, P. 1961.
 List complementaire des poissons du Canal de Mozambique. *Mem. Inst. Sci. Madagascar. Ser. F.*, 4: 83-166.
 Describes *S. ruconius*.
489. FOURMANOIR, P. AND A. CROSNIER 1963.
 Deuxie'me liste comple'mentaire des poissons du Canal de Mozambique. *Cah., ORSTOM (Oce'anogr.)*, 6: 2-32.
 Lists *Leiognathus elongatus* (Gunther) from Nosy-Be.
490. FOURMANOIR, P. AND P. LABOUTE 1976.
 Poissons des mers tropicales; Nouvelle Cale'donie, Nouvelles He'brides. Les editions du pacifique, Papeete-Tahiti.
 p. 304-305 list *L. fasciatus* (21 cm) and *L. equulus* (25 cm) which form important schools in estuaries, over mud, at 2-20 m depth. *G. minuta* (18 cm) is also listed.
491. FOWLER, H. W. 1900.
 Contributions to the ichthyology of the tropical Pacific. *Proc. Acad. Nat. Sci. Phila.*, 52: 493-528.
 p. 502. *Equula* sp., p. 526. *E. fasciata*.
492. FOWLER, H. W. 1904.
 A collection of fishes from Sumatra. *J. Acad. Nat. Sci. Phila., Ser.*, 2, 12: 495-560.

- p. 513. *Equulites* subgen. nov. Type = *L. vermiculatus* sp. nov. pl; p. 516. *Eubleekeria* subgen. nov. Type = *Equula splendens*, *L. spilotus* sp. nov. *L. blochii*; p. 517. *Leiognathus edentulus*. *Deveximentum* gen. nov. Type = *Zeus insidiator*, *G. tapeinosoma* and *G. minuta*.
493. FOWLER, H. W. 1905.
Some fishes from Borneo. *Proc. Acad. Nat. Sci. Phila., Ser., 2*, 57: 455-523.
p. 500. *Leiognathus edentulus*.
494. FOWLER, H. W. 1918.
A list of Philippine fishes. *Copeia*, 1: 62-65.
p. 53. *Gazza minuta*, *Leiognathus equula*, *L. splendens*, *L. fasciatus*.
495. FOWLER, H. W. 1918.
New and little-known fishes from the Philippine Islands. *Proc. Acad. Nat. Sci. Phila., 70*: 2-71.
p. 15-17 describe a new species, *Leiognathus philippinus*; p. 17. *L. fasciatus*.
496. FOWLER, H. W. 1925.
Fishes from Natal, Zululand and Portuguese East Africa. *Proc. Acad. Nat. Sci. Phila., 77*: 187-268.
p. 218-219 list *Leiognathus equulus*, *Secutor ruconius* and *Gazza minuta*.
497. FOWLER, H. W. 1925.
Fishes of Guam, Hawaii, Samoa and Tahiti. *Bernice P. Bishop Mus. Bull., 22*: 1-38.
p. 10. *L. edentulus* (Guam); p. 33 *L. fasciata* (Samoa).
498. FOWLER, H. W. 1927.
Notes on the Philippine fishes in the collection of the Academy. *Proc. Acad. Nat. Sci. Phila., 79*: 255-297.
p. 273 mentions *Gazza minuta*, *G. equulaeformis*, *Leiognathus vermiculatus*, *L. virgatus*, *L. splendens*, *L. equulua*, *L. daura*, *L. philippinus*, *L. stercorarius*, *L. fasciatus*, *Secutor insidiator* and *S. ruconius*.
499. FOWLER, H. W. 1928.
The fishes of Oceania. *Mem. Bernic P. Bishop Mus., 10*: 1-540.
p. 153-154 describe *Leiognathus equula*, *L. dussumieri*, *L. smithursti*, *L. berbis*, *L. fasciatus*, *Secutor insidiator*, *G. minuta* and *G. equulaeformis* with synonyms.
500. FOWLER, H. W. 1929.
Further notes and descriptions of Bombay shore fishes. *J. Bombay Nat. Hist. Soc., 33* (1 & 2): 100-119.
p. 111-112 describe *Leiognathus daura* and *L. fasciatus* and list *Gazza minuta*.

501. FOWLER, H. W. 1929.
 Notes on Japanese and Chinese fishes. *Proc. Acad. Nat. Sci. Phila.*, **81**: 589-616.
 p. 606-607 list *L. equula*, *L. daura*, *L. virgatus*, *S. ruconius*, *S. insidiator* and *Gazza minuta* from China.
502. FOWLER, H. W. 1931.
 A small collection of fishes from Singapore. *Proc. Acad. Nat. Sci. Phila.*, **83**: 443-448.
 Mentions leiognathids collected from Singapore.
503. FOWLER, H. W. 1931.
 The fishes of Oceania. Supplement 1. *Mem. Bernice, P. Bishop Mus.*, **11** (5): 311-381.
 p. 327 lists *Leiognathus equula*, *L. fasciatus* and *Gazza minuta*.
504. FOWLER, H. W. 1931.
 Studies of Hong Kong fishes. No. 2. *Hong Kong Nat.*, **2** (4): 297-317.
 p. 293 lists *L. virgatus*, *S. ruconius* and *S. insidiator*.
505. FOWLER, H. W. 1932.
 Fishes obtained at Fiji in 1929. *Occas. Pap. Bernice P. Bishop Mus.*, **9** (20): 3-15.
 p. 5 lists *L. equula*.
506. FOWLER, H. W. 1934.
 Fishes obtained by Mr. H. W. Bell-Marely chiefly in Natal and Zululand in 1929 - 1932. *Proc. Acad. Nat. Sci. Phila.*, **86**: 405-514.
 p. 453 lists *Secutor insidiator*; p. 454 *S. ruconius*, *L. equula* and *G. minuta*.
507. FOWLER, H. W. 1934.
 The fishes of Oceania. Supplement 2. *Mem. Bernice, P. Bishop Mus.*, **11** (6): 383-466.
 p. 406 lists *Leiognathus edentulus*, *L. equula*, *L. fasciatus*, *L. smithursti* and *G. minuta*.
508. FOWLER, H. W. 1934.
 Zoological results of the Third de Schauensee Siamese Expedition. Part V - Additional fishes. *Proc. Acad. Nat. Sci. Phila.*, **86**: 67-163.
L. equulus, *S. insidiator*, *G. minuta*; *L. splendens* and *L. blochii* are listed with figures on p. 70 and p. 151.

509. FOWLER, H. W. 1935.
 Zoological results of the Third de Schauensee Siamese Expedition. Part VI - Fishes obtained in 1934. *Proc. Acad. Nat. Sci. Phila.*, 87 (1): 89-163.
Macilentichthys berbis (*L. edwardsias* synonym, fig. 108); *Macilentichthys leuciscus* (as similar to *L. stercorarius*, fig. 109); *L. fasciatus*, *L. equula*, *L. splendens*, *L. bindus* (fig. 110); *Secutor insidiator* and *Gazza equulaeformis* are listed.
510. FOWLER, H. W. 1936.
 South African fishes received from Mr. H. W. Bell Marely in 1935. *Proc. Acad. Nat. Sci. Phila.*, 87: 361-408.
Gazza equulaeformis is listed on p. 382.
511. FOWLER, H. W. 1936.
 A synopsis of the fishes of China. Part 6. The mackerels and related fishes. Family Carangidae, continued. *Hong Kong Nat.*, 7 (1): 61-80. Reprint edition (1972) Vol. 1, Antiquariat Junk, Netherlands.
 Lists *S. ruconius*, *L. insidiator*, *L. splendens*, *L. equulus*, *L. leuciscus*, *L. brevirostris*, *L. daura*, *L. bindus*, *L. rivulatus* and *G. minuta* from Chinese coasts.
512. FOWLER, H. W. 1937.
 Zoological results of the Third de Schauensee Siamese Expedition. Part 8. Fishes obtained in 1936. *Proc. Acad. Nat. Sci. Phila.*, 89 (1): 125-264.
 p. 226. *Macilentichthys berbis*; p. 228. *M. leuciscus*, *L. blochii*, *L. equula*, *L. splendens*, *L. daura* (fig. 225), *L. bindus*, *L. fasciatus* (fig. 226), *S. insidiator*, *S. ruconius* and p. 230. *G. equulaeformis* and *G. minuta*.
513. FOWLER, H. W. 1938.
 The fishes of the George Vanderbilt South Pacific Expedition, 1937. *Monogr. Acad. Nat. Sci. Phila.*, (2): 1-349.
 Lists *L. dussumieri*, *L. fasciatus*, *S. insidiator* and *G. minuta* from Tahiti.
514. FOWLER, H. W. 1938.
 A list of the fishes known from Malaya. *Fisheries Bulletin*, 1: 1-268.
 Among Leiognathids *Gazza minuta*, *Leiognathus berbis*, *L. bindus*, *L. daura*, *L. dussumieri*, *L. equula*, *L. fasciatus*, *L. lineolatus*, *L. splendens*, *L. stercorarius*, *Secutor insidiator* and *S. ruconius* are listed with synonyms.
515. FOWLER, H. W. 1939.
 Zoological results of the Third de Schauensee Siamese Expedition. Part 9. Additional fishes obtained in 1938. *Proc. Acad. Nat. Sci. Phila.*, 91: 39-76.
L. dussumieri, *L. fasciatus* and *S. ruconius* are reported from the expedition.

516. FOWLER, H. W. 1939.
 Zoological results of the Denison-Crockett South Pacific Expedition for the Academy of Natural Sciences of Philadelphia, 1937-'38. Part 3. The fishes. *Proc. Acad. Nat. Sci. Phila.*, **91**: 77-96.
 p. 82. *G. minuta* (Sorong).
517. FOWLER, H. W. 1939.
 A collection of fishes from Rangoon, Burma. *Notulae Nat. Acad. Sci. Phila.*, **17**: 1-12.
 p. 11 lists *L. dussumieri*.
518. FOWLER, H. W. 1940.
 Zoological results of the George Vanderbilt Sumatran Expedition, 1936-'39. Part 2. The fishes. *Proc. Acad. Nat. Sci. Phila.*, **91** (1939): 369-398.
 p. 388 lists *L. dussumieri*.
519. FOWLER, H. W. 1940.
 The fishes obtained by the Wilkes Expedition. 1938-'42. *Proc. Amer. Phil. Soc.*, **82** (5): 733-800.
 p. 769 lists *L. splendens* (Manda, Fiji); *L. equula*, *L. blochii* (Philippines?) *S. insidiator* (Manila) and *S. ruconius* (Singapore).
520. FOWLER, H. W. 1944.
 Fishes obtained in the New Hebrides by Dr. Edward, L. Jackson. *Proc. Acad. Nat. Sci. Phila.*, **96**: 155-199.
 p. 190 lists *Aurigequula fasciata* (Malekula) and *Gazza minuta* (Tana).
521. FOWLER, H. W. 1949.
 The fishes of Oceania. Supplement - 3. *Memoirs of the Bernic P. Bishop Museum*, **12** (2): 1-186.
 p. 78 lists *Leiognathus splendens*, *L. equula*, *L. dussumieri*, *L. fasciatus* and *Gazza minuta* with synonymy.
522. FOWLER, H. W. 1959.
Fishes of Fiji. Govt. of Fiji, Suva, Fiji.
 Lists *L. splendens*, *L. dussumieri*, *L. equulus* and *L. fasciatus* from Fiji Islands.
523. FOWLER, H. W. AND B. A. BEAN 1922.
 Fishes from Formosa and the Philippine Islands. *Proc. U.S. Nat. Mus.*, **62** (2448): 1-73.
 p. 22-24 give descriptions of *L. virgatus*, *L. equula*, *L. leuciscus* and *Gazza argeritarius*.

524. FOWLER, H. W. AND B. A. BEAN 1927.
Notes on fishes obtained in Sumatra, Java and Tahiti. *Proc. U.S. Nat. Mus.*, 71 (Art. 10): 1-15.
p. 5-6 list *L. equula*, *L. blochii*, *L. splendens*, *S. insidiator* and *S. ruconius* from Benkocian.
525. FRANZ, B. 1910.
Die Japanischen Knochen fische der Sammlungen Haberer und Dofieln (Beitrage Zur Naturgeschichte Ostasiens). *Abh. Akad. Wiss. Math. Phys. Munchen. Kl. Suppl. Bd. IV. Abh.*, 1: 1-135.
One specimen from Dofieln's collection of *Equula nuchalis* is reported from a depth of 80 m off Enoshima.
526. FRENTIER ABOU, D. 1969.
Composition globale du muscle de quelque poissons comestibles de la cote Malgache. *Cah. ORSTOM (Oceanogr.)*, 7 (1): 3-18. (with English and German abstracts).
Water, fat and protein content of *S. insidiator* and *L. equulus* are reported.
527. FRIDORICH, I. AND J. P. MARTIN 1981.
Evidence for a natural gene transfer from the ponyfish to its bioluminescent bacterial symbiont *Photobacter leiognathi*. The close relationship between bacteriocuprein and the copper - zinc superoxide dismutase of teleost fishes. *J. Biol. Chem.*, 256 (12): 6080-6089.
The copper and zinc containing superdioxide dismutases of six teleost fish species and the bioluminescent bacterium *P. leiognathi* were isolated from ponyfishes.
528. FUJITO, SHIRO 1960.
Egg development and prelarval stages of a silverbelly, *Leiognathus nuchalis* (Temminck et Schlegel). *Bull. Soc. Sci. Fish.*, 26 (11): 1091-1094.
Shape, size and colour of the eggs, hatching period, time and other developmental stages of *L. nuchalis* are described.
529. FUJIISHI, AKIO 1971.
Field experiment on the mesh selection of the net with 23 mm mesh cod end. *J. Shimonoseki Univ. Fish.*, 19 (2 & 3): 65-80 (In Japanese with English summary).
Leiognathus rivulatus in the size of 4.5 cm at the selection point was estimated.
530. FUJIO YASUDA 1960.
The types of food habits of fishes assured by stomach contents examination. *Bull. Jap. Soc. Sci. Fish.*, 26 (7).
L. nuchalis of 3-6 cm length feed mainly on copepods.

531. FUKUDA, S. AND Y. HIRAMI 1955.
 Studies on vitamin B₁ in food. Part I. Vitamin B₁ content in eyeballs of fishes from Province of Tosa. *J. Agric. Chem. Soc. Japan*, 29: 782-784.
 Thiamine content in eyeballs of *L. argenteus* was studied.
532. GADAGKAR, S. R. AND N. SUNDARARAJ 1985.
 Temporal behaviour of marine landings along coastal Karnataka. 1. Relative distribution and secular trends. *Fish. Technol.*, 22 (1): 14-23.
Leiognathus spp. in Karnataka essentially formed an incidental fishery.
533. GADAGKAR, S. R. AND N. SUNDARARAJ 1985.
 Temporal behaviour of Marine landing in Karnataka. 2. Seasonal patterns. *Fish. Technol.*, 22 (2): 92-98.
 Silverbellies constituted a large percentage of the trawl catch off Karwar as well as off Mangalore. In general they constitute a round-the-year fishery as reported.
534. GADAGKAR, S. R. AND N. SUNDARARAJ 1986.
 Temporal behaviour of marine landings along coastal Karnataka. 3. Cyclical patterns. *Fish. Technol.*, 23 (1): 32-37.
 Marine landings data for Karnataka during 1956-'78 were subjected to analysis and cyclical periodicities isolated in the case of *Leiognathus* sp. and other fishes (six year cycle).
535. GEORGE JOSEPH, K. V. MURALEEDHARAN, N. KALAIMANI AND T. S. UNNIKRISHNAN NAIR 1986.
 Quality of cured fish from Tamil Nadu coast. *Fish. Technol.*, 23 (1): 63-65.
 Chemical and bacteriological quality and organoleptic rating of cured silverbellies from Madras, Tuticorin, Nagapattinam and Kanyakumari are given.
536. GEORGE, M. J., C. SUSEELAN AND K. BALAN 1981.
 By-catch of the shrimp fishery in India. *Mar. Fish. Infor. Serv., T & E, Ser.*, No. 29, p. 1-13.
 The second dominant item of the by-catches, the silverbellies contributed to about 14% of the annual landings. Nearly 90% was caught from Tamil Nadu coast alone. A number of species of the genus *Leiognathus* and a single species of *Gazza* (*G. minuta*) comprised silverbelly catch, the former being the most dominant group. Silverbellies were caught in trawl net throughout the year, the maximum catches being recorded from February to May.
537. GEORGE, V. C. 1985.
 The lure and lift net fishing technique at Coromandel coast off Tamil Nadu.

In: *Harvest and Post-harvest Technology of Fish*. Ravindran K., Unnikrishnan Nair, N., Perigreen, P. A., Madhavan, P., Gopalakrishnan Pillai, A. G., Panicker, P. A. and Mary Thomas (Eds.), Society of Fisheries Technologists (India) Cochin, 241-244.

Occurrence of silverbellies in different depths during different months is given on p. 243.

538. GILCHRIST, J. F. D. AND W. WARDLAW THOMPSON 1908.

Description of fishes from the coast of Natal. *Ann. S. A. Mus.*, 6: 145-206.

Descriptive characters of *Equula edentula* and *Gazza equulaeformis* are given.

539. GILTAY, L. 1933.

Resultats scientifiques du voyage aux Indes Orientales Ne'erlandaises de LLA.A.R.R. le Prince et la Princesse Le'pold de Belgique. *Me'm. Mus. R. Hist. Nat. Belgique*, 5 (3): 1-129.

Records *G. minuta* from Bali.

540. GISTEL, J. 1848.

Naturgeschichte des Thierreichs fur hoehere Schulen. Stuttgart.

Original description of the genus *Secutor*.

541. GLOERFELT TRAP, T. AND P. J. KAILOLA 1984.

Trawled Fishes of Southern Indonesia and North Western Australia. Australian Development Assistance Bureau, Directorate General of Fisheries, German Agency for Technical Cooperation, 406 pp..

(Place of publication not known).

Mentions silverbellies as one of the trawl fishes.

542. GOMEZ, E. D. 1980.

The present state of mangrove ecosystems in southeast Asia and the impact of pollution - Philippines. *SCS/80/WP/94 c*, 88 pp. South China Sea Fish. Dev. Coord. Progr., Manila.

p. 27. "Luminous perches" (Leiognathidae) are listed among the frequent inhabitants of mangrove swamp areas of the Philippines. Pesticide levels of Manila Bay were (in parts per billion) 0.306 for Gamma-BHC, 0.213 for Heptachlor and 0.041 for Aldrin.

543. GONZALES, F. R. 1977.

Traditional fish processing in the Philippines. In: *Proceedings of the Conference on the Handling, Processing and Marketing of Tropical Fish*. p. 316-317. Tropical Products Institute, London.

Lists slipmouths among the fish commonly sun-dried. Recorded a *Leiognathus* catch of 40.571 tonnes in 1973 for the whole of the Philippines.

544. GOPALAKRISHNA PILLAI, N. AND R. SATHIADHAS 1982.
 Pair trawling strikes good grounds for white pomfret in the Palk Bay, Tamil Nadu. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 39, p. 1-16.
 Silverbellies contributed 5.75% in the catches of pair trawling.
545. GOPALA REDDY, K. AND V. S. VERNEKAR 1984.
 Fisheries in Malpe - Status and prospects. *Seafood Exp. J.*, 16 (1): 12-19.
 Catches of silverbellies from purse-seine, trawl and gill-net and other gears in the state and outside the state are presented for 1982.
546. GOPINATH, K. 1946.
 Notes on the larval and post-larval stages of fishes found along the Trivandrum coast. *Proc. Nat. Insti. Sci. India*, 12 (1): 7-21.
 Post-larvae of *Leiognathus blochii* of the length range 11-16 mm occurred during December - March. They are obtained in large quantities in shore seines during February. Gives description of post-larvae of *L. blochii*.
547. GOPINATH, K. 1946.
 Preliminary observations on the food of post-larval fishes. *Proc. 33rd Ind. Sci. Cong., Part III*, abstract 50, p. 130-131.
 Copepods, *Lucifer*, mysids, decapod remains, amphipod and molluscan young ones were common in the gut contents of *Leiognathus blochii* and other fishes.
548. GOPINATH, K. 1952.
 Some interesting methods of fishing in the backwaters of Travancore. *J. Bombay Nat. Hist. Soc.*, 51 (2): 466-471.
 Silverbelly produced sounds are listed in the fishing 'Listening IN'.
549. GOVINDAN, V. 1916.
 Fishery statistics and information - west and east coasts. *Madras Presidency Bulletin*, No. 9. Madras Fisheries Bureau, Madras.
 Statement of fish brought to the yards along west coast are given with Malayalam, Canarese, Tulu, scientific and popular names.
550. GOWRI, V., M. S. VASANTHA, K. S. SRINIVASAN AND M. N. MOROJANI 1972.
 Methionine content of some of the important species of Indian fishes. *Fish. Technol.*, 9 (2): 180-181.
 Methionine content of *Leiognathus* spp. is 3.70 (100 g).
551. GRANT, E. M. 1965.
Guide to Fishes. Departments of Harbours and Marine, Queensland, Australia, 280 pp.

- Gerres argyreus* is given with figure and description on p. 127 under *leiognathidae* (silverbelly).
552. GRANT, E. M. 1978.
Guide to Fishes. Department of Harbours and Marine, Brisbane, Australia (4th edition).
 Figures and description for *Equula equula* and *Equulites moretonensis* are given. Also mentions *Equulites bindus*.
553. GREEN, C. F. 1927.
Report on the Working of the S. T. "Tongkol" for the Year 1927. Part I. Singapore.
 Catch data for "kekak" (*Equula*) is given.
554. GREEN, L. B. 1940.
Fisheries Administration Report of the Fisheries Department for the Year Ending 30th June, 1940, 75 pp.
 Ecological studies on other shoaling fishes of the coast such as *Leiognathus bindus* and other fishes were continued and *L. bindus* was added to the Museum. Silverbelly *Leiognathus splendens* was noticed in the stomach contents of *Lactarius lactarius*.
555. GREEN, L. B. 1941.
Annual Report on the Fisheries of Madras, for the Year Ending 30th June, 1941. Department of Industries and Commerce, Madras, 72 pp.
L. bindus was found in the stomach of *Arius dussumieri*. This species (*L. bindus*) dominated the catches on the west coast. *Leiognathus* spp. was recorded in the stomach contents of *Lactarius lactarius* as per the report.
556. GREENWOOD, P. H., D. ROSEN, S. WEITZMANN AND G. MEYERS 1966.
 Phyletic studies of teleostean fishes, with a provisional classification of living forms. *Bull. Amer. Mus. Nat. Hist.*, 131: 339-456.
Leiognathidae is listed as 288th family, remote from the *gerridae* (296th).
557. GREGORY WILLIAM, K. 1933.
 Fish skulls: A study of the evolution of natural mechanisms. *Trans. Amer. Phil. Soc.*, 23 (2): 75-481.
 p. 254. Boulenger referred the genus *Leiognathus* to *Gerres* and Starks (1911 a) differed with the former and opined that the characters of the former were very distinct from the latter.
558. GRESSE, PIERRE, P. 1958.
Traite de Zoologie. Anatomie, Systematique, Biologie, 13 (3).
 p. 2390. *Leiognathidae* is classified under sub-order *Percoidei*. Upward

and downward protractile mouth of *Leiognathus ruconius* and *L. dussumieri* is illustrated in the figure No. 1719, from Weber and Beaufort.

559. GRUVEL, A. 1929.
De l'influence du percement du canal de Suez sur la faune marine des coxes de Syrie. *C. R. Acad. Sci. Colon. Paris*, 188: 1697-1699.
Mentions *L. klunzingeri*.
560. GRUVEL, A. 1936.
Contribution 'a' l'e'tude de la bionomic ge'ne'rale et de l'exploitation de la faune du Canal de Suez. *Mem. Inst. Egypt*, 29 (1): 1-255.
L. klunzingeri of Suez Canal comes from Indo-Pacific area.
561. GRUVEL, A. AND P. CHABANAUD 1937.
Mission A. Gruvel dans le Canal de Suez. II. Poissons. *Mem. Inst. Egypt*, 35: 1-30.
Recorded *L. klunzingeri* from Suez Canal.
562. GUDGER, E. W. 1929.
Nicolas Pike and his unpublished paintings of the fishes of Mauritius, western Indian Ocean, with an index to the fishes. *Bull. Amer. Mus. Nat. Hist.*, 58 (9): 489-530.
Equula caballa and *E. fasciata*.
563. GULLAND, J. A. 1966.
Manual of sampling and statistical methods for fisheries biology. Part 1. Sampling methods, Sections 1-4. *F.A.O. Man. Fish. Sci.*, No. 3, 87 pp.
p. 14. *Leiognathus splendens* used as example for species from the mixed species of fish.
564. GUNTHER, A. 1860.
Catalogue of the Acanthopterygian Fishes in the Collection of the British Museum. Vol. II. British Museum, London, 586 pp.
Gives descriptions and synonyms of *E. fasciata*, *E. edentula*, *E. caballa*, *E. dussumieri*, *E. gerreoides*, *E. nuchalis*, *E. biindoides*, *E. splendens*, *E. daura*, *E. oblonga*, *E. lineolata*, *E. leuciscus*, *E. rivulata*, *E. insidiatrix*, *E. interrupta*, *E. parviceps*, *E. longimanus*, *Gazza minuta*, *G. equulaeformis* and *G. argentaria*.
565. GUNTHER, A. 1873.
Reptiles and fishes of the South Sea Islands. p. 409-430. In: *Jottings During the Cruise of H.M.S. Curacao in 1865*, J. L. Brenchley (Ed.), 487 pp.
Gazza equulaeformis (Solomons) is reported on p. 410.

566. GUNTHER, A. 1874.
Description of new species of fishes in the British Museum. *Ann. Mag. Nat. Hist.*, 14 (4): 368-371.
p. 369 describes *E. elongata* (North Celebes).
567. GUNTHER, A. 1876.
Andrew Carrett's Frische der Sudsee V. J. Mus. *Godeffroy*, 11: 129-168.
p. 144-145 describe *Gazza equulaeformis* and *G. argentaria*, with one figure each for *G. argentaria* and *E. fasciata*.
568. GUNTHER, A. 1880.
Report on the shore fishes, deep-sea fishes and pelagic fishes collected by H. M. S. *Challenger*, 335 pp.
Equula fasciata from Fiji Islands, *E. fasciata* and *E. dussumieri* from the east Indian Archipelago and *E. nuchalis* from Japan were collected by H. M.S. *Challenger*.
569. GUNTHER, A. 1880.
An Introduction to the Study of Fishes. Adam and Charles Black. Edinburg. Reprint, 1963. Today and Tomorrows Book Agency, New Delhi, 706 pp.
p. 449-450, give a short discussion of genus *Equula* with a figure of *E. edentula*. Mentions that this genus consists of 18 species of small Indo-Pacific fishes disappearing towards the coast of Japan and Australia. *Gazza* is very similar to *Equula*, but armed with canine teeth in the jaws.
570. GUNTHER, A. AND C. L. G. ALBERT 1880.
An Introduction to the Study of Fishes. 720 pp.
Equula is described and compared with *Gazza*.
571. GUPTA, R. C. AND S. P. GUPTA 1978.
Five new trematodes of the genus *Lecithocladium* Luke, 1901 (Hemiuridae) from marine fishes. *Folia parasit.*, 25 (3): 223-229.
Gazza minuta as a host of digenean parasite, *Lecithocladium purense*.
572. GUPTA, V. AND M. PURI 1981.
Six new species of the genus *Lecithocladium* Luhe, 1901 (Hemiuridae Luhe, 1901) from marine fishes of Puri, Orissa. *India J. Helminth.*, 13 (1): 58-78.
Reported digenean parasite *Lecithocladium sriovastavai*. Also new parasite species from *G. minuta*.
573. GUPTA, R. AND C. T. SAMUEL 1985.
Some fungal infestations of dried fishes in Cochin markets. *Fish. Technol.*, 22 (2): 132-134.

- Salted and dried silverbellies were selected for study from different local markets of Cochin.
574. GUPTA, U. K., P. S. GEORGE, G. S. GUPTA, RAKESH KHURANA, M. RAGHAVACHARI, S. SRINIVASA RAO AND UMAKANT SRIVASTAVA 1984.
- Marine Fish Marketing in India. Current Situation: Production and Marketing. West coast - Gujarat, Maharashtra, Goa, Karnataka and Kerala. Vol. II, Part - 1, 845 pp.* Indian Institute of Management, Ahmedabad.
- p. 445. Month-wise catches of silverbelly in 1978 from Goa, utilization pattern from 1974 to 1978 and landings from 1969 to 1978 from Karnataka and Kerala are given in tables.
575. GUPTA, U. K., P. S. GEORGE, G. S. GUPTA, RAKESH KHURANA, M. RAGHAVACHARI, S. SRINIVASA RAO AND UMAKANT SRIVASTAVA 1984.
- Marine Fish Marketing in India. Current Situation: Production and Marketing. East coast - Tamil Nadu, Pondicherry, Andhra Pradesh, Orissa and West Bengal. Vol. II, Part - 2, p. 849-1440.* Indian Institute of Management, Ahmedabad.
- p. 1030. Statistics of silverbelly (*Leiognathus* and *Gazza*) landings from 1969-'78 and utilization pattern from Tamil Nadu, Andhra Pradesh and West Bengal are given in tables.
576. GUPTA, U. K., P. S. GEORGE, G. S. GUPTA, RAKESH KHURANA, M. RAGHAVACHARI, S. SRINIVASA RAO AND UMAKANT SRIVASTAVA 1984.
- Marine Fish Marketing in India. Consumer Behaviour and Project Demand. Vol. III, 423 pp.* Indian Institute of Management, Ahmedabad.
- Tables for silverbelly purchased and share of expenditure in metropolitan, urban and rural area of different states of India are given on p. 282.
577. HAEDRICH RICHARD, L. 1971.
- The Pons Moultoni, a significant character. *Copeia*, 1: 167-169.
- Leiognathidae has been found among four families while investigating Pons Moultoni.
578. HAFEEZULLAH, M. 1971.
- Opecoelid trematods of marine fishes of India. *Parasitology*, 62 (2): 321-329.
- A trematod parasite of *L. daura* is reported.
579. HAINES, A. K. 1979.
- An ecological survey of fish of the lower Purari River System, Papua, New Guinea. *Purari River (WABO) Hydroelectric Scheme Environmental Studies 6*, 102 pp. Office of Environment and Conservation, Central Government Office, Waigani, PNG.

Distribution and length ranges are given for *Gazza achlamys*, *Secutor* spp. and *Equula equula* in the mangrove and river mouth. Some data on reproduction are also presented.

580. HALL, G. M. AND D. A. LEDWARD 1986.
Silage from tropical fish. 3. Lipid behaviour. *J. Food Technol.*, 21 (1) 45-54.
Preparation of acid silages from silverbelly (*Leiognathus*) at 30°C with 3% (W/W) of 98% formic acid has been explained.
581. HALL, G. M., L. KEEBLE, D. A. LEDWARD AND R. A. LAWRIE 1985.
Silage from tropical fish. 2. Undigested fraction. *J. Food Technol.*, 20 (5): 573-580.
The solubility of the undigested fraction (sediments) of a silage made from silverbelly (*Leiognathus* sp.) in Sodium dodecyl sulphate, guanidine hydrochloride and 2 mercaptoethanol alone and in combination was evaluated.
582. HAMAGUCHI ET AL. 1960.
Studies in inorganic constituents in biological materials. XIV. *J. Chem. Soc. Japan*, 81: 921-924.
Arsenic, Selenium and Thallium content in *L. nuchalis* is reported.
583. HAMILTON-BUCHANAN, F. 1822.
An Account of the Fishes Found in the River Ganges and its Branches. Edinbrough and Lond., 465 pp.
Gives the detailed description of *Chanda ruconius* and its allied species *Zeus insidiator* in the estuaries of the Ganges.
584. HANAOKA, T. 1953.
On the trophic composition of caught fishes. *Bull. Japanese Soc. Sci. Fish.*, 19 (4): 293-302.
p. 294. *Leiognathus nuchalis* among plankton-feeder.
585. HANEDA, Y. 1950.
Luminous organs of fish which emit light indirectly. *Pac. Sci.*, 4 (3): 214-227.
A discussion of leiognathid bioluminescence with description of the light organs of various species and ecological notes is given.
586. HANEDA, Y AND F. H. JOHNSON 1962.
The photographic organs of *Parapriacanthus beryciformes* Franz and other fish with the indirect type of luminescent system. *J. Morphol.*, 110 (2): 187-198.
Gazza minuta, *Leiognathus insidiator*, *L. ruconius*, *L. equulus*, *L. fasciatus*, *L. lineolatus*, *L. splendens*, *L. daura*, *L. bindus*, *L. berbis*, *L. dussumieri*,

L. stercolarius, *L. elongatus* and *L. argenteum* (possibly all members of this family are luminescent) are found only in shallow water. Abundant in the waters of southern Japan and tropical Asia. Light is emitted from a swollen ring which encircles the oesophagus and contains a gland with two openings leading into the oesophagus. Symbiotic luminous bacteria of a single type, live in the luminescent glands of all the above-mentioned species.

587. HANEDA, Y. AND F. J. TSUJI 1972.

The luminous organs of two species of leiognathid fishes recently found in Ambon. *Indonesi. Sci. Rep., Yokosuka City Mus.*, No., 19, p. 7-11.

The authors list some leiognathid fishes collected during *Alpha Helix* 1969 Biological Expedition to New Guinea and describe the light organs of *Leiognathus hataii* and *L. aureus*. The luminous bodies were very similar in the 2 spp. and resemble those in other spp. of *Leiognathus*, although they were relatively large in relation to body size. The light from the upper region of the doughnut-shaped light organ is emitted through a small, adjustable diaphragm into the swim bladder which is lined with a layer of guanine. This reflects the light in a ventro-lateral direction to the outside through the translucent muscles. Details of the sizes of luminous bodies in the 2 spp. are given.

588. HANEDA, Y. AND F. I. TSUJI 1976.

The luminescent systems of pony fishes. *J. Morphol.*, 150 (2): 539-552.

A comprehensive review of recent data, especially on *L. elongatus*.

589. HANEDA, Y. AND F. K. TSUJI 1976.

Luminescent system of pony fishes. *Sci. Rep. Yokosuka City Mus.* (In Japanese with English Summary). No., 23, p. 79-91.

590. HANEDA, Y., F. H. JOHNSON AND O. SHIMORUHA 1966.

The origin of luciferin in the luminous duct of *Parapiaacanthus ransonnet*, *Pempheris klunzingeri* and *Apogon ellioti*. In: *Bioluminescence in Progress*. F. H. Johnson and Y. Haneda (Eds.), p. 533-535. Princeton University Press, Princeton.

Reports of bioluminescent structures similar to those of Leiognathidae, but without bacterial symbionts.

591. HARDENBERG, J. D. F. 1931.

The fish fauna of the Rokan Mouth. *Treubia*, 13 (1): 81-168.

S. insidiator reported to be rare off the mouth of this river.

592. HARDENBERG, J. D. F. 1931.

The fish fauna of the Rokan Mouth. *Treubia*, 14 (3): 299-312.

Leiognathus insidiator, *L. ruconius*, *L. splendens*, *L. bindus* and *L. berbis* are listed among silverbellies.

593. HARDENBERG, J. D. F. 1936.
 On the collection of fishes from the estuary and the lower and middle course of the River Kapuas. (W. Borneo). *Treubia*, 15 (3): 225-254.
 Gives descriptions of two species namely *Leiognathus brevirostris* and *L. dussumieri* and records the occurrence of *L. ruconius*, *L. splendens* and *L. equulus* from the estuary.
594. HARDENBERG, J. D. F. 1938.
 Hydrological and ichthyological observations in the mouth of the Kumai River (S. W. Borneo). *Treubia*, 16 (1): 1-14.
Leiognathus insidiator and *L. daura* are listed.
595. HARDENBERG, J. D. F. 1938.
 Some new or rare fishes of the Indo-Australian Archipelago. VI. *Treubia*, 16 (3): 311-320.
 Detailed description of *Leiognathus elongatus* is given.
596. HARDER, W. 1964.
 Anatomic der Fische. In: *Handbuch der Binnen-fischerei Mitteleuropas*, Vol. II A. Demoll, Maier and Wundsch (Eds.), Schweizerbart'sche Verlagsbuchhandlung, Stuttgart.
 Contains a figure of the gut convolutions in *L. nuchalis*.
597. HARMS, J. W. 1928.
 Bau und Entwicklung eines eigenartigen Leuchtorgans bei *Equula* spec. (Telcost). *Z. Wiss. Zool.*, 131 (1): 157-179.
 The first account of bioluminescence in the family Leiognathidae.
598. HARTSUIKER, L. 1979.
 An outline of the exploitation of fish stocks in the NW part of the Gulf by small-scale and large-scale fisheries, mainly based on the market statistics of Kuwait. *FAO/RAB/71/278, Appendix 5*, 9 pp., FAO, Rome.
 Reports on catches made on *dhow*s in Kuwait Bay in which *Leiognathus* spp. formed the "main" species.
599. HARVEY, E. N. 1940.
Living Light. Princeton University Press, Princeton.
 p. 84 lists *Equula* among the fishes in which the light is due to symbiotic bacteria which remain in the organ.
600. HARVEY, E. N. 1957.
 The luminous organs of fishes. Chapter 4. In: *The physiology of fishes*. Margaret E. Brown (Ed.), Vol. 2. Behaviour, p. 345-366. Academic Press, New York.
 Mentions luminous organs in *Leiognathus*, *Gazza* and *Secutor*.

601. HASHEM, M. T. 1973.
Some observations on the fishery biology of Red mullet (*Mullus barbatus*, L.) in Abukir-Rosetta Region during 1969-'70. *Bulletin of the Institute of Oceanography and Fisheries*, Vol. 3 Cairo, p. 145-162.
Leiognathidae were caught in trawling operations conducted in the area at different depths during May, 1969 to January, 1970.
602. HASTINGS, J. W. 1971.
Light to hide by. Ventral luminescence to camouflage the silhouette. *Science*, 173 (4001): 1016-1017.
Reports that the pony fish of the tropical and subtropical Indo-Pacific region can emit light from a broad area of its ventral surface. An experimental analysis of this luminescent system supports the hypothesis that it functions by emitting light during the daytime which matches the background light and thereby obscures the silhouette of the animal.
603. HASTINGS, J. W. AND GEORGE MITCHELL 1971.
Endosymbiotic bioluminescent bacteria from the light organ of Pony fish. *Biol. Bull.*, 141: 261-268.
Among *Leiognathidae*, *Leiognathus equulus*, *L. splendens*, *Equilites novaeollandiae* and *Secutor ruconius* which occur in the shallow coastal waters of the tropical and subtropical Indo-Pacific region, are capable of emitting bright light from their ventral surface. In these small fishes, as in several other bioluminescent fish, the source of light is symbiotic luminous bacteria maintained within special organ. In ponyfish the system involves several special and unusual elements. The organ itself which surrounds the oesophagus like a donut, and communicates with it *via* paired ducts is literally packed with bacteria. It was found to be emitting light, brightly and continuously irrespective of the time of day or other environmental factors.
604. HASTINGS, J. W., K. H. NEALSON AND J. REICHEL
The specificity of symbiosis: Ponyfish and luminescent bacteria. Unpublished manuscript, 10 pp.
Describes strain of bacteria isolated from the light organ of leiognathids.
605. HELFMAN GENE, S., AND JOHN, E. RANDALL 1973.
Palauan fish names. *Pacific Science*, 27 (2): 136-153.
The general palauan name of leiognathid fishes is *deluai*. *Keyam* is also the name for the monodactylids and a species of nut-bearing tree. *Gazza minuta* (Bloch) - *Deluai*, *Leiognathus equulus* - *Keyam*.
606. HERALD, S. E. 1961.
Living Fish of the World. Hanish Hamilton, London, 304 pp.

- Describes Leiognathidae and bioluminescence in different species of this family.
607. HERALD, S. E. 1970.
In: *Knaurs Tierreich in Farben*. Droemer Knaur, Munchen Zurich, p. 157.
German name for slipmouths: *Schlupfmauler*.
608. HERRE, A. W. C. T. 1927.
The fisheries of Lake Bombon and Lake Naujan. *Phillip. J. Sci.*, 34: 287-306.
p. 296. *L. caballus*.
609. HERRE, A. W. C. T. 1931.
A checklist of fishes recorded from the Solomon Islands. *J. Pan-Pac. Res. Inst.*, 6 (4): 4-9.
Lists *G. equulaeformis*.
610. HERRE, A. W. C. T. 1931.
A checklist of fishes recorded from the New Hebrides. *J. Pan-Pac. Res. Inst.*, 6 (4): 11-14.
Lists *L. fasciatus* and *G. minuta*
611. HERRE, A. W. C. T. 1932.
A checklist of fishes recorded from Tahiti. *J. Pan-Pac. Res. Inst.*, 7 (1): 2-11.
Lists *L. equula*, *L. dussumieri*, *L. fasciatus*, *S. insidiator* and *G. minuta*.
612. HERRE, A. W. C. T. 1932.
Fishes from Kwantung Province and Hainan Island, China. *Lingnan Sci. U., (Canton)*, 11 (3): 423-443.
Records *S. ruconius* from the market of Tan Shaan and from Hainan.
613. HERRE, A. W. C. T. 1933.
A checklist of fishes from Dumaguete, Oriental Negros, P. I. and its immediate vicinity. *J. Pan-Pac. Res. Inst.*, 8 (4): 6-11.
Lists *L. equulus*, *S. insidiator*, *L. leuciscus*, *L. splendens* and *G. minuta*.
614. HERRE, A. W. C. T. 1933.
A checklist of fishes from Sandakan, British North Borneo. *J. Pan-Pac. Res. Inst.*, 8 (4): 2-5.
Lists *G. minuta*, *L. blochii*, *L. equulus*, *S. ruconius* and *L. splendens*.
615. HERRE, A. W. C. T. 1934.
Hong Kong fishes collected in October-December. *Hong Kong Nat. Suppl.*, 3: 26-36.
p. 29. *L. insidiatrix*.

616. HERRE, A. W. C. T. 1934.
 Notes on the fishes in the Zoological Museum of Stanford University. I. The fishes of the Herre Philippine Expedition of 1931. Privately published by the author. The Newspaper Enterprise Ltd., Hong Kong.
 p. 36 lists *L. bindus*, *L. equulus*, *L. fasciatus*, *L. leuciscus*, *L. ruconius*, *L. splendens*, *L. stercorarius*, *G. achlamys* and *G. minuta*.
617. HERRE, A. W. C. T. 1936.
 A checklist of fishes of the Pelew Islands. *J. Pan-Pac. Res. Inst.*, 10 (2): 163-166.
 p. 164 lists *L. equulus* from Palau.
618. HERRE, A. W. C. T. 1936.
 Fishes of the Crane Pacific Expedition. *Field Mus. Nat. Hist. Zool. Ser.*, No. 21 (353), p. 1-472.
 p. 118 lists *L. dussumieri* from Mbureta River, Ovalau and p. 118 lists *L. fasciatus* from Bushman Bay, Malekula.
619. HERRE, A. W. C. T. 1936.
 Notes on fishes in the Zoological Museum of Stanford University. V. New or rare Philippine fishes from the Herre Philippine Expedition 1933. *Philipp. J. Sci.*, 59 (3): 357-373.
 Lists *L. brevirostris* (Manila Bay) and *L. lineolatus* (Iloilo).
620. HERRE, A. W. C. T. 1939.
 On a collection of fishes from Nanyo, the Japanese mandated islands. *Annot. Zool. Jap.*, 18 (4): 298-307.
 p. 301 lists *L. equulus* and *L. fasciatus* from Gorrer (= Korrer).
621. HERRE, A. W. C. T. 1939.
 On a collection of littoral and freshwater fishes from Andaman Islands. *Rec. Indian Mus.*, 41 (4): 327-372.
 p. 328 lists 18 specimens of *Leiognathus equulus* (66 to 95 mm in length) taken from Phoenix Bay and five (84 to 88 mm length) from the Lime Kilu Jetty, Mount Harriot, Port Blair, southern Andaman.
622. HERRE, A. W. C. T. 1940.
 On a small collection of fish from the Mergui Archipelago. *Rec. Indian Mus.*, 42 (1): 9-14.
 p. 13 lists *Leiognathus equulus*, *L. insidiator* and *L. splendens*.
623. HERRE, A. W. C. T. 1940.
 On a collection of littoral and freshwater fishes from the Andaman Islands. *Supplement Rec. Indian Mus.*, 42: 1-8.

- Size of *Gazza minuta*, *Leiognathus fasciatus* and *L. splendens* collected from Viper Island is given on p. 4.
624. HERRE, A. W. C. T. 1940.
 On a third collection of fish from Maungmagan Tavoy District, Lower Burma. *Rec. Indian Mus.*, **41**: 111-116.
 Number of specimens, size range and lateral line scale range of *Leiognathus brevirostris*, *L. equulus*, *L. insidiator*, *L. splendens* and *Gazza minuta* are given on p. 112.
625. HERRE, A. W. C. T. 1941.
 A list of the fishes known from the Andaman Islands. *Mem. Indian Mus.*, **13** (3): 331-403.
 p. 352-353 list *Gazza minuta*, *Leiognathus daura*, *L. dussumieri*, *L. equulus*, *L. fasciatus*, *L. splendens* and *Equula rivulata*.
626. HERRE, A. W. C. T. 1945.
 Additions to the fish fauna of the Philippine Islands. *Copeia.*, **3**: 146-149.
L. berbis included.
627. HERRE, A. W. C. T. 1953.
 Checklist of Philippine fishes. U.S. Fish. Wildl. Serv. Res. Rep., No. 20, 977 pp.
 pp. 189-195 list 18 leiognathid species, with synonymy.
628. HERRE, A. W. C. T. 1958.
 Marine fishes in Philippine rivers and lakes. *Philipp. J. Sci.*, **87** (1): 65-88.
 p. 79 lists *Leiognathus dussumieri*, *L. equulus* and *L. splendens* among the fishes recorded from fresh waters of the Philippines which return to the sea or brackishwaters to spawn. Lists *L. insidiator* and *L. ruconius* from Lake Naujan.
629. HERRE, A. W. C. T. AND J. MENDOZA 1929.
 Bangos culture in the Philippine Islands. *Philipp. J. Sci.*, **38** (4): 451-509.
 Reports *L. caballa*, *L. fasciatus* and *L. splendens* from Philippine milkfish ponds.
630. HERRE, A. W. C. T. AND G. S. MYERS 1931.
 Fishes from southeastern China and Hainan. *Lingnan Sci. J. (Canton)*, **10** (2/3): 233-254.
L. interruptus is reported on p. 250.
631. HERRE, A. W. C. T. AND G. S. MYERS 1937.
 A contribution to the ichthyology of the Malay Penninsula. *Bull. Raffles Mus.*, Singapore, **13**: 5-75.

- pp. 22-23. *L. blochi*, *L. daura*, *L. dussumieri*, *L. equula*, *L. ruconius*, *L. splendens*, *L. stercorarius* (distinguished from *L. elongatus*) and *G. minuta* are given.
632. HERRE, A. W. AND A. F. UMALI 1948.
 English and local names of Philippine fishes. *U.S. Fish. Wildl. Serv. Circ.*, No. 14, 128 pp.
 English and Philippine names of leiognathids are given.
633. HERRING, P. J. (ED.) 1978.
Bioluminescence in action. Academic Press, N.Y., 570 pp.
 Includes a review of leiognathid bioluminescence.
634. HERRING, P. J. 1978.
 A classification of luminous organisms. In: *Bioluminescence in action*. P. J. Herring (Ed.), p. 461-476. Academic Press, N.Y.
 Leiognathids are included.
635. HERRING, P. J. 1983.
 The spectral characteristics of luminous marine organisms. *Proc. R. Soc. Lond., B.* 220: 183-217.
 Luminescent system in leiognathids is described.
636. HERRING, P. J. AND J. G. MORIN 1978.
 Bioluminescence in fishes. In: *Bioluminescence in Action*. P. J. Herring (Ed.), p. 273-329. Academic Press, N.Y.
 Reviews leiognathid bioluminescence.
637. HEWITT, R. E., L. W. WORD, E. F. HASKINS AND C. P. HASKINS 1963.
 Electrophoretic analysis of muscle proteins in several groups of poeciliid fishes especially the genus *Molliensia*. *Copeia*, 2: 296-303.
 p. 296 refers Viswanathan and Krishna Pillai (1956) about the tissue of *Leiognathus* and other fishes they worked.
638. HILDA, T. S. AND W. T. PEREYRA 1964.
 Results of bottom trawling in the Indian seas by R/V *Anton Bruun* in 1963. *Proc. Indo-Pacific Fish. Counc.*, 11 (3): 156-171.
 Catch data for Leiognathidae are given.
639. HONMA, Y. 1952.
 A list of the fishes collected in the Province of Echigo, including Sado Island. *Jap. J. Ichthyol.*, 11 (3): 138-145.
 Occurrence of *Leiognathus rivulatus* is reported.

640. HORA, S. L. 1923.
Fauna of the Chilka Lake. Fish. Part V. *Mem. Indian Mus.*, 5: 739-769.
L. equula is reported from Chilka Lake.
641. HORA, S. L. 1924.
Zoological results of a tour in the Far East. Fish of the Tale Sap, Penninsular Siam. pt. I-II. *Mem. Asiat. Soc. Beng. Calcutta*, 6: 461-476, 477-501.
Leiognathus equulus is mentioned on p. 485-500.
642. HORA, S. L. 1951.
Problems of marine fisheries in India and how to tackle them. *J. Sci. Club, Calcutta*, 5 (2): 9-18.
Leiognathus is mentioned on p. 13 and 14.
643. HORA, S. L. AND D. D. MUKHERJI 1936.
On two collections of fish from Maungmagan, Tavoy District. Lower Burma. *Rec. Indian Mus.*, 38: 15-40.
p. 19. *Leiognathus insidiator* collected at Maungamagan in October, 1933 and p. 20. *Leiognathus blochi* (Cuv. & Val.) and *Leiognathus insidiatrix* (Bloch) in 1935 are reported.
644. HORA, S. L. AND D. D. MUKHERJI 1938.
Table for the identification of Indian fishes, with description of certain families and observations on the relative utility of the probably larvivorous fishes of India. *Health Bulletin, Delhi*, 12: 1-47.
Leiognathidae is mentioned on p. 17.
645. HORNELL, J. 1910.
Report on the results of a fishery cruise along the Malabar coast and the Laccdive Islands in 1908. Madras fishery investigations 1908. *Bull No. 4 Madras Fisheries Bureau*, 126 pp.
Occurrence of *Equula* among other fishes off south west of Ponnani is recorded on p. 29.
646. HORNELL, J. 1917.
A statistical analysis of the fishing industry of Tuticorin (South India). *Administrative Report*, No. 3. Madras Fisheries Department.
Vernacular, scientific, English and family names of *Equula* and *Gazza* are given on p. 91.
647. HORNELL, J. 1927.
Administration report of the Department of Fisheries for the year ending 30th June, 1923. Report No. 1 of 1924. *Madras Fish. Bull.*, 18, 12 pp.

- Reports that leiognathids are given as a tonic to sick livestock, e. g. elephants.
648. HOUTTUYN, M. 1764.
 Naturrlyke Historie volgens den Heer Linnaeus. *Met. naauwkeurige afbeeldingen*. 3 vols, Amsterdam.
 Original description of *L. argenteus*.
649. HUSSAIN, A. G. 1969.
 Country Report: Pakistan. In: *Proceedings of the International Seminar on Possibilities and Problems of Fisheries Development in Southeast Asia*, Berlin, September, 1968, p. 236-260.
 Catch data includes *Leiognathus*.
650. HUTOMO, M. 1971.
 Notes on the fishes of Ambon. In: *Preliminary Report on Ambon Survey 1970*, p. 23-31. Inst. Mar. Res., Natl. Inst. Oceanol., Indones. Inst. Sci.
 p. 27. *Leiognathus insidiator*, local name included.
651. HUTOMO, M. 1975.
 Identification of our marine fishes. IV. The slipmouths. *Lembaga Oseanol. Nas. Pewarta Oseana*, 2 (4): 1-6. (In Indonesian).
 Description and figures for 11 species of silverbelly are included.
652. HUTOMO, M. AND A. MARTOSEWOJO 1977.
 The fish of the seagrass community on the west side of Burung Island (Pari Islands, Seribu Islands) and their variation in abundance. *Penelit. Laut. Indones., Mar. Res. Indones.*, 17: 1-6.
 Lists *L. fasciatus* as ranking 18th. Studied the relative abundance. Occurred in June only, with 21 specimens ranging from 3.2 to 7.5 cm LS.
653. INTENGAN, C. L., L. G. ALEJO, I. CONCEPTION, V. A. CORPUS, R. D. SALUD, I. DEL ROSARIO, R. GOMEZ AND J. HENSON 1956.
 Composition of Philippine foods. *Philipp. J. Sci.*, 85: 20-213.
 Iron, niacin, riboflavin and thiamine content of *L. daura* and *L. equulus* are reported.
654. IPFC/FAO 1974.
 Proposed area statistical lists of aquatic animals and plants. Area 51, 57, 71 (Western Indian, Eastern Indian, Western Central Pacific). *IPFC/FAO/74/11, Appendix XVI*, 16 pp. FAO, Thailand.
Leiognathus spp. and *Gazza* sp. are given. "Slip-mouths" as official FAO common name.

655. IPFC/IOFC 1975.
 Joint working party of experts on Indian Ocean and Western Pacific Fishery Statistics, Jakarta, Indonesia, 25-30 October, 1975. FAO, Rome.
 Western Indian Ocean: ponyfishes, *Leiognathus* spp., *Gazza* sp. and Eastern Indian Ocean: slipmouth *Leiognathus* sp. are given on p. 45.
656. ISARANKURA, A. P. 1971.
 Assessment of stocks of demersal fish off the west coasts of Thailand and Malaysia. IOFC/DEV/71/20 pp. *Indian Ocean Fish. Comm.* FAO, Rome.
 Mentions *Leiognathus* among the "good" fish. Gives catch data.
657. ISARANKURA, A. P. 1971.
 Present status of trawl fisheries resources in the Gulf of Thailand and the management program. In: *Annual Report 1971*, p. 15-27. Demersal Fisheries Investigation Unit, Division of Research and Investigation, Department of Fisheries, Bangkok.
 Lists *Leiognathus* spp. among those groups whose biology was to be studied.
658. ISARANKURA, A. P. 1971.
 Present status of trawl fisheries resources in the Gulf of Thailand and the management program. *Proc. Indo-Pacific Fish. Council.*, 14 (2): 105-114.
 Listed *Leiognathus* spp. among those groups whose biology was to be studied.
659. ISARANKURA, A. P. 1976.
 Conventional and unconventional fisheries resources in Southeast Asia. In: *Proceedings of the International Seminar on Fisheries Resources and Their Management in Southeast Asia*. K. Tiews (Ed.), p. 95-119. Berlin (West), 19 November - 6 December, 1974. Westkruetz-Druckerei, Berlin.
 Mentions *Leiognathus* spp. among the groups commonly caught.
660. ISARANKURA, A. P. AND G. KUHLMORGEN HILLE 1966.
 Demersal fish resources investigations in the Gulf of Thailand. *Proc. Indo-Pacific Fish. Council.*, 12 (2): 162-171.
 Mentions *Leiognathus* sp.
661. ISARANKURA, A. P. AND G. KUHLMORGEN HILLE 1966.
 Demersal fish resources investigations in the Gulf of Thailand. *Proc. Indo-Pacific Fish. Council.*, 12 (2): 162-171.
 Mentioned that *Leiognathus* sp. is being investigated by the Thai Demersal Fish Investigation Units.

662. ISMAIL, P. K., P. MADHAVAN AND V. K. PILLAI 1968.
 Studies on the preparation of fish protein concentrate. *Fish. Technol.*, 5 (1): 53-59.
 Silverbelly (*Leiognathus* sp.) among fishes collected for experimental work from the catches of trawlers operated off Cochin.
663. JACOB, P. K. 1948.
 Sciaenids of the west coast of Madras province. *J. Bombay Nat. Hist. Soc.*, 48 (1): 118-124.
Leiognathus sp. among miscellaneous fish caught.
664. JACOB, P. K. 1948.
 The bionomics of Ribbon fishes (*Trichiurus* spp.) and their fishery on the west coast of Madras province. *J. Bombay Nat. Hist. Soc.*, 48 (2): 261-264.
 Silverbellies (*Leiognathus* spp.) along with ribbon fishes were recorded in the catch.
665. JACOB, T., K. BALAN AND M. SRINATH 1983.
 Marine fish trend at major mechanised centres. National Marine Living Resources Data Centre. C.M.F.R.I., Cochin. *Marine Fishtrend*, 1 (1): 3-4.
 Landings of silverbellies at Mandapam, Rameswaram and Madras are given.
666. JACOB, T., K. BALAN AND M. SRINATH 1983.
 Marine fish trend at major mechanised centres. National Marine Living Resources Data Centre. C.M.F.R.I., Cochin. *Marine Fishtrend*, 1 (2): 3-4.
 Landings of silverbellies at Mandapam, Rameswaram and Madras are given.
667. JACOB, T., K. BALAN AND M. SRINATH 1983.
 Marine fishtrend at major mechanised centres. National Marine Living Resources Data Centre. C.M.F.R.I., Cochin. *Marine Fishtrend*, 1 (3): 3-4.
 Mechanised boat (bottom trawl) landings of silverbelly at Mandapam, Rameswaram, Madras (Pudumanaikuppam) and Kakinada are given in polygons for the years 1982 and 1983 from January to June.
668. JACOB, T., K. BALAN AND M. SRINATH 1983.
 Marine fishtrend at major mechanised centres. National Marine Living Resources Data Centre. C.M.F.R.I., Cochin. *Marine Fishtrend*, 1 (4): 3-4.
 Mechanised boat (bottom trawl) landings of silverbelly at Mandapam, Rameswaram, Madras (Pudumanaikuppam) and Kakinada are given in polygons for the years 1982-'83 from January to July.

669. JACOB, T., K. BALAN AND M. SRINATH 1983.
 Marine fish trend at major mechanised centres. National Marine Living Resources Data Centre. C.M.F.R.I., Cochin. *Marine Fishtrend*, 1 (5): 3-4, 1 (6): 3-4 and 1 (7): 3-4.
 Landings of silverbellies at Mandapam, Rameswaram and Madras and trends in the landings of silverbellies by bottom trawl at Mandapam, Rameswaram, Madras and Kakinada are shown in polygons for the years 1982-'83 from January to September.
670. JACOB, T., G. VENKATARAMAN, K. ALAGARAJA AND S. K. DHARMA RAJA 1985.
 Manpower and fishing equipment available and the exploited fishery resources in the coastal waters of India. In: *Harvest and Post-harvest Technology of fish*. Ravindran, K., N. U. Nair, P. A. Perigreen, P. Madhavan, A. G. G. Pillai, P. A. Panicker and Mary Thomas (Eds.), p. 31-36. Society of Fisheries Technologists (India), Cochin.
 State-wise average annual catch of *Leiognathus* during 1979-'81 is given.
671. JAIN, M. AND N. K. GUPTA 1979.
 Two new species of the genus *Cleaveius* Subrahmanian, 1927 (Acanthocephala: Micracanthohynchinidae Yamaguti, 1963). *Proc. Indian Acad. Sci.*, 88 B (1): 305-310.
Leiognathus splendens is recorded as host of Acanthocephala parasite *Cleaveius* a new parasite species from Bay of Bengal.
672. JAMES, D. B., P. NAMMALWAR AND P. THIRUMILU 1986.
 Water pollution and fish mortality in Ennore Estuary, Madras. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 69, p. 28-29.
Leiognathus fasciatus (53-90 mm) is included among the dead fishes collected.
673. JAMES, P. S. B. R. 1964.
 Some observations on the fishery of *Chorinemus lysan* Forskal of the Rameswaram Island with notes on its biology. *Indian J. Fish.*, 11 (1): 268-276.
 Stomach contents of two small specimens of *C. lysan* included *Leiognathus* sp.
674. JAMES, P. S. B. R. 1966.
 Notes on the biology of the butterfly ray, *Gymnura poecilura* (Shaw) from the Palk Bay and Gulf of Mannar. *Indian J. Fish.*, 13 (1-2): 150-157.
 A few stomachs showed remains of fish (*Leiognathus* sp).

675. JAMES, P. S. B. R. 1967.
Leiognathus leuciscus (Gunther) and *Leiognathus smithursti* (Ramsay & Ogilby) (Family Leiognathidae: Pisces) - Two new records from the Indian Seas. *J. mar. biol. Ass. India*, 9 (2): 300-302.
 Recorded occurrence of *L. leuciscus* and *L. smithursti* from Mandapam waters.
676. JAMES, P. S. B. R. 1967.
 The Ribbon fishes of the family Trichiuridae of India. *Memoir No. 1*, 228 pp. Mar. Biol. Ass. India.
Leiognathus spp. as food of ribbon fishes.
677. JAMES, P. S. B. R. 1969.
 A new species of silverbelly, *Leiognathus jonesi* (Family Leiognathidae: Pisces) from the Indian seas. *J. mar. biol. Ass. India*, 11 (1 & 2): 316-319.
 Description is given of a new species of silverbelly, *Leiognathus jonesi* collected from the Palk Bay in the vicinity of Mandapam during April, 1968. Differentiated this species from *L. splendens* based on some important characters.
678. JAMES, P. S. B. R. 1971.
 On the occurrence of a blue-green alga on fishes of the family Leiognathidae. *J. mar. biol. Ass. India*, 13 (1): 133-135.
 Occurrence and association of the blue-green alga, chroococcaceae on the fishes of the family Leiognathidae, especially on *Leiognathus dussumieri*, *L. brevirostris*, *L. splendens*, *L. lineolatus* and *L. berbis* from the Palk Bay and the Gulf of Mannar are reported.
679. JAMES, P. S. B. R. 1972.
 Distribution pattern of marine fishery resources of India. *Biologica*, 5: 33-40.
 The important regions for the availability of silverbellies and exploitation are given. A total of 17 species belonging to three genera, *Leiognathus*, *Secutor* and *Gazza* constitute this group. At most of the place, a few species occur together and contribute to the catches which are significant in the states of Tamil Nadu and Kerala. They are of minor importance in other regions, though they occur almost throughout the Indian coast.
680. JAMES, P. S. B. R. 1973.
 Present status of our knowledge of the biology of commercially important marine fishes of India. Abstract, p. 11-12. *Symposium on Problems and Prospects in Indian Fisheries in the Next Decade*. The Indian Academy of Sciences, 39th Annual Meeting, University of Agricultural Sciences, College of Fisheries, Mangalore.
 Mentions silverbellies as important marine fishes of India.

681. JAMES, P. S. B. R. 1973.

The fishery potential of silverbellies. In : *The Proceedings Symposium on Living Resources of the Seas around India*. Spl. Publ., p. 439-444. Cent. Mar. Fish. Res. Inst., Cochin.

As many as 17 species are now known to be available in the seas around India, but from the fishery point of view, seven species, viz. *Leiognathus jonesi*, *L. splendens*, *L. bindus*, *L. dussumieri*, *L. equulus*, *Secutor insidiator*, and *Gazza minuta* seem to be important, of which *L. splendens* is widely distributed along the Indian coasts. As most of the species are small and appear to be short-lived, and since the present method of exploitation leaves enough brood for replenishing the stocks, it is desirable to catch fish of all sizes for the best utilization of the resource.

682. JAMES, P. S. B. R. 1973.

Sharks, rays and skates as potential fishery resources off the east coast of India. In: *Proc. Symp. on Living Resources of the Seas around India*. Spl. Publ., p. 483-494. Cent. Mar. Fish. Res. Inst., Cochin.

Carcharhinus melanopterus was found feeding on silverbellies.

683. JAMES, P. S. B. R. 1975.

A systematic review of the fishes of the family Leiognathidae. *J. mar. biol. Ass. India*, 17 (1): 138-172.

The revision collates earlier literature, supplementing with original data based on examination of fresh material of 18 species of the three genera, *Leiognathus* Lacepede, *Secutor* Gistel and *Gazza* Ruppell from the seas around India and re-examination of types of some species.

684. JAMES, P. S. B. R. 1981.

Exploited and potential capture fishery resource in the inshore waters of India. Proceedings of the Seminar on the role of small-scale fisheries and coastal aquaculture in integrated rural development. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 30 A, p. 72-82.

Small coastal water fishes belonging to the three genera, *Leiognathus*, *Secutor* and *Gazza* occurred together and contributed to major commercial catches in the states of Tamil Nadu, Andhra Pradesh and Kerala. Heavy landings were obtained along the south-east coast around Mandapam. Peak catches were obtained in the third quarter in Tamil Nadu and Kerala and in the first and second quarters in Andhra Pradesh. Average annual landings of silverbellies (*Leiognathus* and *Gazza*) for 1961-'65 and 1966-'76 were 21,523 and 41,978 t respectively. Average annual landings of silverbellies for various states during the period 1962-'74 are given.

685. JAMES, P. S. B. R. 1984.

A review of marine fin fish culture in India - its problems and prospects. *Proc. Symp. Coastal Aquaculture*, 3: p. 718-731.

p. 724. The data indicate that the seed of *Leiognathus brevirostris* occurs among other species at Mandapam.

686. JAMES, P. S. B. R. 1984.

Leiognathidae. *FAO Species Identification Sheets for Fishery Purposes. Western Indian Ocean (Fishing Area 51)* FAO. Fischer, W. and G. Bianchi (Eds.), Vol. II.

Lists and describes *Leiognathus berbis*, *L. bindus*, *L. blochii*, *L. brevirostris*, *L. daura*, *L. dussumieri*, *L. elongatus*, *L. equulus*, *L. fasciatus*, *L. leuciscus*, *L. lineolatus*, *L. smithursti*, *L. splendens*, *Secutor insidiator*, *S. ruconius*, *Gazza achlamys* and *G. minuta* with figures.

687. JAMES, P. S. B. R. 1984.

Marine fish and fisheries of India - an over view. *Farmers' Digest*. G. B. Pant Agricultural University, 1984.

Silverbellies formed by the genera *Leiognathus*, *Secutor* and *Gazza* are found all along Indian coasts and constitute about 50,000 tonnes per year. Sizeable resources of this group have been discovered in Palk Bay region recently. The catches are mostly composed of under and one year old fish. A small portion of the catches is consumed fresh and the rest is cured. These form raw materials for fish meal, fish protein concentrate etc.

688. JAMES, P. S. B. R. 1985.

Comparative osteology of the fishes of the family Leiognathidae. Part I & II. Osteology. Relationship among the genera and the species. *Indian J. Fish.*, 32 (3): 309-358 and 32 (4): 395-416.

The paper deals with the comparative osteology of 17 species of the three genera, *Leiognathus*, *Secutor* and *Gazza*, in the family Leiognathidae. While giving a detailed description of the osteology of *L. jonesi*, representing the genus *Leiognathus*, the osteological features of the other two genera are compared. The distinctive features of the various species are listed. The relationships among the genera and the species are discussed, and osteological keys to the genera and the species are provided.

The results of the study indicate that within the genus *Leiognathus* the species constitute four groups; the first represented by *L. smithursti*, *L. splendens*, *L. jonesi* and *L. dussumieri*; second by *L. fasciatus* and *L. equulus*; third by *L. leuciscus*, *L. berbis* and *L. lineolatus* and the fourth by *L. daura*, *L. blochii* and *L. brevirostris*.

The species *L. bindus* stands apart from all the other species of *Leiognathus* and shows affinity to genus *Secutor* on one hand and genus *Gazza* on the other, and incidentally exhibits certain specialised characters like the upwardly directed protrusible mouth of the former and the development of prominent teeth of the latter. The species of *Secutor* and *Gazza* remain distinct within the respective genera and from species of the genus *Leiognathus*.

689. JAMES, P. S. B. R. 1986.
 Biology and fishery of *Leiognathus jonesi* James from the Palk Bay and Gulf of Mannar. In: *Recent Advances in Marine Biology*, being Dr. S. Jones 70th Birthday Commemoration Volume. James, P. S. B. R. (Ed.), p. 29-101. Today and Tomorrows Publishers, New Delhi.
- This paper deals with various aspects of the biology and fishery of silverbelly, *Leiognathus jonesi*. The length-weight relationship, relative condition of female, spawning periodicity, spawning season, fecundity-length relationship, most important items of food, feeding habits, age and growth and fishery importance of this species are discussed in detail.
690. JAMES, P. S. B. R. 1986.
 History, growth and achievements of C.M.F.R.I. In: *Souvenir Issued on the Occasion of the Inauguration of the Permanent Building for the Headquarters of C. M. F. R. I., Cochin*. March 1, 1986, p. 37-81.
- In the case of silverbellies at Kakinada, studies on *Secutor insidiator* have indicated that though, theoretically, increased catches can result from a reduction in age at capture, this is not advisable, as the present age is near the age of maturity and a reduction of fishery size would result in the removal of spawners and so adversely affect the stock.
691. JAMES, P. S. B. R. AND C. ADOLPH 1965.
 Observations on trawl fishing in the Palk Bay and Gulf of Mannar in the vicinity of Mandapam. *Indian J. Fish.*, 12 (2): 530-545.
- Silverbellies dominate the catches as a single category both in the Gulf of Mannar and in the Palk Bay. The catch rate in the two regions does not seem to be much different while the catches of silverbellies in the Gulf of Mannar are contributed by a number of species together, none of them being significantly more abundant than the others. The catches in the Palk Bay are dominated by a single species of *Leiognathus* the contribution by all the other species together being less than 10% of the total. Nine species of silverbellies contributed to the fishery. Two other species of silverbellies viz. *L. fasciatus* and *L. equulus* are caught occasionally.
692. JAMES, P. S. B. R. AND M. BADRUDEEN 1968.
 On certain anomalies in the fishes of the family Leiognathidae. *J. mar. biol. Ass. India.*, 10 (1): 107-113.
- Anomalies in body profile, fins, eye and colour of seven species: *Leiognathus dussumieri*, *L. brevirostris*, *L. bindus*, *L. fasciatus*, *L. lecuiscus* and *L. lineolatus* are briefly described. Most of them especially those related to body profile and fins, appeared to be resultant of injuries. The significant anomalies reported in the present study are the unusually elongate first dorsal spine of *L. fasciatus*, the defect in the eye of *L. dussumieri*, the absence of first anal spine in *L. bindus* and the complete absence of ventral fins along with the pelvic girdles in *L. lineolatus*.

693. JAMES, P. S. B. R. AND M. BADRUDEEN 1975.

Biology and fishery of *Leiognathus brevirostris* (Valenciennes) from the Palk Bay and the Gulf of Mannar. *Indian J. mar. Sci.*, 4: 50-59.

Age and growth, reproduction, food and feeding habits and fishery of *L. brevirostris* from the Palk Bay and the Gulf of Mannar are described based on material collected from commercial catches landed by different fishing gear during 1969. Life span of the species is about 2 years, attaining a size of about 60 and 120 mm at the end of 1st and 2nd year respectively. Female fish matures at about 63 mm and the male at 68 mm when they are just about 1 year old. Female produces a maximum number of 16,243 eggs. The species spawns throughout the year with intense spawning in May/June and October/November. Individual fish appears to spawn twice in a year. Diatoms, copepods, *Lucifer*, nematodes and polychaetes form important food of the species. The commercial fishery is based on 1 and under 2 year old fish, the dominant size range being 61-105 mm. Fishing depths are upto 12 m in the Palk Bay and 25 m in the Gulf of Mannar. Females appear to be caught in greater numbers than males. Since the species is short lived and breeds at the end of 1st year, the present methods of exploitation appear to leave enough brood for replenishment of the stock and ensure maximum utilization of the resource.

694. JAMES, P. S. B. R. AND M. BADRUDEEN 1981.

Biology and fishery of silverbelly *Leiognathus dussumieri* (Valenciennes) from Gulf of Mannar. *Indian J. Fish.*, 28 (1 & 2): 154-182.

Length-weight relationship of male and female *L. dussumieri* was found to be different. Within females, the immature, maturing, mature and spent-recovering females differ from one another in the length-weight relationship. Males weigh comparatively less than females. Among the females, immature, maturing and spent-recovering females weigh more than mature females. This species mainly spawns during April-May and November-December. Minimum size of maturity for males was found to be 78 mm and for females 83 mm. Generally, females predominate over males in the commercial catches. The counts of mature ova ranged from 805 to 41,683 per female. The fecundity-length relationship has been studied by three different formulae and it was found that the fecundity is better related to direct cube of length.

The most important items of food of the species included polychaetes, copepods, amphipods, bivalves, gastropods and forminiferans. No significant variations in the food of fish from different places in different seasons have been found. The feeding habits of this fish also do not change with age. The fish was found to feed more actively in the month of January, February, April and November at Kilakarai. The fish attains the length of 99 mm at the end of first year, 114 mm at end of second year, 128 mm at the end of third year, 138 mm at the end of fourth year and 145 mm at the end of fifth year. The life span of the species was found to be five years. The maximum length recorded in the present study was 161 mm.

695. JAMES, P. S. B. R. AND M. BADRUDEEN 1986.
 Studies on the maturation and spawning of the fishes of the family Leiognathidae from the seas around India. *Indian J. Fish.*, 33 (1): 1-26.
 The paper deals with the maturation, spawning habits, spawning seasons and fecundity of 17 species of leiognathids from the seas around India. Most of the species appear to spawn over a prolonged period (*L. fasciatus*, *L. jonesi*, *L. bindus*, *L. daura*, *L. leuciscus*, *L. blochii*, *L. brevisrostris*, *L. berbis*, *L. lineolatus*, *S. ruconius*, *S. insidiator*, *G. minuta* and *G. achlamys*), a few spawn twice in a year for a short time in two distinct periods. Four species *L. fasciatus*, *L. bindus*, *L. daura* and *L. berbis* spawn fractionally. Except for *L. brevisrostris*, which spawns almost throughout the year, others spawn mostly during March-April and November-December periods.
 Fecundity was found to increase with length at a higher rate in *G. minuta*, *L. bindus* and *S. insidiator*; at a lower rate in *L. berbis*, *L. brevisrostris*, *L. daura*, and *S. ruconius*. But it was found to decrease with length in *L. leuciscus* and *L. splendens*. The pooled equation was found to be $Y = 0.00745 X^{3.020}$ indicating that in leiognathids fecundity on length is a cubic relationship.
696. JAMES, P. S. B. R., T. R. CHANDRASEKHARA GUPTA AND S. L. SHANBHOGUE 1978.
 Some aspects of the biology of the ribbonfish *Trichiurus lepturus* Linnaeus. *J. mar. biol. Ass. India*, 20 (1 & 2): 120-137.
Leiognathus binds is reported in the stomach during January and May in 1970 and *Leiognathus* sp. during March, November and December, 1978 and April and May, 1971.
697. JAMES, P. S. B. R., K. C. GEORGE AND N. GOPALAKRISHNA PILLAI 1989.
 Research in marine fisheries management and development - capture and culture fisheries. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 44 (Part I), p. 287-296.
 Detailed investigations on individual fish species of groups of silverbelly are made in addition to charting out of the productive fishing ground.
698. JAMES, P. S. B. R., K. V. RAJAGOPAL AND M. M. JOSEPH 1978.
 List of fishes of Karnataka. *UAS Tech. Series*, No., 18, p. 1-50.
 Common and local names of Leiognathidae are given on p. 31.
699. JAMES, P. S. B. R., V. S. RENGASWAMY, A. RAJU AND G. MOHANRAJ 1984.
 Studies on diurnal variations in the occurrence of grey mullet seed at Mandapam. *Proc. Symp. Coastal Aquaculture*, 3, p. 765-775.
Leiognathus brevisrostris was found to occur along with mullets.
700. JAMES, P. S. B. R., S. L. SHANBHOGUE AND T. R. CHANDRASEKHARA GUPTA 1974.
 Biology and fishery of *Lactarius lactarius* (Schneider) off Mangalore. *Indian J. mar. Sci.*, 3: 72-79.

Leiognathus sp. and *Leiognathus bindus* were recorded from the food in certain months.

701. JAMES, P. S. B. R., S. L. SHANBHOGUE AND T. R. CHANDRASEKHARA GUPTA 1975.

Estuarine fisheries resources of South Kanara District, Karnataka. In: *Recent Researches in Estuarine Biology*. R. Natarajan (Ed.), p. 99-104. Hindustan Publishing Corporation, Delhi.

The fish catches in the estuaries consisted of *Leiognathus brevisrostris* and *L. daura* among others.

702. JAMES, P. S. B. R., K. A. NARASHIMHAM, P. T. MEENAKSHISUNDARAM AND Y. APPANNA SASTRY 1986.

Present status of ribbon fish fishery in India. *CMFRI Special Publ.*, No. 24, p. 1-49.

p. 6. *Leiognathidae* as food of ribbon fishes.

703. JAMES, P. S. B. R., T. JACOB, K. C. GEORGE, V. NARAYANA PILLAI, K. J. MATHEW AND M. S. RAJAGOPALAN 1989.

National strategy for exploitation and utilisation of the potential marine fishery resources of India - a projection. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 44 (Part 1), p. 111-136.

Average and region-wise landing of silverbelly for 1983 to 1985 with percentage of occurrence are presented. Estimated potential yield and expected additional catch for one year period are also reported.

703. a. JAMES, P. S. B. R. 1990.

A new species of silverbelly *Leiognathus striatus* (Family *Leiognathidae* : *Pisces*) from the Gulf of Mannar, India and redescription of *Leiognathus fasciatus* (Lacepede). *J. mar. biol. Ass. India*, 32 (1 & 2) : 217-226.

A new species of silverbelly *Leiognathus striatus* from the Gulf of Mannar is described and compared with *L. fasciatus* and *L. smithursti*. A redescription of *L. fasciatus* is also given.

704. JAYABALAN, N. 1980.

Studies on silverbellies (*Pisces*: *Leiognathidae*) and their associated bioluminescent bacteria of Porto Novo waters. *Ph.D. Thesis*. Annamalai University, India.

This thesis deals with fishery, morphology, morphometrics, meristics, light organ and species composition of 14 species trawled during 1975-'77. Reproductive biology, food and feeding habits, age and growth, length-weight relationship and relative condition of *L. splendens*, *S. insidiator* and *G. minuta* are reported for the period 1976-'78 with proximate composition of 10 species of silverbelly. *Leiognathus* sp., *L. dussumieri* and *L. berbis* were

found to possess 'common type' and *L. bindus* sexual dimorphic luminescent system. *Photobacterium leiognathi* a symbiotic bacterial species was isolated.

705. JAYABALAN, N. 1985.

A new species of silverbelly, *Gazza shettyi* (Pisces: Leiognathidae) from the Bay of Bengal. *Matsya*, 11: 42-45.

A new species of silverbelly, *Gazza shettyi* is reported from the Bay of Bengal off Porto Novo (Lat. 11°29'N, Long 79° 46'E). With the inclusion of *G. shettyi*, there are now three species under the genus *Gazza*.

706. JAYABALAN, N. 1986.

Reproductive biology of silverbelly *Leiognathus splendens* (Cuvier) at Porto Novo. *Indian J. Fish.*, 33 (2): 171-179.

Leiognathus splendens spawns throughout the year along the Porto Novo coast with two peaks, during Oct-Dec/Jan. and during Apr.-May. Individual fish appears to spawn twice a year for a short duration. High gonado-somatic indices correspond well with the peak spawning months, and females always have higher values. The relative condition factor does not indicate any relation with the reproductive cycle. Females mature between 76 and 111 mm total length whereas males mature between 81 and 111 mm. Sex ratio shows general preponderance of males and chi-square test indicates significant difference between years. Fecundity, varying between 7,099 and 21,507 appears to increase with length of fish.

707. JAYABALAN, N. 1986.

Luminescent system in the ponyfish *Leiognathus bindus* (Val.) *Curr. Sci.*, 55: 468-469.

Study of anatomical details of luminescent system in *L. bindus* revealed the presence of sexually dimorphic luminescent system. The light organ is situated at the distal end of the oesophagus and completely encircles it as a short ring made of several layers of tissues. The size and morphology of the organ differ greatly between the two sexes exhibiting sexual dimorphism. The light organ is relatively larger in male than in female of the same length. The light organ of the female resembles that of male in its features on the dorsal side. The pattern and extent of sex specific luminescence of *L. bindus* may help to recognize the sex of the possessor and attract the opposite sex for mating.

708. JAYABALAN, N. 1988.

Reproductive biology of the ponyfish, *Gazza minuta* (Bloch) from Porto Novo, east coast of India. *Indian J. mar. Sci.*, 17 (1): 51-54.

Population of *G. minuta* spawns during July-January and individual fish spawns once for a shorter duration. Higher gonado-somatic indices

recorded during July-December correspond well with spawning season and females always register higher values than males. The values of relative condition factor during different months indicate that they are not influenced by reproductive cycle. Males mature between 81 and 116 mm of total length (TL) and females between 91 and 121 mm TL. Sex-ratio shows the general preponderance of females over males. Fecundity ranges from 11,645 to 26,735 ova indicating an increase in relation to length and weight of the fish.

709. JAYABALAN, N. 1989.

Comparative morphology of light organ systems in ponyfish (Leiognathidae). *Indian J. Fish.*, 36 (4): 315-321.

Light organ systems in 11 species of leiognathids belonging to the genera *Secutor*, *Gazza* and *Leiognathus* are described with figures. Light organ is donut shaped and encircles the distal end of the oesophagus of the fish partially or fully. Morphology of the light organ exhibits species specificity and therefore would serve as a dependable taxonomic character in speciation.

710. JAYABALAN, N. AND P. DEVADOSS 1980.

Catches of mechanised boats at Madras in 1971-'72. *Indian J. Fish.*, 27 (1 & 2): 95-101.

Some of the common species in the fishery were *Secutor insidiator*, *S. ruconius*, *Leiognathus splendens*, *L. equulus*, *L. dussumieri*, *L. bindus*, *Leiognathus* sp. and *Gazza minuta*. They occurred in all the years with peak during January to March and September to November. This group was estimated as 6.4% in mechanised catches for the entire period. 1971 registered a catch of 159 tonnes with 10.5 kg/boat while it was 104 tonnes with 4.0 kg/boat in 1972. *G. minuta* and *L. equulus* have demand in the market. Silverbellies are eaten in fresh as well as in sun dried condition.

711. JAYABALAN, N. AND K. RAMAMOORTHY 1977.

A reappraisal of the family Leiognathidae (Pisces). *Matsya*, 3: 87.

Records 1 or 2 cleithral projections below the operculum in all 3 genera and body ridge on the head 'Y' or 'V' shaped in *Secutor* and *Gazza* but 'Y' shaped in *Leiognathus*. A synoptic key to the genera of Leiognathidae of Porto Novo is given.

712. JAYABALAN, N. AND K. RAMAMOORTHY 1979.

Significance of ventral luminescence of silverbellies. (Fam. Leiognathidae). *Curr. Sci.*, 48 (4): 181-182.

The catches of silverbellies in bottom trawls were found to vary during day and night. The ventral luminescence of leiognathids appears to be one possible reason for the variation. Data on leiognathid catches by bottom trawls were collected for a period of one year from June, 1976 to May, 1977. The diurnal variations in catches and the average catch per unit effort was

highest in July, 1976 during the day. The highest landings during night for the entire period was in September, 1976. The lowest average catch during the day was in April, 1977 and minimum in May, 1977 during night operations. The day and night variations in the catches of silverbellies seem to support the view of "luminescent camouflage" suggested by Hastings (Hastings suggested that ventral luminescence is used by silverbellies to catch the downwelling ambient light so as to conceal their silhouettes from predators. He believed that the regulation of light and the optical arrangements provided a continuously available but readily variable ventral glow to match the background light. He suggested that at an ambient light intensity higher than that which can be matched by the luminescence, the fish would presumably be driven to the bottom, attempting to move to greater depths. He was also of the view that the silverbellies spend a part of their daily life off the bottom.

713. JAYABALAN, N. AND K. RAMAMOORTHY 1982.

Why do some marine fishes luminesce with the aid of bioluminescent bacteria? *Seafood Export Journal*, 14 (5): 1-3.

All the species of the family leiognathidae grouped under the genera *Leiognathus*, *Secutor* and *Gazza* possess a well developed internal luminescent system. This glandular organ houses the bacteria *P. leiognathi* which are easily grown on artificial media. In leiognathids the luminescence also appears to help in intraspecific communication, to lure or attract potent mate apart from illuminating their surroundings.

714. JAYABALAN, N. AND K. RAMAMOORTHY 1982.

The luminous bacterium, *Beneckea harveyi* in the gut of leiognathid fishes. *Curr. Sci.*, 51 (20): 998-999.

Beneckea harveyi, a species of luminous bacteria, occurs as enteric form in the gut of 6 species of leiognathid fishes, viz. *Gazza minuta*, *G. achlamys*, *Secutor ruconius*, *Leiognathus splendens*, *L. bindus* and *L. dussumieri* in Porto Novo waters.

715. JAYABALAN, N. AND K. RAMAMOORTHY 1984.

A brief note on the proximate composition of silverbellies (Fam: Leiognathidae) of Porto Novo waters. *Indian J. Fish.*, 31 (3): 393-395.

Proximate composition of *Leiognathus splendens*, *L. equulus*, *L. dussumieri*, *L. bindus*, *Leiognathus* sp. *L. berbis*, *Gazza minuta*, *G. achlamys*, *Secutor insidiator* and *S. ruconius* was studied from nutritive point of view. Protein varied between 73.8 and 77.07%. The minimum and maximum values of protein were found in *S. ruconius* and *L. dussumieri* and the carbohydrate varied between 0.75 and 2.06%. *S. insidiator* recorded lowest (2.96%) and *L. splendens* the highest (5.98%) values of fat. The ash content varied between 17.17 and 22.64%. The highest and lowest values were observed in *S. insidiator* and *Leiognathus* sp. respectively. The highest moisture content (77.40%) was recorded in *L. bindus* while the lowest value (73.67%) was in *Gazza minuta*.

716. JAYABALAN, N. AND K. RAMAMOORTHY 1985.
Sexual dimorphism in the ponyfish *Leiognathus bindus* (Val.). *Curr Sci.*, 54 (22): 1191-1192.
717. JAYABALAN, N. AND K. RAMAMOORTHY 1985.
Maturation and spawning of the silverbelly *Secutor insidiator* from Porto Novo coast. *Indian J. mar. Sci.*, 14: 105-109.
Population of *S. insidiator* spawns twice a year from July to November and March to April, while individual fish spawns once a season. High gonadosomatic indices precede spawning season and females always record higher values than males. It appears that the changes in the values of relative condition factor of the fish in various months are not due to reproductive cycle. Males mature between 71 and 101 mm TL while females mature between 76 and 91 mm TL. Females are dominant at different maturity stages during greater part of the year. Fecundity ranges between 5,085 and 12,585 ova with increase in length and weight of the fish.
718. JAYABALAN, N. AND K. RAMAMOORTHY 1985.
Food and feeding habits of the silverbelly, *Gazza minuta* (Bloch) in Porto Novo waters. *India J. mar. Sci.*, 14: 110-112.
Smaller *G. minuta* are omnivores while larger ones are carnivores. Fishes form the major item of diet contributed mainly by *Stolephorus* sp. *Pseudorhombus* spp., *Cynoglossus* spp., *Apogon* spp. and *Thryssa* spp. Prawns rank second and various items of diet of minor importance include other crustaceans (*Squilla*, isopods, amphipods, copepods and crabs), polychaetes, nematodes, algae and diatoms. Active feeding is evident during May, Sept., Jan. and April. Active moderate and poor feeding at various stages of maturity of the fish indicate that feeding intensity has no relation to growth/maturity stages.
719. JAYABALAN, N. AND K. RAMAMOORTHY 1986.
Determination of age and growth in the Toothed ponyfish *Gazza minuta* (Bloch) from Porto Novo. *Mahasagar*, 19(3): 217-220.
Length-frequency distribution in commercial catches shows that *G. minuta* attains a length of 98 mm at the end of 1st year and 138 mm at the end of 2nd year of its life. von Bertalanffy growth equation fitted for length at age data for *G. minuta* ($t=160(1-e)^{0.8649(t+0.2316)}$). The VBG parameters are estimated as $L_{\infty} = 160$ mm and $K = 0.8649$.
720. JAYABALAN, N. AND S. L. SHANBHOGUE 1984.
Bioluminescence of silverbellies. An advantage of fishermen. *Seafood Export Journal*, 16 (9): 17-19.
All the species of leiognathids possess basically a similar internal luminescent system consisting of light organ reflector-lenses and other accessory structures to produce, transmit and diffuse the light through the lower

aspects of the body. The light organ is a short ring of tissue surrounding the oesophagus to harbour continuously light emitting symbiotic luminescent bacteria. So far a single species of luminous bacteria (*Photobacterium leiognathi*) is known to occur in the light organs of different species of leiognathids and a fraction of the weight of the organ is due to the bacteria. Light emission through the ventral body surface of the fish is hypothesised as a function of counter illumination to disrupt the silhouette, making it less discernible to active predators coming from below. This diurnal variation appears as an indication of counter illumination. Probably the silverbellies move to the bottom during day while attempting to migrate to greater depths when the solar illumination is higher than their bioluminescence utilized for luminescent camouflage. Whatever may be the functional value of leiognathid bioluminescence, it is undoubtedly a boon to fishermen as most species of leiognathids appear to congregate at the bottom in shoals during day when the solar illumination is high, yielding good harvest to bottom trawlers.

721. JAYABALAN, N., K. DHEVENDRAN AND K. RAMAMOORTHY 1978.
Occurrence of symbiotic bioluminescent bacteria in Indian leiognathids. *Curr. Sci.*, 47(17): 648-649.
This study was the first of its kind dealing with the occurrence of symbiotic bioluminescent bacteria in the light organs of 4 species of silverbellies belonging to 3 genera of the family Leiognathidae.
722. JAYABALAN, N., G. S. THANGARAJ AND K. RAMAMOORTHY 1984.
Finfish seed resources of Vellar estuary. *Proc. Symp. Coastal Aquaculture*, 3, p. 742-749.
Among miscellaneous groups of fishes, the leiognathids were represented by 14 species in Porto Novo waters, but only a few species supported the fishery in the estuary namely *Leiognathus splendens*, *L. equulus*, *Leiognathus* sp., *Secutor insidiator* and *S. rucomius*. Juveniles of *L. splendens* were abundant throughout the year.
723. JAYACHANDRAN, P. 1962.
Proximate chemical composition of marine fishes. *Madras J. Fish.*, 1 (1): 123.
Analysis of fresh *Leiognathus splendens* for proximate composition is made.
724. JAYARAMAN, K. C. 1976.
Index Horane. *Rec. Zool. Sur. India, Occ. Paper*, No. 1, p. 1-191.
Index for *E. endendata*, *E. edentula*, *E. equula* and *E. splendens* is given on p. 86. Under Leiognathidae, *L. blochii*, *L. equulus* and *E. insidiatrix* are given.
725. JAYARAMAN, K. C. 1981.
The fresh water fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka. A hand book. *Hand Book Ser. Zool. Surv. India*, No. 2, 22 pp.
Key to genera of the oriental region is given on p. 321.

726. JAYASEELAN, M. J., AND K. KRISHNAMURTHY 1980.
 Role of mangrove forests of Pichavaram as fish nurseries. *Proc. Indian Natn. Sci. Acad.*, 46B (1): 48-53.
 Food of *Leiognathus equulus* (58-78 mm) considered to be animal and detritus matter (omnivore). *Secutor ruconius* (40-76 mm) is considered to be carnivorous.
727. JAYAWARDENA, K. M., A. VILLADSEN, Q. GUNERATNE, J. AAGAARD AND R. G. POULTER 1980.
 Studies on the preparation of fish silage. 1. Effect of quality of raw material and type of acid. *Bull. Fish. Res. Stn. Sri Lanka*, No. 30 (1-2), p. 17-23.
 An experiment was undertaken in which silverbelly (*Leiognathus splendens*) of different quality was used to produce silage using different concentrations of hydrochloric acid and formic acid.
728. JAYAWARDENA, K. M. AND R. G. POULTER 1980.
 Studies on the preparation of fish silage. 2. Rate of liquefaction in different parts of silverbelly. *Bull. Fish. Res. Stn. Sri Lanka*, No. 30 (1-2), p. 25-31.
 An experiment was undertaken to determine from which part of silverbelly (*Leiognathus splendens*) carcasses originate the autolytic enzymes responsible for liquefaction of silage. Findings showed that it is important to leave head and viscera present in order to get a satisfactory liquefaction in silage prepared from silverbelly using 3.5% formic acid.
729. JAYAWARDENA, K. M., Q. GUNERATNE, A. VILLADSEN AND R. G. POULTER 1980.
 Studies on the preparation of fish silage. 3. Dried silage products. *Bull. Fish. Res. Stn. Sri Lanka*, No. 30 (1-2), p. 33-36.
 An investigation was undertaken on the production of dried products from silverbelly (*Leiognathus splendens*) silage mixed with plant filter materials. Silages produced using hydrochloric acid and/or formic acid when mixed with rice bran or maize meal and dried, yielded powders having an acceptable appearance and a pleasant odour, which are suitable for use in compounded chicken feeds.
730. JAYAWEERA, V., A. VILLADSEN, T. DE SILVA, D. ALWIS AND DE JAUSEN 1980.
 Storage life of silverbelly (*Leiognathus* sp.) with delayed icing. *Bull. Fish. Res. Stn. Sri Lanka*, No. 30 (1-2), p. 53-61.
 Silverbelly (*Leiognathus splendens*) caught in September spoiled faster than the fish caught in May. This could be due to seasonal changes. For silverbelly, total volatile base (TVB) value could be used as a measure of spoilage. At the beginning of spoilage, TVB value was between 30-40 mg N/100 g sample. The main spoilage for silverbelly appeared to start between 6 and 8 hours (at 28°C) after landing onboard. Therefore, it is not

necessary to ice silverbelly immediately. It seems to be sufficient if icing is done within 6 hours of landing onboard.

731. JAYASEELAN, PRINCE M. J. 1981.
Studies on ichthyofauna of the mangroves of Prichavaram (India). *Ph.D. Thesis*. Annamalai University, 130 pp.
Leiognathidae from other mangroves like Godavari and Sunderbans was compared with those from Prichavaram mangroves.
732. JENG, S. C., G. S. WANG AND Y. W. HUANG 1974.
Heavy metal contents of fishes caught in Kaohsiung Harbor. *Jour. Fish. Soc. Taiwan*, 3 (1): 29-32.
Heavy metal contents of *Leiognathus rivulatus* are given on p. 30.
733. JENKINS, J. T. 1910.
Notes on fish from India and Persia with descriptions of new species. *Rec. Indian Mus.*, 5 (2): 12.
Collection of *Equula brevirostris*, *L. fasciata* and *E. insidiatrix* from Karachi is reported.
734. JHINGRAN, A. G. 1984.
Marine Fish Resources. Chapter-5. The Fish Genetic Resources of India. Bureau of Fish Genetic Resources, I.C.A.R., New Delhi, 82 pp.
Silverbellies occur all along the Indian coast, though the bulk comes from Tamil Nadu, Kerala and Andhra Pradesh. They are represented by *Secutor ruconius*, *S. insidiator*, *Leiognathus dussumieri*, *L. fasciatus*, *L. equulus*, *L. bindus*, *L. lineolata* and *Gazza minuta*.
735. JHINGRAN, V. G. 1982.
Fish and Fisheries of India. Hindustan Publishing Corporation (India), Delhi, Second edition, 665 pp.
Mentions the leiognathid species occurring along Indian coasts with notes on areas of abundance and on catches.
736. JOB, T. J. 1940.
An investigation of the nutrition of the perches of Madras coast. *Rec. Indian Mus.*, 42: 289-364.
p. 292. Mentions *Gerres punctatus* among Leiognathidae.
737. JOHN, M. A. 1951.
Pelagic fish eggs and larvae of the Madras coast. *J. Zool. Soc. India*, 3 (1): 41-69.
Several specimens of *Leiognathus* of size ranging from 9 to 25 mm in length were collected from the Madras coast between July and November. The collection consisted of three species *L. lineolatus*, *L. insidiator* and *L. ruconius*.

Of the three, *L. ruconius* was represented only by one specimen. Detailed description of the youngest specimen of the above three species with text figures are given. The stomach of the very young and post-larval *Leiognathus* contained only algal and other vegetable matter of the plankton while older forms fed on copepods in addition to the vegetable matter as judged from their stomach contents.

738. JOHNSON, C. R. 1972.
Biology and ecology of *Callionymus belcheri* (Pisces: Callionymidae). *Copeia*, 3: 461-470.
Leiognathus moretonensis was present among 450 species of fishes recorded from Moreton Bay.
739. JOHNSON, F. H. AND Y. HANEDA (Eds.) 1966.
Bioluminescence in Progress. Princeton Univ. Press, Princeton.
Contains several papers mentioning or dealing specifically with leiognathid bioluminescence.
740. JOHNSTONE, J. 1903.
Report on the marine fishes (collected by Messrs Annandale and Robinson on the coast of Patani and Jhering). *Fasciculi Malayensis Zool.*, Pt. 2, p. 293-302.
p. 294. *E. ruconius*. pl. 2.
741. JONES, GLENYS 1985.
Revision of the Australian species of the fish family Leiognathidae. *Aust. J. Mar. Freshw. Res.*, 36 (4): 559-613.
The Australian species of Leiognathidae are revised and their distinguishing features more clearly defined. Fourteen Australian species are recognized: *Gazza minuta*, *Leiognathus aureus*, *L. bindus*, *L. blochii*, *L. decorus*, *L. elongatus*, *L. equulus*, *L. fasciatus*, *L. leuciscus*, *L. smithursti*, *L. splendens*, *Leiognathus* sp., *Secutor insidiator* and *S. ruconius*. Diagnostic characters for the species are difficult to ascertain as the family tends to be meristically constant. Identification relies principally on a combination of body proportions, distribution of scales, shape and arrangement of teeth and body pigmentation patterns. Species descriptions, figures, abbreviated synonymies and geographic distributions within Australia are presented for all species, and an identification key is given. Incorrect usage in the literature of several species names, including *L. elongatus*, *L. brevirostris* and *L. lineolatus* is discussed.
742. JONES, R. 1976.
Mesh regulation in the demersal fisheries of the South China Sea area. *SCS/76/WP/34*, 75 pp. South China Sea Fish. Dev. Coord. Progr., Manila.
Gives catch including that of Leiognathidae and discusses the "trash fish" problem.

743. JONES, R. 1982.
Ecosystems, food chains and fish yields. In: *Theory and Management of Tropical Fisheries*. Pauly, D and G. I. Murphy (Eds.). ICLARM, CSIRO, 295 pp.
p. 210. Leiognathidae among food web for the Gulf of Thailand prepared by participants at the FAO/DANIDA Seminar on the management of tropical demersal fisheries held in Bangalore. 22 October-2 November, 1979.
744. JONES, S. 1951.
Bibliography of breeding habits and development of estuarine and marine fishes of India. *J. Zool. Soc. India*, 3 (1): 121-139.
Classification of fishes of the family Leiognathidae is given on p. 129.
745. JONES, S. 1958.
Authorship of names of Indian fishes proposed in "Histoire Naturelle Des Poissons" by Cuvier and Valenciennes and recorded by Day. *J. Zool. Soc. India*, 9 (2): 121-129.
p. 127 lists *Equula dussumieri*, *E. bindus*, *E. blochii*, *E. brevirostris*, *E. lineolata* and *E. oblonga* with page, serial and volume number and with author names.
746. JONES, S. 1966.
A preliminary report on the commercial sea fisheries of the western sector of the IPFC. *Proc. Indo-Pacific Fish. Counc.*, 12, c 66/Tech. Pap. 33, 28 pp.
Mentions silverbelly among commercial fishes.
747. JONES, S. 1967.
Two decades of marine fisheries research. *20th Anni. Souv.* Central Marine Fisheries Research Institute, Mandapam Camp, p. 1-12.
Described the silverbelly fishery of India and its importance in Andhra, Tamil Nadu and Kerala coasts. Craft and gear, fishery, spawning season and fecundity are reported for important species like *Leiognathus splendens*.
748. JONES, S. 1969.
Marine fishery resources of India. *Indian Farming*, 19 (9): 19-21.
Silverbellies as part of all India fish landing during 1964-'65 are included.
749. JONES, S. 1969.
Catalogue of fishes from the Laccadive Archipelago in the reference collection of the Central Marine Fisheries Research Institute. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 8, 32 pp.
Lists *L. fasciatus* and *G. minuta* among other fishes.

766. JORDAN, D. S. AND A. SEALE 1906.
 The fishes of Samoa. Description of species found in the Archipelago, with a provisional check-list of the fishes of Oceania. *U.S. Bull. Bur. Fish.*, 25: 173-455.
 Lists *S. insidiator*, *L. fasciatus* (common species) *L. obscurus*, *L. equulus*, *L. dussumieri*, *L. edentulus*, *L. smithursti*, *G. minuta*, *G. equulaeformis* and *G. argentaria*.
767. JORDAN, D. S. AND A. SEALE 1906.
 The fishes of Samoa. Description of species found in the Archipelago, with a provisional check-list of the fishes of Oceania. *U.S. Bull. Bur. Fish.*, 25: 173-455.
 Lists *S. insidiator*, *L. fasciatus*, (common species), *L. obscurus*, *L. equulus*, *L. dussumieri*, *L. edentulus*, *L. smithursti*, *G. minuta*, *G. equulaeformis* and *G. argentaria*.
768. JORDAN, D. S. AND A. SEALE 1907.
 Fishes of the Islands of Luzon and Panay. *U.S. Bull. Bur. Fish.*, 26: 1-48.
 p.15. *E. minuta*, *L. dussumieri* (in part only).
769. JORDAN, D. S. AND J. O. SNYDER 1901.
 A preliminary check-list of the fishes of Japan.
 p. 68. Lists *Leiognathus nuchalis*, *L. rivulatum* and *L. linolatum* in the genus *Leiognathus*. - Japanese names of the species are given.
770. JORDAN D. S. AND E. C. STARKA 1917.
 Notes on a collection of fishes from Ceylon, with descriptions of new species. *Ann. Carnegie Mus.*, 11 (344): 43-446.
 p. 444-446. *L. equula*, *L. daura* and *L. insidiatrix* with description of *G. minuta*.
 p.446-447, plate 45: description of new species *Gazza achlamys*.
771. JORDAN D. S., S. TANAKA AND J. O. SNYDER 1913.
 A catalogue of the fishes of Japan. *J. Coll. Sci. Imp. Univ. Tokyo*, 33 (1): 1-497.
 Members of the family Leiognathidae are included
772. JOSE, I., SULIT OLYMPIA B. NAVARRO, REGINA C. SAN JUAN AND ELISA B. CALDITO 1977.
 Proximate chemical composition of various species of Philippines market. *Fishes Philippine. Jour. Fish.*, 2 (1 & 2): 106-119.
 Proximate chemical composition and calorific food value of *L. equula* .
773. JOSEPH, B. 1974.
 Preliminary report on experimental fishing with purse seine and lampers

- nets for small pelagic fish varieties around Sri Lanka. *Bull. Fish. Res. Stn., Ceylon*, No. 25 (1/2), 13 pp.
- Lists *G. minuta*, *S. ruconius*, *S. insidiator*, *L. linitolatus*, *L. dussumieri* and *L. splendens* with size ranges and English and local names.
774. JOSEPH, K. C AND R. SRINIVASAN 1967.
 On the fish curing at Cape Comorin. *Madras J. Fish.*, 4: 71-74.
 Silverbellies caught and processed at Cape Comorin, their English, scientific and local names and their approximate annual landings are given.
775. JOSEPH, JOSE., CHINAMMA GEORGE AND P. A. PERIGREEN 1989.
 Studies on minced fish-storage and quality improvement. *J. mar. biol. Ass. India*, 31 (1 & 2): 247-251.
 Among fishes, *Leiognathus* spp. minces were also prepared for the study of percentage of yield and its proximate composition.
776. JOSEPH, K. C. 1971.
 Prospects of fish canning in Tamil Nadu. *Souvenir Issued on the Occasion of the 9th Anniversary of the Fish Exporters Chamber Tuticorin*, p. 35-38.
 Landing figures of Leiognathids in Tamil Nadu in 1969 are given.
777. JOSEPH, K. M 1985.
 Marine fishery resources of India. In: *A Systems Frame Work of the Marine Foods Industry in India*. G. G. R. Kulkarni and U. K. Srivastava (Ed.), p. 90-149.
 p. 97. State-wise landings of silverbellies and its percentage from east and west coasts of India are given.
778. JOSEPH, K. M 1986.
 Some observations on potential fishery resources from the Indian Exclusive Economic Zone (EEZ). *Bull. Fish. Surv. India*, No. 14, 20 pp.
 Average all India silverbelly landings during 1979 and 1983-84 are given.
779. JOSEPH, K. M. AND M. E. JOHN 1986.
 Potential marine fishery resources. *Seminar on Potential Marine Fishery Resources. CMFRI Special Publication*, No. 30, p. 18-43.
 The catch per unit effort of leiognathids obtained in demersal trawl survey in northwest, southwest, lower east, upper east coasts, Wadge Bank and Gulf of Mannar regions of India coasts is presented.
780. JOUAN, H. 1867.
 Notes sur quelques poissons de mer observes a Hong Kong. *Mem. Soc. Sci. Nat. Cherbourg.*, 13: 241-282.
 p. 266. *E. insidiatrix*.

781. KABATA, Z. 1967.
Proclavellodes pillai gen. et sp. n. (Copepoda: Lernaeophodidae) from south India. *J. Parasitol.*, 53 (6): 1298-1301.
P. pillai a new copepod parasite is reported from *Gazza minuta*.
782. KAIKINI, A. S. 1960.
 The fisheries of Malwan. *Indian J. Fish.*, 7 (2): 348-367.
 Annual catch of *Leiognathus* is given for the year from 1950-'57.
783. KAILOLA, P. J. 1975.
 A catalogue of the fish in the reference collection at the Kanudi Fisheries Research Laboratory. *Res. Bull. Dept. Agri., Stock Fish., Port Moresby*, No. 16, p. 1-277.
 p. 124-127 list from PNG: *Equula equula*, *E. fasciata*, *Equulites berbis*, *E. bindus*, *E. novaehollandiae*, *Gazza achlamys*, *G. minuta*, *Leiognathus elongatus*, *L. rapsoni*, *L. splendens*, *Secutor insidiator* and *S. ruconius*. Also lists from other areas: *Leiognathus* sp. (Philippines), *L. aureus* (Ambon, Indonesia), *L. hatai* (Ambon), *L. nuchalis* and *L. rivulatus* (both Japan).
784. KAILOLA, P. J. AND M. A. WILSON 1978.
 The trawl fishes of the Gulf of Papua. *Res. Bull., Dept. of Primary Ind., Port Moresby*, No. 20, p. 1-85.
Leiognathidae accounted for about 20% (by weight) of catch. Lists the following spp.: *G. minuta*, *L. bindus*, *L. equulus*, *L. fasciatus*, *L. novaehollandiae*, *L. rapsoni*, *L. splendens*, *S. insidiator* and *S. ruconius*.
785. KAKUDA, S. 1973.
 The marine fishes from the estuary of the Ashida River. *J. Fac. Fish. Anim. Hubs., Hiroshima Univ.*, 12 (1): 83-87.
L. nuchalis is listed among the resident fishes.
786. KALAVATHY, M. H. AND V. TIETZE 1984.
 Artisanal marine fisheries in Orissa: A techno-demographic study. Bay of Bengal Programme. Development of small-scale fisheries. BOBP/WP/29, SIDA, FAO, Sri Lanka, 60 pp.
 Catch statistics of *Leiognathus* and *Gazza* from 1976-'81 are given on p. 52.
787. KALLOLA, P. J. 1971.
 New records of fish from Papua. *Papua New Guinea Agri. J.*, 22 (2): 116-133.
 First record of *Equulites berbis* from the territory of Papua.
788. KAMI, H. T., I. I. IKEHARA AND F. P. DE LEON 1968.
 Check-list of Guam fishes. *Micronesica*, 4 (1): 95-131.
 Lists *Leiognathus equulus* and *Gazza achlamys* from Apra Harbour. Local name for both spp. is "Cajao".

789. KAMOHARA, T. 1965.
Coloured Illustrations of the Fishes of Japan. Hoikusha Publishing Co. Ltd., Japan, 158 pp.
 Colour illustrations and descriptions in Japanese language are given for leiognathids on p. 26.
790. KAMOHARA, T. 1967.
Fishes of Japan in Color. Koikusha Publishing Co. Ltd., Japan, 135 pp.
 p. 52. Description of Spawning period of *Leiognathus equulus*, its occurrence in deeper water and more offshore areas are given. It is known from Ibaragi and Sado to Korea and Formosa.
791. KARBHARI, J. P. 1982.
 Scientific, common and local names of commercially important marine fishes and shell fishes of Maharashtra and Gujarat coasts. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 44, p. 18-23.
 Local names of silverbelly, *Leiognathus splendens* are given as 'Katali'/'Kappi' in Marathi and 'Katali' in Gujarati.
792. KAROLI, J. 1882.
Prodromus piscium Asia orientalis a Domino Joanne Xantus annis 1968-'70 collectorum. Termeszet. Fuzetek 5 Fuzet, 1882, 17: 147-187.
 p. 161. *S. insidiator*.
793. KARTHIKEYAN, M., N. GOPALAKRISHNA PILLAI AND M. BADRUDEEN 1989.
 Population dynamics of silverbelly *Leiognathus jonesi* James, in the trawling grounds of Rameswaram. *Indian J. Fish.*, 36 (2): 103-106.
 The von Bertalanffy growth parameters for *Leiognathus jonesi* are estimated as $L_{\infty} = 146.617$ mm and $K = 0.917$ per year. The coefficient of total mortality (Z) natural mortality (M) and fishing mortality (F) rates are estimated. The length-weight relationship of the fish is $W = 0.000030335 L^{2.687}$. Beverton and Holt yield per recruit analysis shows that an increase in L_{∞} results is better yield per recruit. The estimated average annual stock ranges between 8,800 and 9,100 tonnes and the average standing stock between 1,700 and 1,900 tonnes.
794. KARUNASINGHE, W. P. N. 1988.
 The status of the beach seine fishery along the south-west coast of Sri Lanka. *Symp. Tropical Marine Living Resources*. Marine Biological Association of India, Cochin, 12-16 Jan., 1988. Abstract No. 3.
 Leiognathids contribute around 46.7% from Moratuura.

795. KEARNEY, R. E., A. D. LEWIS AND B. R. SMITH 1972.
 Cruise Report Tagula 71-1. Survey of Skipjack tuna and bait resources in Papua, New Guinea waters. *Res. Bull. Dept. Agri. Stock. Fish. Port Moresby*, No. 8, 145 pp.
 Lists Leiognathidae among the potential bait-fish resources. Some catch data are also given.
796. KEENLEYSIDE, M. 1979.
Diversity and Adaptation in Fish Behaviour. Springer Verlag, Berlin.
 Mentions light emission of *L. equulus*.
797. KENDALL, W. C. AND E. L. GOLDSBOROUGH 1911.
 The shore fishes. (Reports on the scientific results of the expedition to the tropical Pacific in charge of Alexander Agassiz, by the U. S. Fish Comm. Steamer "Albatross" from August, 1899 to March, 1900). *Mem. Mus. Comp. Zool. Harvard Con.*, 26 (7): 239-344.
 p. 274. *L. splendens* (Suva, Fiji), *L. edentula* (Suva) and *L. fasciatus*.
798. KESTEVEN, G. L. AND T. W. BURTON 1952.
 Fisheries survey report No. 1. *Fish. Bull.*, No. 1, 119 pp.
Leiognathus sp. said to comprise 2.4% of fish in Singapore markets in 1950.
799. KHALAF, K. T. 1961.
The Marine and Fresh Water Fishes of Iraq. University of Baghdad, A 1 - Rahitta Press, 164 pp.
 General description of the family Leiognathidae (including Gerridae) and description of one specimen of *Leiognathus* sp. about 8 cm in T. L. obtained from FAO market on April 10, 1960 are given.
800. KHORONA, D. K., M. L. SARMA AND K. V. GIRI 1942.
 Investigations in the food value of fish and other marine products. *Indian J. Med. Res.*, 30: 315-318.
 Niacin content of a *Leiognathus* sp. is reported.
801. KIENER, A. 1963.
 Poissons, peche et pisciculture a Madagascar. *Cent. Tech. Forest. Trop. Publ.*, No. 24, 160 pp.
 Gives data on habits fishery, local names etc. of *L. equula*, *L. dussumieri* and *G. minuta*.
802. KIENER, A. 1966.
 Contribution a l'etude ecologique et biologique des eaux saumaitres malgaches. Les poissons euryhalins et leur role dans le developement des peches. *Vie Milieu*, 16 (2 C): 1013-1149.

- Lists *G. minuta*, *L. dussumieri*, *L. equula* and *S. insidiator* among the euryhaline fishes occurring in Madagascar, with *L. equulus* the most abundant leiognathid penetrating deepest into fresh waters.
803. KIENER, A. AND G. RICHARD-VINDARD 1972.
Fishes of the continental waters of Madagascar. In: *Biogeography and Ecology in Madagascar*. R. Battistini and G. Richard-Vindard (Eds.), p. 477-499, Dr. W. Junk BW Publ., The Hague.
p. 494 lists *Leiognathus equulus* among the euryhaline spp. caught in Kalomalala, east coast of Madagascar and p. 490 lists the Leiognathidae among the brackish water groups.
804. KIKUCHI, T. 1966.
An ecological study on animal communities of the *Zostera marina* belt in Tomioka Bay, Amakusa, Kyushu. *Amakusa Mar. Biol. Lab.*, 1 (1): 1-106.
Gives various ecological data relating to *L. nuchalis*.
805. KIRTSINGHE, P. 1961.
A review of the parasitic copepods of fish recorded from Ceylon with description of additional forms. *Bull. Fish. Res. Str. Ceylon*, No. 17, p. 45-132.
Several females of *Peniculus scomberi* a copepod parasite attached to the fin rays of *Gazza minuta* were obtained.
806. KLAUSEWITZ, W. AND J. NIELSEN 1965.
On Forsskal's collection of fishes in the Zoological Museum of Copenhagen. *Skr. Zool. Mus. Kbenh.*, 22: 1-29.
p. 23 mentions two specimens of *Scomber equula* (plate 28) and designates Lectotype.
807. KLUNZINGER, C. B. 1884.
Die Fische des Rothen Meeres. Eine Kritische Revisio mit Bestimmungstabellen. 1. Theil. *Acanthopteri veri* Owen. Deni-schr. *Akad. Wiss. Wien*, 80 (1): 325-430 and Schweizerbartsche Verlagshandlung. Stuttgart. 133 p. (Reprint edition: Dr. W. Junk BV Publ. The Hague, 1975).
Describes *L. fasciatus*, *L. equulus*, *L. splendens*, *L. berbis*, *G. minuta*, *G. argentaria* and *G. equulaeformis*.
808. KNER, R. 1865-1867.
Reise der Oesterreichen Fregatte "Novara" um die Erde in den Jahren 1857-'59 unter den Befehlen des Commodore B. von Wullersdorf-Urbain. *Zoologischer Theil. Fische.*, 1 und 2. Abtheilung, Wein, 1865, 272 pp. 3. Abtheilung, Wein, 1867, 272-433.
Descriptions of *E. ensifera*, *E. dussumieri*, *E. bindoides*, *E. splendens*, *E. insidiatrix*, *E. interrupta* and *G. minuta* are given on p. 166 - 170.

809. KOBAYASI, H. 1952.
Comparative studies of the scales in Japanese freshwater fishes, with special reference to phylogeny and evolution. *Jap. J. Ichthyol.*, 12 (4/5): 183-191.
Leiognathus nuchalis among the fishes used for the study of scales.
810. KOBAYASI, H. 1953.
Comparative studies of the scales in Japanese freshwater fishes, with special reference to phylogeny and evolution. *Jap. J. Ichthyol.*, 11 (6):
Leiognathus nuchalis under the family Leiognathidae is used for the study of scales.
811. KOSSWIG, C. 1950.
Erythraische Fische in Mittelmeer und an der Grenze der Agais. *Sylogomena Biologica. Festschrift Kleinschmidt Akad. Verlag, Leipzig*, 203-212.
L. klunzingeri occurs from Suez to Rhodes.
812. KOTTHAUS, A. 1974.
Fische des Indischen Ozeans. Ergebnisse der ichthyologischen Untersuchungen während der Expedition des Forschungsschiffes "Meteor" in den Indischen Ozean, Oktober, 1964 bis 1965. A Systematischer Teil 12 Perchomorhl (5) Meteor. *Forsch. Ergebn.*, (18): 44-54.
Meristics and morphometrics of *Gazza minuta* and *Leiognathus equulus*.
813. KOUMANS, F. P. 1940.
On a collection of fishes from East Java. *Zool. Meded.*, 22: 257-264.
Lists *L. daura* and *L. brevisrostris* from East Java.
814. KOUMANS, F. P. 1953.
Biological results of the *Snellius Expedition*. XVI. The Pisces and Leptocardi. *Temminckia*, 9: 177-275.
Lists *Leiognathus splendens* from Beo, Taland Island and *L. brevisrostris* from Menado.
815. KOWTAL, G. V. 1967.
Occurrence and distribution of pelagic fish eggs and larvae in the Chilka Lake during the years 1964 and 1965. *Indian J. Fish.*, 14 (1 & 2): 198-214.
Reports occurrence of larvae of *Leiognathus* sp. in the central sector as well as in the outer channel sector. This species was considered to spawn in the lake for about six months.
816. KRISHNAMOORTI, B. 1957.
Fishery resources of the Rameswaram Island. *Indian J. Fish.*, 4: 229-253.

- p. 240. Bulk of the fish catch in Rameswaram Island was *Leiognathus splendens*. Silverbellies were caught throughout the year with maximum quantity during April - October when boat-seines were in operation. *L. splendens* was caught during November-February. The family leiognathidae was represented by *L. bindus*, *L. insideatrix*, *L. equulus* and *L. splendens*.
817. KRISHNAMURTHY, K., AND M. J. P. JEYASEELAN 1979.
The early life history of fishes from Pichavaram mangrove ecosystem in India. ICES/ELH Symp./RA: 15, 13pp. *Early Life History Symposium Int. Counc. Explor. Sea.*, Woodshole, U.S.A.
Juveniles of *Gazza minuta*, *Leiognathus equulus*, *Leiognathus* sp., *S. ruconius* and *S. insidiator* are listed among the fishes occurring in Pichavaram mangrove, with *L. equulus* also occurring there as adult. January-March and April-June are given as spawning season for the two *Secutor* spp.
818. KRISHAPILLAI, V., A. P. VALSON AND M. RAJENDRANATHAN NAIR 1956.
Studies on the chemical quality of cured fish products from the west coast of India. *Indian J. Fish.*, 3 (1): 43-58.
Chemical quality of sun dried samples of *Leiognathus* collected at Narakkal and dry cured samples collected at Cape Comorin is discussed.
819. KUHLMORGEN-HILLE, GEORGE 1968.
An illustrated field key to the family Leiognathidae of the Gulf of Thailand. *Contrib. Mar. Fish. Lab. Bangkok*, No. 12, p. 1-7.
Field key to identify the fishes of the family Leiognathidae in a simple and quick way with the aid of important details like shape and colour marks. Key to the species of *G. minuta*, *S. insidiator*, *S. ruconius*, *L. elongatus*, *L. brevirostris*, *Leiognathus* sp., *L. smithursti*, *L. fasciatus*, *L. leuciscus*, *L. splendens*, *L. daura*, *L. lineolatus*, *L. bindus* and *L. equulus* is given.
820. KUHLMORGEN-HILE, G. 1974.
Leiognathidae. In: *FAO Species Identification Sheets for Fishery Purposes, Eastern Indian Ocean. (Fishery Area 57) and Western Central Pacific (Fishery Area 71)*. W. Fischer and P. J. P. Whitehead (Eds.), Vol. 2. FAO, Rome.
Contains descriptions, figures and aids to proper identification of 13 species of silverbellies.
821. KULKARNI, C. V. 1952.
Local and scientific names of commercial fishes of Bombay. *J. Bombay Nat. Hist. Soc.*, 51 (4): 917-925.
Scientific, English and local names of *Leiognathus fasciatus* are given.
822. KUMARAN, M. AND G. GOPAKUMAR 1986.
Potential resources of fishes other than Tuna in Lakshadweep. *Mar. Fish Infor. Serv., T & E. Ser.*, No. 68, p. 1-66.

- Silverbelly landings and percentage among the fish landings in Lakshadweep during 1971-'84 are reported.
823. KURATA, A., Y. YOSHIDA AND F. TAGUCHI 1979.
Accumulation of Ni from the environmental seawater and sediments by various marine organisms. *Mar.*, 17 (1): 11-17. (In Japanese).
Accumulation of Nickel in *Leiognathus equulus* is given.
824. KURODA, N. 1951.
A nominal list with distribution of the fishes of Surugu Bay, inclusive of the freshwater species found near the coast. *Jap. J. Ichthyol.*, 1 (6): 314-338.
Species, sub-species, localities and other important localities of the occurrence of *Leiognathus elongatus*, *L. nuchalis* and *L. rivulatus* are given.
825. KURODA, N. 1958.
On the life colors of some fishes. *Jap. J. Ichthyol.*, 7 (1): 25-31. (In Japanese with English Summary).
The part seven of this series contains descriptions of life colours of the species nos. 97-111, with some notes on the fishes (several species of Carangidae, Leiognathidae, Oplegnathidae, Mullidae, Capolidae and Branchiostegidae) found in Surugu Bay, Japan.
826. KURONUMA, K. 1961.
A check list of fishes of Vietnam. *Div. Agri. and Nat. Resources, U. S. Operations Missions to Vietnam, Contract IV*, 153, 66 pp.
Lists *G. minuta*, *L. berbis*, *L. brevirostris*, *L. equulus*, *L. fasciatus*, *L. splendens*, *S. insidiator* and *S. ruconius*.
827. KURONUMA, K. AND Y. ABE 1972.
Fishes of Kuwait. Kuwait Institute for Scientific Research, State of Kuwait.
General description of the slipmouth under the family Leiognathidae and detailed description of *Leiognathus bindus* and *Leiognathus fasciatus* with colour plates are given.
828. KURONUMA, K. 1974.
Arabian Gulf fishery-oceanography survey of *Umitika-Maru*. *Trans. Tokyo Univ. Fish.*, 1: 1-118.
Gives catch data and distribution in detail of *L. equulus* and *L. lineolatus*.
829. KURUP, B. MADHUSOODANA AND C. T. SAMUEL 1983.
Systematics and distribution of fishes of the family Leiognathidae (Pisces) of the Vembanad Lake, Kerala (S. India). *Rec. Zool. Surv. India*, 80 (3 & 4): 387-411.
Nine species of silverbelly namely *Leiognathus splendens*, *L. equulus*, *L.*

bindus, *L. daura*, *L. berbis*, *L. brevirostris*, *Secutor insidiator*, *S. ruconius* and *Gazza minuta* are reported. Notes on the occurrence of different species in the lake, their seasonal abundance and distribution in relation to varying environmental characteristics and geographical distribution are included. Tables of morphometric characters, black and white photographs, distribution maps and a key are also provided.

830. KURUP, B. M. AND C. T. SAMUEL 1985.

Fishing gear and fishing methods in the Vembanad Lake. In: *Harvest and Post-harvest Technology of Fish*. Ravindran, K., Unnikrishnan Nair, N., Perigreen, P. A., Madhavan, P., Gopalakrishna Pillai, A. G., Panicker, P. A. and Mary Thomas (Eds.), p. 232-237. Society of Fisheries Technologists, (India), Cochin.

Leiognathus brevirostris and *L. equulus* were the species caught in the Vembanad Lake during the study.

831. KUSAKA, T. 1974.

The Urohyal of Fishes. Univ. of Tokyo Press, Tokyo.

Gives description and figure of the urohyal bone of *L. elongatus*, *L. equulus*, *L. rivulatus*, *L. nuchalis*, *Equulites novaehollandiae*, *Gazza minuta* and an unidentified species.

832. KUSUMA, M. S., R. SUDARSHAN, U. G. BHAT, M. V. PAI AND B. NEELAKANTAN 1985.

Fin fish resources of Karwar. In: *Harvest and Post-harvest Technology of Fish*. Ravindran, K., Unnikrishnan Nair, N., Perigreen, P. A., Madhavan, P., Gopalakrishna Pillai, A. G., Panicker, P. A., and Mary Thomas (Eds.), Society of Fisheries Technologists (India), Cochin. p. 91-94.

Leiognathus equulus and *L. daura* under the family Leiognathidae are reported from Karwar. The local name is "Guruku". Estimated catch is 225.9 t (0.7%).

833. KUTHALINGAM, M. D. K. 1955.

Food and feeding habits of juveniles and adults of four fishes of Madras. *J. Madras Univ.*, 25 B (3): 235-253.

The food of *L. ruconius* consisted mainly of small planktonic crustaceans.

834. KUTHALINGAM, M. D. K. 1955.

The food of horse-mackerel, *Caranx*. *Cur. Sci.*, 24 (12): 416-417.

Caranx does not destroy the young ones of *Leiognathus*.

835. KUTHALINGAM, M. D. K. 1958.

The food and feeding habits of some young silverbellies. *J. Madras Univ.*, B. 28 (1): 13-22.

The stomach contents of 370 juveniles or young fishes belonging to four different species of silverbellies are reported on. All the four species, *Gazza minuta*, *Leiognathus insidiator*, *Leiognathus daura* and *Leiognathus splendens* are surface feeders during their early life. The diet of these young fishes when compared with those of the adults showed that in *Leiognathus splendens* there is no change of diet except what is to be expected from the change in size; that *Gazza minuta* changes from a plankton-feeding habit to a bottom-feeding habit; that the young of *Leiognathus daura* filters surface-living protozoa and that *Leiognathus insidiator* feeds on all the forms in the plankton.

836. KUTHALINGAM, M. D. K. 1959.
The life history and feeding habits of the tripod fish (*Triacanthus brevirostris* Tem. & Schl.) of the Indian Sea. *Treubia*, 25 (1): 159-164.
Lists *Leiognathus* sp. among the food items.
837. KUTHALINGAM, M. D. K. 1962.
A method for estimating trawler catches. *Indian J. Fish.*, 9 (2): 506-511.
Catch estimate of silverbellies from *Kalyani* fishing vessel.
838. KUTHALINGAM, M. D. K. 1965.
Notes on some aspects of the fishery and biology of *Nemipterus japonicus* (Bloch) with special reference to feeding behaviour. *Indian J. Fish.*, 12 A & B (2): 500-506.
Leiognathus spp. formed the food of *N. japonicus*.
839. KUTHALINGAM, M. D. K. AND A. CHELLAM 1970.
Results of the exploratory trawl fishery off Cannanore by the Indo-Norwegian Project vessels. *Indian J. Fish.*, 17 (1 & 2): 156-164.
Leiognathus splendens dominated the catch in February and *Leiognathus bindus* in March. Dominant items of food and extent of feeding for *Leiognathus splendens*, *Leiognathus bindus*, *Leiognathus brevirostris*, *Leiognathus equulus*, *Secutor ruconius* and *Secutor insidiator* are given.
840. KUTHALINGAM, M. D. K., P. LIVINGSTON AND P. S. SADASIWA SARMA 1978.
Observations on the catches of the mechanised boats at Neendakara. *Indian J. Fish.*, 25 (1 & 2): 98-108.
Authors reported the leiognathid fishery of Neendakara with percentage composition of different species and catch rate in different months. Number of fishes examined, sex ratio, maturity stages of male and female, food and feeding habits of *Secutor ruconius*, *Leiognathus splendens* and *S. insidiator* are given in tabulated statements.
841. KUTHALINGAM, M. D. K., P. MAZMUDER AND A. K. CHATERJEE 1973.
Offshore fishery resources of the Bay of Bengal from Sandheads to

Gopalpur. In: *Proc. Symp on Living Resources of the Seas around India*, p. 333-364. Cent. Mar. Fish. Res. Inst. Cochin.

The total yield of leiognathids was calculated to be 67,712.21 kg which constituted 83% of the "B" class catches. It seems that November represented the peak month for the fishery. Good catch of *Leiognathus* spp. was obtained during November, 1960-'61 off Puri coast between depths of 8-18 fathoms. Among the various species, *L. splendens* and *L. insidiator* formed the bulk constituting 36.6 and 32.4% respectively. *L. daura*, *L. brevisrostris* and *Gazza minuta* together constituted the rest.

842. KUTHALINGAM, M. D. K., G. LUTHER, S. LAZARUS AND K. PRABHAKARAN NAIR 1982.

Experimental trawling off Vizhinjam. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 40, p. 5-7.

Among Leiognathids, *Leiognathus bindus* (65-85 mm), *L. lineolatus* (60-75 mm), *Secutor insidiator* (52-85 mm) and *S. ruconius* (50-75 mm) were landed during trawling. *Leiognathus* formed the main food of other fishes.

843. KUTTY AYYAPPAN, M. P., A. VASANTH SHENOY AND K. GOPAKUMAR 1976.

Proximate composition on 17 species of Indian Fish. *Fish. Technol.*, 13 (2): 153-155.

Proximate composition of silverbelly (*Leiognathus* spp.) such as moisture (73.4), ash (5.58), protein (17.39), lipids (4.02), phosphorus (1754 g/100 (100 g of whole minced wet fish), calcium (3384), sodium (173.4), and potassium (107.4) in mg/100 g are reported.

844. KVARAN, E. 1971.

Marine fisheries potential in the Philippines and South East Asia. *Philipp. Fish. Comm. Fish. Newsl.*, 8-17.

Suggests that high fishing effort may have a negligible effect on recruitment of fishes such as *Leiognathus*.

845. LACEPEDE, B. G. E. 1803.

Historie Naturelle des Poissons. Vol. 5, Paris.

p. 425, 460 *Clupea fasciata* (= *L. fasciatus*) (type loc. Mauritius).

846. LACEPEDE, B. G. E. 1803.

Historie Naturelle des Poissons. Vol. 4, Paris.

Equula caballa.

847. LAGLER, K. F. AND S. PUNPOKA 1965.

Index to the families and major groups in Weber and Beaufort's "Fishes of the Indo-Australian Archipelago", Vol. I-XI, 1911-1962. *Notes Fac. Fish., Kasetsart Univ, Bangkok*, 1: 1-4.

Refers to the Leiognathidae in Vol. 6, p. 360.

848. LAGLER, K. F., J. E. BARDACH, R. R. MILLER AND D. R. M. PASSINO 1962.
Ichthyology. 2nd edition. John Wiley & Sons, Inc., New York, 545 pp.
 p. 44 Lists Leiognathidae among other fishes and p. 130 mentions leiognathid bioluminescence.
849. LAKSHMANAPERUMAL SAMY, P., K. DHEVENDARAN, M. CHANDRASEKARAN AND B. CHANDRA MOHAN 1981.
 Occurrence of bioluminescent bacteria in Cochin backwater. *Bull. Dept. Mar. Sci., Univ. Cochin*, 12 (1): 41-51.
 Isolation of symbiotic bioluminescent bacteria from the light organs of silverbelly species is reported.
850. LAL MOHAN, R. S. 1984.
 Some hydrological characteristics of the surf region of West Hill, Calicut. *Indian J. Fish.*, 31 (3): 362-365.
 Occurrence of juvenile of *Leiognathus bindus* of the length range 12-13 mm is reported.
851. LAL MOHAN, R. S. 1985.
 Food and feeding habits of the sciaenid fish *Pennahia macrophthalmus* (Bleeker). *J. mar. biol. Assn. India*, 27 (2 & 2): 68-71.
Leiognathus sp. formed 90-95% of the landing. Studied food of *P. macrophthalmus*.
852. LAL MOHAN, R. S. 1986.
 Fish and fisheries of Mandapam. *Souvenir, 35th Anniversary of the Recreation Club of Regional Centre of Central Marine Fisheries Research Institute, Mandapam Camp*, 68 pp.
 Silverbelly formed raw material for fish meal plant at Mandapam. Dried fish commonly known as "Mullan" were sent to Kerala during June to September.
853. LAMBOEUF, M. AND E. J. SIMMONDS 1979.
 Acoustic estimation of the biomass of the stock of small pelagic species in the Gulf of Oman - September, 197 - October, 1978. *FAO/RAB/71/278/7, Part 3*, 21 pp., FAO, Rome.
 Reports that Leiongnathidae and Gerridae which are demersal during the day, occurred in midwater at night.
854. LARKIN, P. A. 1983.
 Directions for future research in tropical multispecies fisheries. In: *Theory and Management of Tropical Fisheries*. Pauly, D. and G. I. Murphy (Eds.), 390 pp.
 p. 314-315 mention of silverbellies in trawl catches of Gulf of Thailand.

855. LATIFF, M. S. B. S. A. 1971.
A Guide to Trawl Species in Penang Waters. Min. Agric. Lands Malaysia.
 p. 32 gives descriptions and photos of *G. minuta*, p. 33 gives *L. equulus* and
 p. 34 gives *L. splendens*.
856. LAVELLE, F., J. P. HENRY AND A. M. MICHELSON 1970.
 Etude en milieu fluide et a basse temperature de la reaction d'émissions
 de bioluminescence de *Photobacterium leiognathi*. *C. R. Acad. Sci. Paris*, 270:
 2126-2129.
 Mentions of silverbelly as host.
857. LEE, C. K. C. 1973.
 The feeding of *Upeneus moluccensis* (Bleeker) on fishing grounds near Hong
 Kong. *Hong Kong Fisheries Bulletin*, No. 3, p. 47-53.
 p. 52. *Leiognathus* sp. among food items.
858. LEGASTO, R. M., C. M. DEL MUNDO AND K. CARPENTER 1976.
 On the socio-economic survey and hydrobiological survey of Maqueda
 Bay, Villareal Bay and part of Zumarraga Channel for the proposed fish
 nurseries/reservation. *Philipp. J. Fish.*, 13 (1): 102-146.
 Analysed 6 trawl hauls containing *L. splendens* and other unspecified
 slipmouths. Length range is also given.
859. LE MARE, D. W. AND THAM AH KOW 1954.
 On the inshore fish population of the Straits of Singapore.
 Lists *Leiognathus* spp. among the most abundant species. Species list
 includes: *L. insidiator*, *L. ruconius*, *L. fasciatus*, *L. equulus*, *L. bindus*, *L. berbis*,
L. lineolatus and *G. minuta*.
860. LE MINH, VIEN 1968.
 Commerical ichthyofauna of the Gulf of Tonkin. *J. Ichthyol., (Vopr. Ikhiol.)*,
 8 (5): 655-667.
 Gives distribution of *L. equulus* in the Indo-Pacific. Maximum size attained
 was 23.0 mm, important in the Gulf of Tonkin, used for production of fish
 pastes. Lists *Therapon theraps* as predator of *Leiognathidae*.
861. LEO, S. BERG 1947.
Classification of Fishes Both Recent and Fossil. A. J. Reprints Agency, New
 Delhi.
 p. 475. Family *Leiognathidae* and *Gerridae* Jordan are included from
 tropics.
862. LEUNISSEN, J. A. M. AND W. W. DE JONG 1987.
 Copper/zinc superoxide dismutase. How likely is gene transfer from
 pony-fish to *Photobacterium leiognathi*.

The proposed transfer of the gene for Cu/Zn superoxide dismutase from the pony fish to its symbiotic bacterium *Photobacterium leiognathi* has been evaluated by an extensive analysis of all available Cu/Zn superoxide dismutase sequences.

863. LEWIS, A. D., B. R. SMITH AND R. E. KEARNEY 1974.
Studies on tunas and baitfish in Papua, New Guinea waters. II *Res. Bull. Dept. Agri. Stock Fish, Port Moresby*, No. 11, 112 pp.
The live bait potential of leiognathids is discussed on p. 65.
864. LICHTENSTEIN, M. H. C. 1844.
Descriptions animalium quae in itinere ad maris Australis terras per annos, 1772-1774 suscepto, collegit, observavit et delineavit Joannes Reinoldus Forster. Berlin.
p. 96 *Zeus argentarius* (Tanna Isl.).
865. LIEM, D. S. AND A. K. HAINES 1977.
The ecological significance and economic importance of the mangrove and estuarine communities of the Gulf Province, Papua, New Guinea. *Office of Environment and Conservation, Waigani (Port Moresby), Papua, New Guinea Purari River (WABO) Hydroelectric Scheme Environmental Studies*, 3, 35 pp.
Lists *Gazza achlamys*, *Secutor* sp. *E. equula* and *E. berbis* among the predominantly marine fishes occurring in the Purari-Kikori mangrove areas.
866. LIN, S. Y. 1934.
A study of Foochow fishes. *Lingnan Sci. J. (Canton)*, 13 (4): 671-691.
p. 676 *L. ruconius*.
867. LINDBERG, G. U. AND Z. V. KRASYUKOVA 1969.
Fishes of the sea of Japan and adjacent waters of the sea of Okhotsk and the Yellow Sea. Part 3. Teleostomi. XXIX. Perciformes. *Opred. Faune SSSR*, 99: 1-479. English ed. 1971. Israel Progr. Sci. Trans.
Key to leiognathid spp. from Japanese waters. Describes *L. ruconius*, *L. elongatus*, *L. nuchalis*, *L. rivulatus*, *L. lineolatus* and *L. daura*.
868. LINDBERG, G. U. 1971.
Fishes of the world. A key to the Families and a Checklist. B. E. Bykhovskir, A. P. Adrivyashev (Ed.), 546 pp. Jhon Wiley & Sons, New York.
p. 321. Family Leiognathidae and *L. equulus* with figures are described.
869. LINDBERG, G. U. 1974.
Fishes of the World. Isr. Progr. Sci. Transl., Jerusalem.
p. 321. General remarks on Leiognathidae.

870. LINDLEY, R. H. 1982.
 Cod-end escapement from a demersal trawl with particular reference to the Leiognathidae. In: *Investigations into Fisheries Resources in Brunei*. Beales, Ru., Currie, D. J. and Lindky, R. H. (Eds.), Pub: by Brunei Museum, Brunei, pp. 99-114. *Monograph, Brunet Mus. J.*, No. 5.
 An examination of the escapement of various species from the 35 m cod end of a demersal trawl is described. Data on escapement for *Leiognathus splendens*, *L. daura*, *Leiognathus* sp. (undescribed) and *L. equulus* is given. Additional data on length, weight and body depth relationships are presented together with tentative conclusions on the suitability of a 35 mm cod end for use in Brunei's water.
871. LINDSAY, C. C. 1963.
Guide to Families of Malaysian Fishes. Dept. of Zoology, Univ. of Singapore.
 Key to Leiognathidae is given.
872. LIPTON, A. P., T. APPA RAO, S. G. RAJE, C. GOPAL, RANJIT SINGH, P. B. THUMBER AND H. K. DHOKIA 1988.
 Marine fish calender, VII. Veraval. *Mar. Fish. Inf. Serv., T & E Ser.*, No. 86, p. 1-20.
 Scientific and vernacular names, gear, percentage in the catch, peak period, depth of occurrence, length range, size at first maturity and spawning season of *Leiognathus splendens* are given.
873. LIVINGSTON, P., M. SIVADAS AND M. BADRUDEEN 1988.
 Marine fish calender, XII. Mandapam. *Mar. Fish. Inf. Serv., T & E Ser.*, No. 90, p. 1-12.
 Scientific and vernacular names, gear, peak period, depth of occurrence, length range, size at first maturity and spawning season of *Leiognathus jonesi*, *L. brevirostris*, *L. dussumieri*, *L. berbis*, *L. equulus*, *Gazza minuta*, *Secutor ruconius* and *S. insidiator* are reported.
874. LLOYD, R. E. 1907.
 Notes on a collection of marketable fish from Akyab, with a description of a new species of *Lactarius*. *Rec. Indian Mus.*, 1: 219-231.
 p. 278. *Equula eudentula* is common in river in winter months.
875. LONGHURST, A. 1969.
 Species assemblage in tropical fisheries. In: *Proceedings of the Symposium on the Oceanography and Fishery Resources of the Tropical Atlantic*, p. 147-168. UNESCO, Paris.
 Discusses the leiognathid niche in relation to that of the Sciaenidae and Gerridae.

876. LOSSE, G. F. 1964.
 A purse seine fishery in East African coastal waters. *Proc. East. Afr. Acad.*, 2: 88-91.
 Reports that Leiognathidae is well-represented in the catch (Zanzibar Channel) making 30-60% of the total catch from June to October. Important species are: *G. minuta* and *S. insidiator*.
877. LOSSE, G. F. 1966.
 Fishes taken by purse-seines and dipnet in the Zanzibar Channel. *East Afr. Agri. For. J.*, 32 (1): 50-53.
 Lists *G. minuta*, *S. insidiator* and *L. fasciatus* which are abundant during the southeast monsoon.
878. LOSSE, G. AND A. DWIPPONGO 1977.
 Reports on the Java Sea southeast monsoon trawl survey, June-December, 1976. *Contrib. Demersal Fish. Proj. Mar. Fish. Res. Inst., Jakarta*, No. 3, 119 pp.
 Gives catch rates for *L. splendens* and other Leiognathidae. Defines "inshore" and "offshore" with reference to occurrence of *L. splendens*.
879. LOVE, M. 1970.
The Chemical Biology of Fish, with a Key to the Chemical Literature. Academic Press, London and New York, 547 pp.
 Gives an index, listing *L. argenteus*, *L. nuchalis*, *L. equulus*, *L. daura* and *Leiognathus* sp. for the substances analyzed.
880. LUTHER, G. 1973.
 Observations on the biology and fishery of the India mackerel *Rastrelliger kanagurta* (Cuvier) from Andaman Islands. *Indian J. Fish.*, 20 (2): 425-447.
Leiognathus is listed among the occasional food items.
881. LUTHER, G. 1985.
 Food and feeding habits of the two species of *Chirocentrus* from Mandapam. *Indian J. Fish.*, 32 (4): 439-446.
 Leiognathids ranked 2nd in importance in the food of *Chirocentrus nudus* and *C. dorab*.
882. LUTHER, G., P. N. RADHAKRISHNAN NAIR, G. GOPAKUMAR AND K. PRABHAKARAN NAIR 1982.
 The present status of small-scale traditional fishery at vizhinjam. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 38, p. 1-17.
 Contributing about 187 tonnes annually, the silverbellies accounted for about 4% of the total fish landings. *Leiognathus bindus* and *Secutor insidiator* were the two important species of the area. The other species met with

- were *L. daura*, *L. dussumieri*, *L. brevirostris*, *L. equulus*, *L. lineolatus*, *L. splendens*, *L. leuciscus*, *S. ruconius* and *Gazza minuta*. Bulk (85%) of the leiognathid catch was landed by boat-seine, followed by shore-seine (9%) and 'Chala vala' (5%). Though the landing was throughout the year, nearly 90% of the catches was obtained during April-October with peak in June.
883. LUTHER, G., T. APPA RAO, S. REUBEN, Y. APPANNA SASTRY, M. V. SOMARAJU, C. GOPAL AND K. RADHAKRISHNA 1988.
- Marine fish calendar. 2. Visakhapatnam. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 80, p. 1-21.
- Scientific and vernacular (Telugu) names, gear, percentage in the catch of the group, peak period of occurrence, depth of occurrence, length range in commercial fishery, size at first maturity and spawning season of *Leiognathus bindus* with annual average catch of leiognathids are given.
884. MACLEAN, J. 1973.
- An analysis of the catch by trawlers in Moreton Bay (old) during the 1966-'67 prawning season. *Proc. Linn. Soc. N. S. W.*, 98 (1): 35-42.
- The "sixpence" *Leiognathus moretonensis* contributed 0.1% of the catch by weight.
885. MACLEAY, W. 1880.
- Note on some fishes from the Solomon Islands. *Proc. Linn. Soc. N. S. W.*, 4 (1): 60-65.
- E. edentula*.
886. MACLEAY, W. 1881.
- Descriptive catalogue of the fishes of Australia. Vol. 1. F. W. White, Sydney.
- p. 185 lists and describes *E. edentula* and *E. interrupta*.
887. MACLEAY, W. 1883.
- Notes on a collection of fishes from the Burdekin and Mary River. *Proc. Linn. Soc. N. S. W.*, 8: 199-213.
- Equula* sp. is recorded from lower course of Burdekin River.
888. MACLEAY, W. 1883.
- Contributions to a knowledge of the fishes of New Guinea. Part 4. *Proc. Linn. Soc. N. S. W.*, 8 (2): 252-282.
- E. edentula* (Normandy Is., New Guinea).
889. MACLEAY, W. 1884.
- Supplement to descriptive catalogue of the fishes of Australia. *Proc. Linn. Soc. N. S. W.*, 9: 2-64.
- p. 25 lists and describes *E. splendens* and *E. edentula*.

890. MADAN MOHAN 1983.
Kalava fisheries of Pulluvila village. *Indian J. Fish.*, 30 (1): 135-142.
Leiognathus spp. were also used as fish bait among other fishes.
891. MAGNUSSON, J. 1972.
On the trawl fishery in the Philippines. *Proc. Indo-Pacific. Fish. Council.*, 13 (3): 597-604.
Reports on p. 601 that slipmouth (*Leiognathus*) are by far the most common species in the catch (about $\frac{1}{3}$ with the gerreid *Pentaprion*).
892. MAHADEVAN, S. 1950.
The digestive system of *Caranx djedaba* (Forsk.) and *Trichiurus haumela* (Forsk.) *Jour. Mad. Univ.*, 20 B: 25-48.
Mentions silverbellies as food of ribbon fish.
893. MAHADEVAN, S. 1958.
Report on the "KaaraI" (*Leiognathus* spp. and *Gazza minuta*) fishery of Rameswaram Island in the Gulf of Mannar and Palk Bay. *Proc. 45th Ind. Sci. Congr., Part III, Abstracts*.
Silverbelly is reported as an important group of fishes in Rameswaram Island and these are landed by 'Madivalai' operated using catamaran in July-September. Seven species were examined in commercial catches. Economics of this fishery is discussed.
894. MAITIFE, P., AND S. S. DE SILVA 1986.
The structure and function of 'Kraal', a fishing gear, in a Sri Lanka lagoon. *Indian J. Fish.*, 33 (1): 137-143.
p. 142. Mentioned silverbellies among the bycatch.
895. MALPAS, A. H. 1926.
Biological survey of the littoral waters of Ceylon. *Ceylon J. Sci. Sect., C* 2: 13-165.
Gives biological data for 8 species of *Leiognathids*.
896. MAMMEN, T. A. 1985.
Prospects of deep sea fishing. In: *Proc. Harvest and Post-harvest Technology of Fish*. K. Ravindran, N. Unnikrishnan Nair, P. A. Perigreen, P. Madhavan, A. G. Gopalakrishna Pillai, P. A. Panicker and Mary Thomas (Eds.), p. 730-735. Society of Fisheries Technologists (India), Cochin.
p. 732. Additional yields of silverbellies estimated by George *et al.* (1977) and Joseph (1981) were 52,000 and 70,000 tonnes respectively.

897. MANACOP, P. R. 1937.
The fisheries of Lake Mainit and of Northern Surigao, including the Island of Dinagat and Siargao. *Philipp. J. Sci.*, 64 (4): 341-355.
'Danutan' (*Leiognathidae*) is reported among the principal species found in the lake.
898. MANACOP, P. R. 1956.
Commercial trawling in the Philippines. *Philipp. J. Fish.*, 3 (2): 117-183.
Leiognathus spp. are reported to make the bulk of trawl catches in Manila Bay and other areas of the Philippines.
899. MANE, A. M., AND E. O. TAN 1969.
Country report Philippines. In: *Proceedings of the International Seminar on Possibilities and Problems of Fisheries Development in Southeast Asia*, p. 261-276. Berlin, September, 1968. (Philippines, Fish. Comm., Intramuros, Manila, Philippines).
Mentions *Leiognathidae*.
900. MANGALIK, A. 1966.
Food and feeding habits of two species of *Leiognathidae*, *L. splendens* (Cuv.) and *Gazza minuta* (Bleeker). Bogor. Agri. Inst., Indones., 30 pp. Thesis. (In Indonesian).
L. splendens feeds mainly on copepods and benthic organisms and *G. minuta* on young fishes.
901. MANNA, B. AND B. C. B. GOSWAMI 1985.
A check-list of marine and estuarine fishes of Digha, West Bengal, India. *Mahasagar*, 18 (4): 489-499.
p. 495. *Leiognathus equulus* is reported among *Leiognathidae* with common English name and spot of collection.
902. MARR, J. C. 1976.
Fishery and resource management in Southeast Asia. *RFF/PISFA, paper 7*, 62 pp. Resources for the Future, Washington D. C.
Catch data of *Leiognathidae* emphasize importance of this family.
903. MARSHALL, T. C. 1954.
Revised and illustrated version of the commercial fishes and fisheries of Queensland, an essay by J. Douglas Ogilby. Dept. Harbors and Marine, Brisbane, Queensland.
Enormous catches of *leiognathid*, which are often mistaken for the young of valuable species are reported.

904. MARSHALL, T. C. 1964.
Fishes of the Great Barrier Reef and Coastal Waters of Queensland. Angus and Robertson, Sydney, 566 pp.
 Gives Description of the family Leiognathidae in general and *Secutor ruconius* and *Leiognathus moretoniensis* in particular. Gives the key to the genera in Australia with colour plate of *S. ruconius*.
905. MARTIN, J. P. AND I. Ld. FRIDOVICH Jr. 1981.
 Evidence for a natural gene transfer from the ponyfish to its bioluminescent bacterial symbiont *Photobacter leiognathi*. The close relationship between bacteriocuperin and the copper-zinc superoxide dismutase of teleost fishes. *J. Biol. Chem.*, 256 (19): 6080-6089.
 As per title.
906. MARTOSUBROTO, P. 1973.
 (Studies on the demersal fisheries stock in the Malacca Strait and Jambi Bay) Laporan Penelitian Perikanan Laut (*Mar. Fish. Res. Rep.*), 1: 1-33 (In Indonesian).
 Gives catch data for Leiognathidae according to depth zone. Catch list includes *G. minuta*, *S. ruconius*, *L. brevirostris*, *L. splendens* and *L. equulus*.
907. MARTOSUBROTO, P. AND D. PAULY 1976.
 R/V *Mutiaria IV* survey data, November, 1974 to July, 1976. *Contrib. Demersal Fish. Proj. Mar. Fish. Res. Inst. Jakarta*, No. 2, 136 pp.
 Gives rough estimates of leiognathid stock size and potential yield, by subareas (Western Indonesian waters). Also contains length frequency data for various Leiognathidae.
908. MARUKAWA, H. 1939.
 (Fisheries of the South Seas. IV. Bait fishes for tuna and Skipjack). *South Sea Fish.*, 5 (5): 4-10 (In Japanese. English translation. South West Fisheries Center, NMFS, NOAA, Honolulu).
 Mentions *G. minuta* as live bait, used only where other fishes are scarce.
909. MASUDA, H., C. ARAGA AND T. YOSHINTO 1975.
Coastal Fishes of Southern Japan. Tokai University Press, Japan, 379 pp.
Leiognathus nuchalis, *L. equulus*, *L. rivulatus*, *L. leuciscus* and *L. fasciatus* are given in colour plates with description.
910. MASUDA, H., K. AMAOKA, C. ARAGA, T. UYENO AND J. YOSHINO 1984.
The Fishes of the Japanese Archipelago. Tokai University Press, Japan, 437 pp.
 p. 158. Description of the characters of the family Leiognathidae and the species namely *L. elongatus*, *L. rivulatus*, *L. leuciscus*, *L. lineolatus*, *L. bindus*, *L. nuchalis*, *L. splendens*, *L. equula*, *L. fasciatus* and *G. minuta* are given with plate.

911. MATHEN, C., F. THOMAS, A. MATHEW AND A. C. JOSEPH 1975.
A survey on the quality of Indian fish meal of commerce. *Fish. Technol.* 12 (1): 16-20.
Factory product of silverbelly fish meal analysed for the proximate composition contained moisture (8.98-1.39%), fat (6.12-0.97%), ash (30.50-2.44%), protein (48.30-0.54%), acid insoluble ash (3.10-1.00%) and some of the Indias quality sodium chloride 1.62-0.19% (moisture free basis). Total non protein nitrogen 1148-546%, total volatile nitrogen 59-97% and standard plala count/g 50-62-130.
912. MATHESON, R. E. Jr. 1984.
Taxonomic studies of the *Eucinostomus argenteus* complex (Pisces: Gerriidae). Dissertation. *Abst. Int.*, 45 (1): 91.
Gives systematic accounts, significance and geographic variation.
913. MATHESON, R. E. Jr R. AND J. D. MC EACHRAN 1984.
Taxonomic studies of the *Eucinostomus argenteus* complex (Pisces: Gerriidae): Preliminary studies of external morphology. *Copeia*, 4: 893-902. illustration.
Gives morphological variations, taxonomic use of character and correlations. Florida.
914. MCALLISTER, D. E. 1966.
The significance of ventral bioluminescence in fishes. *J. Fish. Res. Board Can.*, 24 (3): 537-554.
As per title, including Leiognathidae.
915. MCFALL-NGAI, M. J. 1983.
Adaptations for reflection of bioluminescent light in the gas bladder of *Leiognathus equulus* (Perciformes: Leiognathidae). *J. Exp. Zool.*, 227 (1) : 23-33.
The gas bladder of leiognathid fish functions not only in buoyancy but also in reflection of bioluminescent light from the circumoesophageal light organ. Purine distribution, quality (guanine/hypoxanthine ratio) and concentration, as the basis for reflectivity, were analysed enzymatically for different portions of gas bladder lining of the common leiognathid, *L. equulus* (Forskal). The enhancement of purine in the reflective portions of the bladder and the correlation of the differential distribution of purines with the path of light indicate that the *L. equulus* gas bladder is exquisitely adapted to function as reflector of bioluminescent light.
916. MCFALL-NGAI, M. J. 1983.
Adaptations of reflection of bioluminescent light in the gas bladder of *Leiognathus equulus* (Perciformes: Leiognathidae). *J. Exp. Zool.*, 227 (1): 23-33.
Gives gas bladder-adaptations for bioluminescent light reflection.

917. MCFALL-NGAI, M. J. AND P. V. DUNLAP 1983.
 Three new modes of luminescence in the leiognathid fish *Gazza minuta* - discrete projected luminescence, ventral body flash and buccal luminescence. *Marine Biol.*, 73 (3): 227-237.
 Luminescence mechanism in *Gazza minuta* of Philippines is described.
918. MCFALL-NGAI, M. J. AND P. V. DUNLAP 1984.
 External and internal sexual dimorphism in Leiognathid fishes: Morphological evidence for sex-specific bioluminescent signalling. *J. morphol.*, 182: 71-83.
 Fourteen species of leiognathid fishes (Perch: Leiognathidae) from the Philippine Islands, Thailand, Japan, Indonesia and Palau were examined for accessory secondary sexual dimorphism. Thirteen species exhibit either external dimorphism or internal dimorphism or both. Eight of the 14 species exhibit both forms of sexual dimorphism. Two species show only internal light organ volume dimorphism and one species shows neither external nor internal dimorphism. Sexual dimorphism is thus very common in leiognathidae. The externally dimorphic skin patches are closely associated with the internally dimorphic light organ system in seven species, indicating a potential for light emission through the clear patches. A bioluminescent signalling function by males is therefore suggested for the sexual dimorphism in leiognathids which may play an important role in the schooling behaviour as well as in species and sexual recognition of these coastal fishes.
919. MEENAKSHISUNDARAM, P. T., T. C. GNANAMUTHU, R. SARVESAN, E. VIVEKANANDAN, M. RAJAGOPALAN, S. SRINIVASARENGAN, S. K. BALAKUMAR, S. CHANDRASEKAR AND P. THIRUMILU 1981.
 Industrial fisheries off Madras coast based on exploratory survey during 1973-80. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 32, p. 7-36.
 The silverbellies formed the major group in the catches made by the exploratory vessels.
920. MEES, G. F. 1959.
 Additions to the fish fauna of Western Australia. 1. *Fish. Bull. W. Aust.*, 9 (1): 5-11.
Leiognathus fasciatus recorded.
921. MENASVETA, P. 1976.
 Ecology of fish population in the coastal area of Bang Pra. MS presented at the *Symposium on Mangrove Ecology*, Phuket, Thailand, Jan., 1976.
 Gives catch and length data for *L. elongatus*, *S. ruconius*, *Leiognathus* sp. and *L. splendens*.

922. MENASVETA, D. AND A. P. ISARANKURA 1969.
Country report: Thailand. *Proceedings of the International Seminar on Possibilities and Problems of Fisheries Development in Southeast Asia*. Berlin, September, 1968, p. 281-309. (Dept. Fish., FAO, Via delle Terme di Caracalla, 00100 Rome, Italy).
923. MENDIS, A. S. 1954.
Fishes of Ceylon. (a catalogue, key and bibliography). *Bull. Fish. Res. Stn. Ceylon.*, No. 2, p. 1-222.
p. 59. Key to the family Leiognathidae including *Gerres*, *L. insidiator*, *L. ruconius*, *L. splendens*, *L. fasciatus*, *L. equulus*, *L. daura*, *L. bindus* and *Gazza minuta* with catalogue of the family Leiognathidae on p. 128.
924. MENON, M. A. S. 1963.
On a collection of fish from Lake Chilka, Orissa. *Rec. Indian Mus.*, 59 (1/2): 41-69.
Lists *L. daura*, *L. dussumieri*, *L. equulus*, *S. insidiator*, *L. blochii* and *G. minuta*.
925. MENON, A. G. K. AND P. K. TALWAR 1972.
Fishes of the Great Nicobar Expedition, 1966 with description of a new gobioid fish of the family Kraemeriidae. *Rec. Zool. Surv. India*, 66 (1-4): 35-61.
A systematic account, with size range in standard length, the date of collection, locality and the range of distribution of family Leiognathidae (*G. minuta*, *Gerres oblongus*, *Leiognathus blochii*, *L. daura*, *L. dussumieri*, *L. equulus*, *Pertica filamentosa* and *Secutor insidiator*).
926. MENON, A. G. K., K. V. RAMA RAO, S. CHAKRAPANI AND T. K. SEN 1971.
Fishery resources of the Andaman Islands with suggestions for the improvement of the fishing Industry. *Seafood Exp. J.*, 3 (1): 19-26.
Scientific, common English and local names (in Telugu) are given for *Leiognathus equulus*, *L. ruconius* and *L. splendens*.
927. MEYER, A. B. 1885.
Catalogo de los peces recolectados en el archipelago de las Indias orientales durante los anos 1870 a 1973. *An. Soc. Esp. Hist. Nat.*, 14: 5-49.
p. 26. *G. argentaria*.
928. MICHEL, C. 1974.
Notes on marine biology studies made in Mauritius. *Bull. Mauritius Inst.*, 7 (2): 1-284.
Lists *Equula dentex*, *E. ensifera* and *E. parvicepa* from Mauritius.

929. MIDGALSKI, E. C. AND G. S. FICHTER 1976.
The Fresh and Salt Water Fish of the World. Mandarin Publishers Limited, Hong Kong, 316 pp.
 p. 233 gives information on small marine fishes of Indo-Pacific region abundant in some region. Fishes with protrusible mouth and luminous organs around the oesophagus are described. Largest species is *Leiognathus equula* measuring 12 inches. Other species of *Leiognathus*, *Gazza* and *Scutor* measured less than 6 inches long.
930. MISTA, K.S. 1959.
 An aid to commercial fishes. *Rec. Indian Mus.*, 57: 255-259.
 Description, distribution and synonyms of *leiognathus blochii*, *L. equula*, *L. fasciata*, *L. lineolata*, *L. ruconius*, *L. splendens* and *Gazza minuta* are given.
931. MITO, SATOSHI 1966.
 Fish eggs and larvae. *Identification Sheet of Marine Plankton of Japanese Waters*. Vol 7, 74 pp. Soyosha, Tokyo.
 p. 25. Description of egg and larvae of *Leiognathus nuchalis* (Temminck et Schlegel) is given in Japanese language.
932. MITO SATOSHI, M. UKAWA AND MASAKAI HIGUCHI 1973.
 Growth of some marine fish larvae hatched out from pelagic eggs. *J. mar. biol. Ass. India*, 15 (2): 490-495.
 Gives the early growth of larvae hatched out from pelagic eggs of Japan. *Leiognathus nuchalis* is described as example.
933. MOAZZAM, M. AND S. H. NIAZ RIZVE 1980.
 Fish entrapment in the seawater intake of a power plant at Karachi coast. *Environ, Biol. Fish.*, 5 (7): 49-57.
S. insidiator, *G. minuta*, *L. daura*, *L. bindus* and *L. dussumieri* are listed among the entrapped fishes, with length range.
934. MOHAMMED SHAARI BIN SAM ABDUL LATIF, G. RAUCK, K.S. ONG AND T.S. PENG 1974.
 Demersal fish resources in Malaysian waters. 2. Trawl survey of the coastal waters off the west coast of Peninsular Malaysia (12th December, 1970 - 22nd January, 1971). *Min. Agric. Rural Dev., Malays. Fish. Bull.*, No. 3, p. 1-41.
 Catch data for large-sized *Leiognathidae* according to depth range and bottom type.
935. MOHANTY, S.K., P.V. RAO AND S. CHOUDHURY 1979.
 Ganjam coast in Orissa can support good trawl fishery. *Seafood Exp. J.*, 11 (3): 15-17.

- Gives the details of experimental trawling conducted off Orissa coast during 1971-'73. Silverbellies are reported among 148 fish species.
936. MOHAPATRA, P. 1966.
 Indigenous fishing methods of the south Orissa coast. *Orissa Fisheries Research and Investigation Bulletin*, No. 1, p. 1-56.
Leiognathus equulus is caught in shore or beach seines and boat seines.
937. MOHAPATRA, P. 1966.
 Local names of common sea fishes of Orissa. *Orissa Fisheries Research and Investigation Bulletin*, No. 1, p. 1-56.
 Under family Leiognathidae, *Leiognathus equula* (Tonka Chanded), *L. splendens* (Tonka Chandee) and *Gazza minuta* (Polanga) are given.
938. MOJUMDER, P. 1969.
 Food of the cat-fish. *Tachysurus thalassinus* (Ruppell). *Indian J. Fish.*, **16** (1 & 2): 161-169.
Leiognathus spp. were recorded among fish that constituted the food of *Tachysurus thalassinus*.
939. MONKOLPRASIT, S. 1966.
 Preliminary faunal data on marine tidal and sea shore habitats of Klon-Wan area, Thailand. *Bull. Kasetsart Univ. Fish. Res.*, No. 3, p. 1-27.
 Lists from a market collection: *G. minuta*, *L. daura*, *L. elongatus*, *L. equulus*, *L. fasciatus*, *L. insidiator*, *L. lineolatus* and *L. splendens*. From the seashore are listed: *G. minuta*, *L. berbis*, *L. brevirostris*, *L. daura*, *L. equulus*, *L. insidiator*, *L. ruconius*, *L. splendens* and *Leiognathus* spp. many of which were juveniles.
940. MONKOLPRASIT, S. 1973.
 The fishes of the leiognathid genus *Secutor* with description of a new species from Thailand. *Bull. Kasetsart Univ. Fish. Res.*, No. 6, p. 10-17.
 Describes a third species *Secutor indicus* from both the Gulf of Thailand and Indian Ocean coast of Thailand along with *S. insidiator* and *S. ruconius*.
941. MONKOLPRASIT, S. 1971.
 (Systematics of Thai fishes). *Fac. Fish Kasetsart Univ. Bangkok*. (In Thai) (mimeo).
 Gives a general description of leiognathids and species list.
942. MONKOLPRASIT, S. 1972.
 (Guide to fish identification in Thai waters). *Fac. Fish. Kasetsart Univ. Bangkok*. (In English with title in Thai) (mimeo).
 Contains a key to three genera and seventeen species of Thai Leiognathidae.

943. MONTALBAN, H. R., G. BLANCO AND I. A. RONQUILLO.
 Philippine fishes. *Philipp. Dept. Agric. Nat. Resources, Pop. Bull.*, No. 46, p. 1-16.
 Gives figures for *L. equulus*, *L. fasciatus* and *S. ruconius*.
944. MOORJANI, M. N., GEETHA RAMANATHAN AND S. RAJALAKSHMI 1978.
 Meat separation from inexpensive varieties of fish and its utilization.
Proc. Indo-Pacific. Fish. Coun., 18 (3): 254-261.
 Estimated landing of silverbellies during 1976 was 48,996 tonnes. They were grouped as inexpensive variety of fish. Minced meat of silverbelly was obtained from thoroughly washed, eviscerated and beheaded fish using a meat or bone separator. The separated meat and the other ingredients were thoroughly mixed and baked at 160°C for about 40-60 min. Taste panel studies were conducted with six trained personnel to score for flavour and taste. The yield of minced flesh based on round fish was 60 per cent while the yield was 85 per cent based on dressed silverbelly.
945. MORGAN, R. 1956.
World Sea Fisheries. Mathue & Co, London, 307 pp.
 p. 177. Percentage of *Leiognathus* spp. and *Gazza* spp. landings for the year 1951 was 3.3% in Asian region.
946. MORGAN, G.R. 1985.
 Status of the shrimp and fish resources of the Gulf. *FAO Fisheries Circular*, No., 792, p. 1-49.
 p. 44. Data of estimated annual production of ponyfishes by artisanal fishery is presented. The quantity discarded for various species in Qatar is also given.
947. MORI, T. 1928.
 A catalogue of the fishes of Korea. *J. Pan. Pac. Res. Inst.*, 3 (3): 3-8.
 Lists *L. argentea* (Houttuyn) and *L. rivulatus* (T. & Schl.) from Fusan.
948. MORIN, J. G. 1975.
 Light for all seasons : Versatility in behavioural repertoire of the flashlight fish. *Science*, 190: 784-76.
 Mentions luminescent camouflage in leiognathids.
949. MORIN, J. G., HARRINGTON AND J. W. HASTINGS 1975.
 Protective illumination by the ponyfish: a confirmatin of the countershading hypothesis. *Alpha Helix Bioluminescence Expedition Indonesia (MS)*.
 Reports that the light emitted by *G. minuta* changes proportionately to that of a lamp placed above the fish.

950. MOSES, S. T. 1923.
 A statistical account of the fish supply of Madras. Report No. 6 of 1922. *Madras Fisheries Bulletin*, No. 4, p. 131-166.
 Silverbellies are the most important food fishes of Madras. These fish are greatly in demand by the poor and priced cheap. The species included under this group are *E. edentula*, *E. insidiatrix*, *L. splendens*, *E. daura*, *E. blochii* and *Gazza minuta*. These are common from August till November.
951. MOUNEIMNE, N. 1977.
 Liste des poissons de la cote du Liban (Mediterranee, Orientale). *Cybiurn* 3^{ème} Ser., (1): 37-66.
 Lists *L. klunzingeri* mentioning its Red Sea origin.
952. MUNKUNDAN, C. 1977.
 Demersal fisheries. In: *Indian Fisheries*. E.G. Silas (Ed.), p. 14-16. MPEDA, Cochin.
 Silverbellies occur at 30-50 m depth among other fishes in the northern Bay of Bengal.
953. MUNDO, C. M., T. G. DEL PIMENTAL, A. B. OLANDEZ AND A. M. GLICIA 1980.
 Preliminary report on the hydrobiological and fisheries survey of Asiatic Gulf, Masbate, March 14-28. *Bur. Fish. Awuat. Res. (Philippines), Tech. Pap. Ser.*, No. 4 (4), p. 1-12.
 Catch of a "bahau" (small trawl) was analysed and found consisting of *L. equulus* (N=100, range 31-85 mm, all immature), *S. ruconius* (N=5, range 33-57 mm all immature) and *Leiognathus* spp. all immature. Catch consisted of 9.90% of Leiognathidae.
954. MUNRO, I. S. R. 1955.
The Marine and Freshwater Fishes of Ceylon. Dept. of External Affairs, Canberra.
 A key to identification, description, brief synonymy and figures of *S. ruconius*, *S. insidiator*, *L. splendens*, *L. dussumiri*, *L. fasciatus*, *L. equulus*, *L. brevisrostris*, *L. daura*, *L. bindus*, *L. lineolatus*, *G. minuta* and *G. achlamys* are given.
955. MUNRO, I. S. R. 1958.
 The fishes of the New Guinea region: a check-list of the fishes of New Guinea. *Fish. Bull. Ter. Papua, New Guinea.*, 1: 97-364. Also in *Papua New Guinea. Agri. J.*, 10 (4): 97-369.
956. MUNRO, I. S. R. 1960.
 Handbook of Australian fishes. *Fisheries News Letter*, 19 (96): 1-34.

- Description of *Gazza minuta*, *Secutor reconstitutus*, *Equula equula*, *E. fasciata*, *E. nuchalis*, *Leiognathus splendens*, *Equulites moretoniensis*, *E. hastatus* and *E. novaehollandiae* are given under the family Leiognathidae.
957. MUNRO, I. S. R. 1964.
 Additions to the fish fauna of New Guinea. *Papua, New Guinea Agric. J.*, 16: 141-168.
L. rapsoni nov. sp. Lists *L. bindus* as a new record.
958. MUNRO, I. S. R. 1967.
The Fishes of New Guinea. Dept. Agric. Stock. Fish Port, Moresby, New Guinea.
 p. 237-241 list and describe with figures *G. minuta*, *G. achlamys*, *S. ruconius*, *L. equulus*, *L. fasciatus*, *L. bindus*, *L. novaehollandiae*, *L. splendens* and *L. rapsoni*.
959. MUNRO, I. S. R. 1968.
 Survey of the prawn resources of the Gulf of Carpentaria, January-August, 1968. 74 pp.
 Lists *Equulites novaehollandiae* and *Leiognathus* spp. among the dominant fishes in the trawl catches.
960. MUNRO, I. S. R. 1982.
The Marine and Freshwater Fishes of Ceylon. Soni Reprints Agency, Delhi. Indian Reprint, 351 pp., plates 56.
 Description and key to the identification of 12 species under the family leiognathidae with figures are given.
961. MUTHU, M. S., K. A. NARASIMHAM, G. SUDHAKARA RAO, Y. APPANNA SASTRY AND P. RAMALINGAM 1975.
 On the commercial trawl fisheries off Kakinada during 1967-'70. *Indian J. Fish.*, 22 (1 & 2): 171-186.
 Species-wise break up value weight was 26,2661 kg with the percentage of 6.44. Catch rates varied in each boat and *Leiognathus* spp. (10-25 mm) were dominant.
962. MYERS, R. F. AND J. W. SHEPARD 1980.
 New records of fishes from Guam with notes on the ichthyofauna of the Southern Marianes. *Micronesica*, 16 (2): 305.
 The family Gerridae is listed as distinct from the Leiognathidae.
963. MURTY, V. SRIRAMACHANDRA 1969.
 Catalogue of fishes (excluding from the Laccadives) in the reference collections of the Central Marine Fisheries Research Institute. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 10, 36 pp.

List of silverbellies viz. *Secutor ruconius*, *S. insidiator*, *Leiognathus fasciatus*, *L. bindus*, *L. equulus*, *L. daura*, *L. brevirostris*, *L. leuciscus*, *L. smithursti*, *L. lineolatus*, *L. blochii*, *L. splendens*, *L. dussumieri*, *L. berbis*, *Gazza minuta* and *G. achlamys* is given with number of specimens available and places of collection.

964. MURTY, V. SRIRAMACHANDRA 1983.

Observations on some aspects of biology of silverbelly *Leiognathus bindus* (Valenciennes) from Kakinada. *Indian J. Fish.*, 30 (1): 61-68.

The length-weight relationship of *Leiognathus bindus* can be described by the equation $\log W = -4.77709 + 2.96182 \log L$. The length at first maturity is estimated as 80 mm. This species is a fractional spawner and appears to release the ova at least in two spawnings during the course of one year. It appears to spawn in almost all months, with a peak during December-February. Based on length-frequency distribution, the species attains 65 and 90 mm at the completion of first and second year respectively.

965. MURTY, V. SRIRAMACHANDRA 1985.

Multispecies stock assessment with particular reference to major demersal fish species in the trawling grounds off Kakinada. *J. mar. biol. Ass. India*, 27 (1 & 2): 39-48.

Leiognathus bindus and *Secutor insidiator* were studied.

966. MURTY, V. SRIRAMACHANDRA 1986.

Studies on growth and population dynamics of silverbelly *Leiognathus bindus* (Valenciennes) in the trawling grounds off Kakinada. *Indian J. Fish.*, 33 (3): 277-284.

The von Bertalanffy growth parameters are estimated as $L_{\infty} = 158.4$ mm, $K = 0.58$ per year and $a - d t_0 = -0.024$ year. The yield per recruit analysis shows that the yield of *L. bindus* can be increased by increasing the cod end mesh size of trawl nets.

967. MURTY, V. SRIRAMACHANDRA 1986.

Population characteristics of the silverbelly *Leiognathus bindus* (Valenciennes) along West Bengal coast. *J. mar. biol. Ass. India*, 28 (1 & 2): 41-47.

The author recorded the population characteristics of silverbelly *Leiognathus bindus* during the survey conducted by Research Vessel R. V. *Skipjack* along the coast of West Bengal. Occurred 6-15 mm above sea bottom during night time. The length weight relationship is described by equation and concluded that the species belonged to a virgin stock. The yield per recruit analysis showed that high yield could be obtained at a code end mesh size of 42 mm with a maximum F of 3.2.

968. MURTY, V. SRIRAMACHANDRA AND N. GOPINATHA MENON 1986.

The silverbelly resources. *R & D series for Marine Fishery Resources Management*. C. M. F. R. I., Cochin.

Short account of silverbelly resources of India. Management of resources of *Leiognathus bindus*, *L. jonesi* and *Secutor insidiator* is given.

969. MURTY, V. SRIRAMACHANDRA, M. K. BANDYOPADHYAY AND P. RAMALINGAM 1988.

Marine fish calendar. 5. Kakinada. *Mar. Fish. Inf. Serv., T & E ser.*, No. 83, p. 1-17.

Scientific and vernacular names, percentage in the catch, peak period, length range, size at first maturity and spawning seasons of *Leiognathus bindus*, *L. brevirostris*, *Secutor insidiator* and *Gazza minuta* are reported.

970. MYOUNG, J. G. AND Y. U. KIM 1984.

Morphology of larvae and juveniles of *Leiognathus nuchalis*. *Bull. Natl. Fish. Univ. Pusan, Pusan Korea*, 24 (1): 1-22.

The metamorphosis was recognised in the post larval stage between ca 4.1 mm and 6.0 mm in body length. Upto metamorphosis, the tail developed faster than any other body part. However, after metamorphosis the body height developed faster and the tail slowest. Metamorphosis brought about not only ossification of many elements, but also exchange of larval features to adult ones. The latter happened typically to jaw bones and proopercles. The dorsal and anal fin rays were at first formed when the body length was ca 4.1 mm and as it attained ca 5.8 mm the number of fin rays reached that of the adult ones. In the unpaired fins, the development of caudal fin preceded that of the dorsal and anal fins. Upper jaw teeth were formed only on the premaxillary. While the teeth on the jaw increased almost constantly, those on the upper and lower pharyngeal bones increased in proportion to body length.

971. NADER, I. A. AND S. JAWDAT 1977.

First records of fishes from Iraq waters. *Bulletin Fac. Sci. Riyadh. Univ.*, 8, p. 429-443.

Leiognathus splendens recorded for the first time.

972. NAEVE, S. A. (Ed.) 1939.

Nomenclator Zoologicus. Vol. D. L.

Indicates first authors of *Deveximentum*, *Equula*, *Equulites* and *Leiognathus*.

973. NAGABHUSHANAM, A. K. 1966.

A survey of the offshore demersal fisheries of the Andhra and Orissa coasts with special reference to the biological data collected during 1960. *Indian J. Fish.*, 13 (1 & 2): 359.

Length range of *Secutor* was 29-96 mm, 26-119 mm, 45-120 mm and 60-120 mm and of *Leiognathus* was 36-110 mm, 32-265 mm, 49-265 mm and 70-140 mm in different depths (upto 20 metres, 21 to 40 metres, 41-60 metres and 61 to 80 metres respectively).

974. NAGAKURA, K. AND K. SACHITHANANTHAN 1971.
Proximate composition of 4 types of salted and dried fish in Ceylon. *Bull. Tokai Reg. Fish. Res. Lab.*, 65: 75-80.
Also on *Secutor* sp.
975. NAIR, G. K. 1958.
Piscine wealth to the Andamans. Table of catch statistics for 1955-'57, 5 pp.
Notes on *Leiognathidae*, *Leiognathus*, *Gazza* and other fishes, and on craft and gear used are given.
976. NAIR, K. V. SOMASEKHARAN 1980.
Food and feeding habits of *Johnnieops sina* (Cuvier). *Indian J. Fish.*, 27 (1 & 2): 24-34.
Leiognathus sp. formed food of juveniles and in adults *Leiognathus bindus* formed predominant food almost throughout the year.
977. NAIR, R. V. 1947.
Fish eggs and larvae of the Madras plankton. *Proc. 33rd Indian Sci. Congr. (Bangalore), Part 3*, 127 pp. (Abstract).
Post-larvae of *Leiognathus ruconius* are recorded.
978. NAIR, N. BALAKRISHNAN 1985.
Conservation of living resources of India. Problems and prospects. In: *Harvest and Post-harvest Technology of Fish*. Ravindran, K. Unnikrishnan Nair, N., Perigreen, P. A., Madhavan, P., Gopalakrishna Pillai, A. G., Panicker, P. A and Mary Thomas (Eds.) p., 3-13. Society of Fisheries Technologists (India), Cochin.
p. 8. *Leiognathus* and *Gazza* among the marine fish landings in India from 1970-'80 with average of 47,744 and 270 tonnes which formed 3.51% and 0.02% respectively.
979. NAIR, R. V. 1952.
Studies on some post-larval fishes of the Madras plankton. *Proc. Indian Acad. Sci.*, 35, Section 3: 225-244.
p. 238-239. The smallest post-larva of *Leiognathus ruconius* measuring 9 mm in total length is described.
980. NAIR, R. V. AND S. K. BANERJEE 1965.
A survey of the statistics of marine fish catch in India. *Indian J. Fish.*, 12 A & B (1): 135-236.
Landings of *Leiognathus* and *Gazza* for 9 maritime states for 1950-'62 were 12,565 and 340 respectively. The major portion of the *Leiognathus* catch

came from the states of Andhra, Madras and Kerala. Catch trend is discussed for all maritime states.

981. NAIR, T. K. A. 1987.
Exploitation and utilization of marine fishery resources. *C. M. F. R. I. Spl. Publication, No. 30*. Seminar on Potential Marine Fishery Resources, April 23, 1986, p. 99-103.
Silverbelly among midwater fishery resources.
982. NAJAH, A. HUSSIAN, HANIFA, A. HAMZAH AND TALFAN, A. AHMAD 1985.
Composition of the demersal fish catches of the Iraq trawlers from the northern Arabian Gulf during 1975-'79. *Indian J. Fish.*, 32 (4): 453-462.
The absence of some common families such as Leiognathidae might be because they were treated as trash fish, and were often thrown out to sea.
983. NAKAMURA, H. 1936.
On the food habit of yellow fin tuna *Neothunnus macropterus* (Schlegel) from the Celbes Sea. *Trans. Nat. Hist. Soc. Formosa*, 26 (148) and *Pac. Oceanic Fish. Inv. Transl.*, (17) (1949). *Spec. Sci. Rep. Fish. No. 23*, 1-6.
Leiognathids recorded as food items.
984. NANDA, USAKANTA 1980.
Studies on the biology of two cat fishes (Siuriformes: Aridae) from Porto-Novo coast. *Ph.D. Thesis*. Annamalai University, 230 pp.
Leiognathus sp. was found to be food of cat fishes.
985. NANDA, K. R. 1980.
Studies on lizard fishes of Porto-Novo waters (Scopeliformes : Synodidae). *Ph.D. Thesis*. Annamalai University, 220 pp.
p. 44. *Leiognathus* sp., *Secutor* sp. and *Gazza* sp. were very common in the gut contents.
986. NARASIMHAM, K. A., G. SUDHAKARA RAO, Y. APPANNA SASTRY AND W. VENNUGOPALAM 1979.
Demersal fishery resources off Kakinada with a note on economics of commercial trawling. *Indian J. Fish.*, 26: 90-100.
Leiognathid landings during 1971-'74 formed 6.33% of total trawl catch.
987. NARAYANAPPA, G. AND A. V. V. SATYANARAYANA 1973.
On the optimum bouyancy - weight relation for a bottom trawl. *Fish. Technol.*, 10 (2): 131-137.
p. 136. Silverbellies were recorded in catches made with 60' two seam and 53' two seam cotton net.

988. NARAYANAPPA, G. AND D. A. NARASIMHA RAJU 1972.
 Certain observations on the otter trawl operations carried out in the inshore and deep waters off Kakinada. *Proc. Indo-Pacific Fish. Coun.*, 13th Session, Section III, 450-455.
 In the inshore catches, silverbellies were in fourth place in the order of abundance but conspicuous absence was noticed from the deeper zone.
989. NARAYANAPPA, G., Y. SREEKRISHNA AND K. A. SADANANDAN 1974.
 On the resources of demersal fishes for bottom trawling in inshore waters off Kakinada by small mechanised boats. *Fish. Technol.*, 11 (2): 137-141.
 Silverbellies formed 25% of total catch in experimental trawling.
990. NARAYANAPPA, G., S. V. S. RAMA RAO, R. M. NAIDU, J. SITARAMA RAO AND A. V. V. SATYANARAYANA 1985.
 Studies on high opening trawl : Relative efficiency with bulged - belly trawl. In: *Harvest and Post-harvest Technology of Fish*. K. Ravindran, N. Unnikrishnan Nair, P. A. Perrigreen, P. Madhavan, A. G. G. Pillai, P. A. Panicker and Mary Thomas, (Eds.), 202-205. Society of Fisheries Technologists (India), Cochin.
 Percentage composition of silverbellies and anchovies together in high opening trawl and bulged - belly trawl showed that high opening trawl catch was more than the latter. This was due to the increased vertical height of the net mouth by which the net could catch more off-bottom fish like silverbellies and anchovies.
991. NATARAJAN, P., N. RAMANATHAN AND K. VENKATARAMANUJAM 1980.
 Fish and prawn seed resources of Tuticorin. *Seminar on Coastal and Inland Fish Culture in Tamil Nadu*. Abstracts of papers. Fisheries College, Tamil Nadu Agricultural University, Tuticorin, p. 33.
Leiognathus bindus was found among the fish seed of Tuticorin throughout the year.
992. NATARAJAN, P., P. DEVADOSS AND K. MUNIYANDI 1979.
 Fishes of Vellar estuary, Porto-Novo. *Indian J. Fish.*, 26 (1 & 2): 201.
Leiognathus fasciatus formed one of the prominent species among other fishes.
993. NAYAR, S. GOPALAN 1958.
 A preliminary account of the fisheries of Vizhinjam. *Indian J. Fish.*, 5: 32-55.
 Gives percentage composition of fish landings from 1950 to 1954. *Leiognathus* spp. constituted 2.02% of the total catch in this locality. Season for this fishery was from March to June and September to January. The

maximum yield from this fishery was obtained in 1952. These fish were usually caught in boat seines and shore seines. They were in great demand among the poorer class of people. Curing was by salting and sun drying.

994. NELLEN, W. 1973.
Fischlarven des Indischen Ozeans. Ergebnisse der Fischbrutuntersuchungen während der ersten Expedition des Forschungsschiffes "Meteor" in den Indischen Ozean und den Persischen Golf, Oktober 1964 bis April, 1965. "Meteor" Forsch. Reike, D (14): 1-68.
Quantitative data for occurrence of leiognathids are given.
995. NELLEN, W. 1973.
Kinds and abundance of fish larvae in the Arabian Sea and the Persian Gulf. In: *Ecological Studies, Analysis and Synthesis*. B. Zeitzschel (Ed.), Vol, 3, p. 415-430. Biology of the Indian Ocean, Springer Verlag, Berlin.
Larval Leiognathidae were present in about 50% of the zooplankton samples sorted.
996. NELSON, JOSEPH S. 1976.
Fishes of the World. A Wiley-Interscience Publication. New York, London, Sydney, Toronto, 416 pp.
Leiognathidae - slimys slipmouths or ponyfishes. Marine and brackishwater, Indo-Pacific. Description of common characters. *Leiognathus klunzingeri* a former Red Sea endemic, is one of the 24 known species of fishes. Three genera *Gazza*, *Leiognathus* (= *Equula*) and *Secutor*, with about 18 species.
997. NICOL, J. A. C. 1960.
The Biology of Marine Animals. Sir Isaac Pitman & Sons, Ltd., London.
Reports on *Gazza* and *Leiognathus*. A ring shaped bioluminescent gland envelopes the oesophagus into which it opens.
998. NICOL, J. A. C. 1969.
Bioluminescence. In: *Fish Physiology* W. S. Hoar and D. J. Randall (Eds.), Vol. 3, p. 365-400. Academic Press, New York.
The luminous organ of *equulus* is figured which is reportedly based on Harms (1928). Probably a misunderstanding as Harms (1928) worked on *L. splendens*, as indicated by Ahrens (1965).
999. NIKOLSKY, G. V. 1983.
The Ecology of Fishes. Academic Press, London and New York.
Reports that coelenterates are being eaten by leiognathids (based on Tham, Ah Kow, 1950).

1000. NINAN, T. V., S. P. BASU AND P. K. BAARGAVA 1984.
 Observations on the demersal fishery resources along Andhra Pradesh coast. *Bull. Fish. Surv. India*, 13: 18-22.
 Species composition of *Leiognathus* (1.56%) is given.
1001. NISHIDA, T. AND K. SIVASUBRAMANIAN 1986.
 Atlas of deep water demersal fishery resources in the Bay of Bengal. *Bay of Bengal Programme, BOBP/WP/53*, 49 pp.
Leiognathus sp. was found in the 100-600 m depth zone during "Dr. Fridtjof Nansen" survey (1978-'83) in Bangladesh and Burma.
1002. NISHIWAKI, S. AND K. KOIKE 1980.
 Fish fauna of the *Zostera* belt in Shimoda Bay and Nabeta Cove, the Izu Peninsula. *Bull. Coll. Med. Tech. Nurs. Univ. Tsukuba*, 1: 1-10.
 Lists *Leiognathus nuchalis* ranging from 25 to 45 mm TL, a seasonal resident in *Zostera* beds.
1003. NOBLE, A. 1982.
 Strategy for research and development of marine fisheries in Karnataka. *Proceedings of the Seminar on Research Management in Fisheries Sciences*. University of Agri. Science, Mangalore, p. 33-39.
 p. 35. *Leiognathus* formed 4.8% of the landing of State.
1004. NOLF, D. AND LAPIERRE, H. 1979.
 Otolithes des poissons nouveaux ou peu connus du calcaire Grossier et de la Formation d' Auvers. (Eocène du bassin parisien). *Bull. Mus. Nat. Hist. nat. Paris*, No. 2, p. 79-125.
Gazza minuta and *Gazza pentagonalis* sp. nov. are described.
1005. NORMAN, J. R. 1929.
 Notes on the fishes of the Suez Canal. *Proc. R. Zool. Soc. London*, 4: 615-616.
 Lists *Leiognathus* (? *lineolatus*) among the fishes which migrated into the Mediterranean (prob. *L. klunzingeri*).
1006. NORMAN, J. R. 1939.
 Fishes. *Sci. Rep. John Murray Exped.*, 1933-'34, 7: 1-116.
 Mentioned *Leiognathidae*.
1007. NORMAN, J. R. 1966.
 A draft synopsis of the orders, families and genera of recent fishes and fish-like vertebrates: 285-286 Trustees. *Br. Mus. Nat. Hist.*
 Gives synonymy of *Leiognathus* Lac. (type: *L. argenteus* Lac).

1008. NORMAN, J. R. AND P. H. GREENWOOD 1975.
A History of Fishes. 3rd ed. Ernest Benn Ltd., London.
 Considers Leiognathidae systematically remote from the Gerridae.
1009. NUGROHO, D AND M. BADRUDEEN 1987.
 Catch rate analysis of the demersal fish resources during a period of 1975-'86 in the north coast of Central Java waters. *J. Mar. Fish. Res.*, 40: 1-9.
 Leiognathidae is described as a predominant species in the north coast of Central Java waters.
1010. NYSTROM, E. 1887.
 Redogorelse for den Japanska Fiskamlingen i. Upsala Universitets Zoologiska Museum. *Bihang Svensk. Vetensk. Akad. Handl.*, 13 (4): 1-54.
 p. 36. *E. lineolata*.
1011. OBRUCHEV, D. V. (Ed.) 1964.
 1. Osnovy paleontologii. 2. Beschlyustnye, ruby (Fundamentals of Paleontology. 2. Agnathan, fishes). *Izd. Nauka, Moskva*, 522 pp. (In Russian). Also available from: Israel Progr. Sci. Transl. (1967).
 Family Leiognathidae is described on p. 684 with occurrence in the fossil record from the Oligocene (of the Caucasus and Western Europe) to Recent. Fossil species of *Leiognathus* and *altipinnus* are also described.
1012. OGILBY, J. D. 1912.
 On some Queensland fishes. *Mem. Queensl. Mus.*, 1: 26-65.
L. hastatus nom. nov. and *L. moretonensis* sp. nov. are described on p. 58-60.
1013. OGILBY, J. D. 1916.
The Commercial Fishes and Fisheries of Queensland. Dept. Harbours and Marine, Brisbane, Queensland.
 Reports on enormous catches of leiognathids, which are often mistaken for the young of valuable species.
1014. OGILVIE, H. W., A. FRASER-BRUNNER AND D. L. BYRD 1954.
 Report to the Government of Italy as the administering authority for the trust territory of Somalia on the exploratory fishery survey in Somalia 1952/'53. *Rep. FAO/ETAP 288*, 91 pp. FAO, Rome.
Leiognathus sp. among the food items found in stomach of *Euthynnus affinis affinis*.
1015. OKADA, Y. 1955.
Fishes of Japan. Maruzen Co. Ltd., Tokyo.
 p. 179. Describes *Leiognathus rivulata* with figures.

1016. OKADA, Y. K., I. S. TAKI., T. SAKAI AND T. ABE 1962.
Illustrated Pocket Book of the Japanese Fauna in Colour. II. The Hokuryukan Co. Ltd., Tokyo.
 Figure of *Leiognathus argentea* in colour is given on p. 438.
1017. OMMANNEY, F. D. 1962.
 Malayan offshore trawling grounds. The experimental and exploratory fishing cruises of the F. R. V. *Manihine* in Malayan and Borneo waters, 1955-'56 with a note on temperature and salinities in the Singapore Strait. *Colonial Off. Fish. Publ.*, (18), H. M. S. O., London.
 Lists *Leiognathus* sp. "kekek" among the second grade fish caught.
1018. OMMEN, V. P. 1977.
 Studies on the food, feeding and fishery of certain cephalopods from the west coast of India. *Bull. Dept. Mar. Sci. Univ. Cochin*, 8: 73-152.
 Table showing the month-wise occurrence of *Leiognathus* sp. in stomach content of three species of cephalopods is presented.
1019. ORDONEZ, J. A., F. M. ARCE, R. A. GANADEN AND N. L. METRILLO 1974.
 Philippine estuarine research. The hydro-biological and fisheries survey of Sorsogon Bay - Luzon Island. In: *Proceedings of the Third CSK Symposium, Bangkok, Thailand*, p. 435-463 The Juroshi 3.
 Biology of dominant fish species *Leiognathus splendens*, *L. ruconius*, *L. bindus* and other fishes is given.
1020. ORDONEZ, J. A., J. S. GINON AND A. M. MAALA 1975.
 A report on the fishery-oceanographic observations in Tayabas Bay and adjacent waters (Cruise R 742) B 140-159. In: *First Fisheries Forum*. Philippine Council for Agriculture and Resources Research, Los Banos, Philippines.
 Mentioned that catches, including that of *Leiognathus* spp. and *L. bindus* caught in March, 1974 were mostly immature.
1021. PAI, M. V. AND P. K. MAHADEVAN PILLAI 1973.
 Trawl fishery potential of the south-east coast of India. In: *Proc. Living Resources of the Seas around India*, p. 261-279. Spec. Publ. Cent. Mar. Fish. Res. Inst. Cochin.
 Landings of leiognathids in the Area 8-78 during 1961-'66 were 1,36,486 kg (22.56%) with a catch rate of 28.98 kg/hr. In the Sub-area 8-78 4 B, total yield was 1,06,435 kg (23.02%) with a catch rate of 10.34 kg/hr and in the Sub area 8-78 4 C, 16,982 kg (18.32%) were landed at 26.55 kg/hr. In Sub-area 8-78 5 B, 993 kg (10.36%) at 2.85 kg/hr were landed. The seasonal distribution of leiognathids showed that average catch rate was 21.60 kg. During February, May and September - December, the catch rates were

above the average catch rate showing abundance during these months, the peak period being October-December.

1022. PAI, RAGHAVENDRA AND M. P. M. REDDY 1985.

Influence of certain oceanographic factors on the trawl catches off Malpe, South Karnataka. *Indian J. Fish.*, 32 (2): 159.

Silverbellies, the only group which had year-round distribution at all depths (barring 10 and 20 m depth in December), were maximum in 40 m depth. That this was the only group occurred alike in all the depths during the month of August, the peak of the southwest monsoon seemed to be significant.

1023. PAJOT, G., J. CROCKETT, S. PANDURANGAN AND P. V. RAMA MOORTHY 1982.

Further trials of mechanised trawling for food fish in Tamil Nadu. *Bay of Bengal Programme. Development of Small Scale Fisheries. BOBP/WP/20. SIDA, FAO, Madras, 28 pp.*

Reports silverbelly among catch of two-boat trial trawling from Tuticorin in July, 1980 - January, 1981 and in trial trawling from Mandapam (October-November, 1980) and from Mallipattanam (March-May, 1980).

1024. PANIKKAR, N. K. 1951-'52.

Fisheries research in India. *J. Bomb. Nat. Hist. Soc.*, 50: 741-765.

Silverbelly contributed small scale fisheries in the east coast between Cape and Point Calimere.

1025. PANIKKAR, N. K. AND R. V. NAIR 1945.

Progress report of the scheme of research on the fish eggs and larvae of the Madras plankton (1944-1945) Madras.

Described the eggs of *Secutor ruconius*.

1026. PARKER, S. P. (Ed.) 1984.

Synopsis and Classification of Living Organisms. Vol. 2. Mc Graw - Hill Book Company.

Ponyfishes are primarily marine; however, some species enter brackish or even freshwater. Most are schooling fish found in coastal waters. They feed mainly on bottom living animals, but *Secutor* species feed on plankton. Many species are caught commercially and marketed as fish meal or duck food. There are 3 genera, *Gazza*, *Leiognathus* and *Secutor* with perhaps 18 species in the family. They are found in the Indo-West Pacific. The characteristic features of ponyfishes are also given.

1027. PASSOUPATTY, A. 1980.

Studies on the biology of some sciaenid fishes of Porto-Novo coast. *Ph.D. Thesis*. Annamalai University.

Leiognathus sp. is mentioned as the major food of *Otolithus ruber* on p. 39.

1028. PATHANSALI, D., K. S. ONG, S. S. LATIFF AND L. J. CARVALHO 1967.
 Preliminary results of trawling investigations off Penang. *Proc. Indo-Pacific Fish. Counc.*, 12 (2): 181-207.
 Reports on the dominance of Leiognathidae in the catch, their low commercial value and the feature that they are replaced by Gerridae (especially *Pentaprion longimanus*) at greater depth ("ecological counterpart").
1029. PATHANSALI, D., G. RAUCK, A. A. JOTHY, MOHAMMED SHAAR BIN SAM ABDUL LATIFF AND T. B. CURTIN 1974.
 Demersal fish resources in Malaysian waters. 1. Trawl survey of the coastal waters off the east coast of West Malaysia. *Fish. Bull.*, 1: 1-46. Min. Agri. Fish. Malaya.
 Gives catch data per depth and sub-area, mentioning that *L. equulus* and *L. splendens* constitute most of the leiognathid catch (1.95% of total catch).
1030. PATRO, R. AND PRASAD, R. 1979.
 Chromosomes of six marine percoids from the Indian sea. *Indian Biologist*, 11 (1-2): 9-12.
 Karyotype Analysis of *Gazza minuta* from Bay of Bengal is given.
1031. PAUL NEVE AND HAMAD AL-AIDI 1972.
 Red Sea fish : Check list No. 1. *Bull. Mar. Res. Centre. Saudi Arabia*. No. 2. 20 pp.
 p. 12. Family, genus and species names are given with English and Arabic names of *Leiognathus* sp. "Samak abu gurs" - Arabic name.
1032. PAULY, D. 1977.
 The Leiognathidae (Teleostei), their species, stocks and fisheries in Indonesia, with notes on the biology of *Leiognathus splendens* (Cuvier). *Mar. Res. Indonesia*, 19: 73-93.
 As per title.
1033. PAULY, D. 1977.
 The Leiognathidae (Teleostei) : an hypothesis relating their mean depth of occurrence to the intensity of their countershading bioluminescence. *Penelit. Laut Indones., (Mar. Res. Indones.)*, 19: 137-146.
 As per title.
1034. PAULY, D. 1978.
 A preliminary compilation of fish length growth parameters. *Ber. Inst. Meereskunde (Kiel)*, No. 55. 200 pp.
 Gives growth parameter values for 18 stocks and 6 species of Leiognathidae; all based on analysis of length frequencies.

1035. PAULY, D. 1978.

A discussion of the potential use in fish population dynamics of the interrelationships between natural mortality, growth parameters and mean environmental temperature in 122 fish stocks. *I. C. E. S. CM 1978/G: 21*, 38 pp. Demersal Fish Committee, Int. Counc. Explor. Sea, Copenhagen.

Estimation of $M = 1.8$ for *Leiognathus splendens*, when $L_{T\infty} = 14.3$ cm, $K = 1.04$, at a mean temperature of 28.5°C .

1036. PAULY, D. 1979.

Gill size and temperature as governing factors in fish growth : a generalization on von Bertalanffy's growth formula. *Ber. Inst. Meereskunde (Kiel)*, No. 63, 156 pp.

Gives growth parameters for *Leiognathus equulus* in Table VII b as estimated from data in Chabanne and Plante (1969).

1037. PAULY, D. 1979.

Theory and management of tropical multispecies stocks : A review, with emphasis on the southeast Asian demersal fisheries. *ICLARM Studies and Review 1*, 35 pp. International Centre for Living Aquatic Resources Management, Manila.

Discusses the stock dynamics of Leiognathidae as typical representative of 'prey' fishes in the Gulf of Thailand. Yield-isopleth diagram is given for *Leiognathus splendens*. 1,43,118 mt (20.1%) of Leiognathids were reported by four countries. This probably makes up a large part of the non-identified marine fishes reported from Thailand (754,796 t in 1976). In shallow waters, the bulk of the catch generally comprises Leiognathidae which has a mean maximum length of about 12 cm (one species, *Leiognathus equulus*, reaches to 30 cm. The figure of 12 cm refers to the rest of the leiognathidae species which are small sized). *L. splendens* is the most abundant slipmouth species as well as probably the most abundant single species (atleast in virgin stock) in the Sunda Shelf Area. The stock of *Leiognathus splendens* is also overfished and the yield-per recruit could be increased by about 50% increasing L_{∞} to about 6 or 7 cm.

1038. PAULY, D. 1979.

Biological overfishing of tropical stocks. *ICLARM Newsl.*, 2 (3): 3-4.

Yield-isopleth diagram for *Leiognathus splendens* is given.

1039. PAULY, D. 1980.

On the interrelationships between natural mortality, growth parameters and mean environmental temperature in 175 fish stocks. *J. Cons., Cons. Int. Explor. Mar.*, 39 (3): 175-192.

L. splendens from Western Indonesia included among stocks used for derivation of general relationship. Parameters used were $L_{\infty} = 14$ cm (LT), $W_{\infty} = 64$ g, $K = 1.04$ and $M = 1.8$.

1040. PAULY, D. 1980.

A selection of simple methods for the assessment of tropical fish stocks. *FAO. Fish. Cir.*, No. 729, p. 1-54.

Table of length increment per month (h) and mean length \bar{L} for growth segment (1-13) linking model classes in *L. bindus* (1956-'58). Figure yield/recruit in relation to size or age at first capture (ordinate) and the force of fishing (abscissa) of the slipmouth *L. splendens*. Growth parameters of *L. equulus* and *L. splendens* from Ambaro Bay, Madagascar and San Miguel Bay, Philippines are given.

1041. PAULY, D. 1982.

Studying single-species dynamics in a tropical multi-species context. In: *Theory and Management of Tropical Fisheries*. D. Pauly and C. I. Murphy (Ed.), ICLARM, ISIRO, p. 33-70.

p. 60-61. Figures give the recruitment pattern in *Leiognathus bindus*. The growth parameters used for projecting the length frequency data were $L_{\infty} = 12.2$ cm, $K = 1.3$ and $D = 1$ (ESP/ASP = 0.804) as estimated by means of ELEFAN from data of Balan (1963). An increase in standard deviation from *Leiognathus bindus* (S.D = 1.25) is noted to other species namely *Ambassis*.

1042. PAULY, D. 1982.

History and status of the San Miguel Bay fisheries. Small-scale fisheries of San Miguel Bay, Philippines. Biology and stock assessment. *ICLARM Technical Report*, No. 7, Philippines.

Total annual catch of Leiognathidae caught by trawl fishery and small-scale fishery with percentage caught in the two sectors are given in 1947, when a trawl survey was conducted in San Miguel Bay, slipmouths formed a large proportion (60%) of the fish catch (Warfel and Manacop, 1950), and this value is an under estimate of true relative abundance because the *Theodore N. Gill* was using large meshes which did not retain the smallest leiognathids (e.g. those of the genus *Secutor*). The present catch of Leiognathidae that is reported as such contributes only 0.6% of the trawler catches but this proportion increases to 22% if the reasonable assumption is made that half of the miscellaneous species category consists of small-sized Leiognathids. Thus, slipmouths have diminished in the Bay both in absolute and relative abundance, as a species noted by Vakily (this report).

1043. PAULY, D. 1983.

Some simple methods for the assessment of tropical fish stocks. *FAO Fisheries Technical paper*, No. 234. ICLARM, Manila, Philippines.

L. bindus taken as example of study.

1044. PAULY, D. 1984.

Fish Population Dynamics in Tropical Waters: A Manual for use with Programmable Calculators. ICLARM, Manila, Philippines. 325 pp.

Examples and figures for length weight relationships, mean length and water depth, average catch per effort and water depth, pseudo catch curve, yield per recruit, estimation of population (K) in adult, total stock under two different exploited regions of the species *L. splendens* are given. Trawl selection data obtained in 7.8 cm mesh nets, morphometric data for the rapid estimation of mean length at first capture and selection factor by means of morphometric data for *L. equulus* are also given.

1045. PAULY, D. AND N. DAVID 1980.

An objective method for determining growth from length-frequency data. *ICLARM Newsl.*, 3 (3): 13-15.

Growth parameters of *L. bindus* ($L_{\infty} = 12.2$, $K = 1.3$) estimated by means of a new computer-based method.

1046. PAULY, D. AND N. DAVID 1980.

A Basic Programme for the Objective Extraction of Growth Parameters from Length-Frequency Data. International Council for the Exploration of the Sea. Copenhagen, Denmark, 14 pp.

Size distribution and growth are given for *L. bindus*.

1047. PAULY, D. AND A. N. MINES 1982.

The fishes and their-ecology. Small-scale fisheries of San Miguel Bay, Philippines. Biology and stock assessment. *ICLARM Technical Report*, No. 7, Philippines, p. 15-24.

Largest observed sizes of *Leiognathus bindus*, *L. splendens*, *Secutor insidiator* and *S. ruconius* caught by trawlers inside and outside of San Miguel Bay are given.

Lists 15 leiognathids recorded from San Miguel Bay in 1868-'81.

1048. PAULY, D. AND I. R. SMITH 1983.

The research process and communication of results: Lessons learned from a multidisciplinary analysis of a tropical small-scale fishery. *FAO Fisheries Report*, No. 284, p. 37-55.

Total annual catch of trawl fishery and non-trawl catches of Leiognathidae for San Miguel Bay, 1980-'81 are discussed.

1049. PAULY, D. AND S. WADE-PAULY 1981.

An Annotated Bibliography of Slipmouths (Pisces: Leiognathidae). No. 2. ICLARM, Manila (Philippines), 62 pp.

A bibliography of the Leiognathidae is presented. A total of 941 references, most of which annotated, are listed, covering, all aspects of their biology, including fishery related aspects, physiology and anatomy (e.g. bioluminescence) as well as their use as human food. Comprehensive subject and geographic indices are provided.

1050. PAULY, D., A. N. MINES AND N. A. NAVALUNA 1982.
 Catch and effort in the small-scale fisheries. Small-scale fisheries of San Miguel Bay, Philippines: Biology and stock assessment. *ICLARM Technical Report*, No. 7, p. 56-64.
 Leiognathidae represented the catch by 22.3% in small-scale gears in San Miguel Bay in 1980-'81. Catch per trip (kg) of Leiognathidae in fish coral liftnet and filtnet in different months is reported.
1051. PAULY, D. AND N. A. NAVALUNA 1983.
 Monsoon induced seasonality in the recruitment of Philippine fishing. *FAO Fisheries Report*, No. 291 (Vol. 3).
 Recruitment patterns of *Leiognathus bindus*, *L. blochii*, *L. brevisrostris*, *L. daura*, *L. equulus*, *L. lecuiscus*, *L. lineolatus*, *L. splendens*, *Secutor insidiator* and *S. ruconius* with percentage of smaller of two recruitment pulses, smaller time between two recruitment pulses and sample size are given.
1052. PEARSON, J. AND A. H. MALPAS 1926.
 A preliminary report on the possibilities of commercial trawling in the sea around Ceylon. *Ceylon. Sci. Sect.*, C 2: 1-165.
 Catch data, length, weight, food for both sexes of *L. bindus*, *L. edentulua*, *L. fasciata*, *L. insidiatrix*, *L. lineolata*, *L. ruconius*, *L. splendens* and *G. minuta* are presented.
1053. PEIRIS, T. S. S. AND J. GRERO 1973.
 Chemical Analyses of some Sri Lanka fishes. 3. *Bull. Fish. Res. Stn. Sri Lanka (Ceylon)*, 24 (1 & 2): 1-2.
 The edible flesh, skin, head, bones, fins, tail, scales, viscera, liver and whole fish of thirty ungutted specimens of *Gazza minuta* were analysed for percentage of fish moisture, ash, fat and protein.
1054. PELLEGRIN, J. 1914.
 Sur une collection de poissons de Madagascar. *Bull. Zool. Fr.*, 39: 221-234. p. 225. *E. dussumieri*.
1055. PELOZARSKI, W. *et al.* 1979.
 Summary Report on Cruise of the M/T "Muraena" in the Northwest Coast of India. 18 November, 1976 - 1 February, 1978. Exploratory Fisheries Project. Govt. of India, Bombay, 57 pp.
 p. 51. *Secutor insidiator*, *Gazza minuta*, *Leiognathus bindus* and *Leiognathus brevisrostris* under the family Leiognathidae with species code number and local name (*Khapi*: Polish, are given.
1056. PENAFLOR, G. C. 1988
 Growth of *Leiognathus splendens* based on daily otolith rings and length frequency analysis. *Asian Fish. Sci.*, 2 (1): 83-92.

Otolith rings from the extraction of Sagittae of *Leiognathus splendens* were counted and increment counts were used to determine growth of *L. splendens*. Growth parameters were estimated from the otolith increment data and growth equation.

1057. PEREZ, E. R. AND D. R. YNGENTE 1979.

Eureka for the protein content of some fish species. *Fish. Today (Philippines)*, 2 (3): 38-42.

Gives the protein content and the protein content per unit price for slipmouth as 11% and 18% respectively.

1058. PERUGIA, A. 1889.

Eleno dei pesci raccolti dal Dott. Elio Modiglianovi nelle isole di Nias e di Sumatra. *Ann. Mus. Civ. Genova*, 7 (2): 269-277.

E. lineolata.

1059. PETERS, W. C. H. 1855.

Übersicht der in Mossambique beobachteten Seefische. *Monatsber. Akad. Wiss. Berlin*, 428-466 and *Arch. Naturgesch*, 21 Jahrgang, 1: 234-282.

p. 247. *E. dentex*.

1060. PETERS, W. C. H. 1868.

Übersicht der während der von 1874 bis 1876 unter der Commando des Hrn. Capitan z. S. Freiherrn von Schlelnitz ausgeführten Reise S. M. S. *Gazelle* Fische. *Monatsber. Dtsch. Akad. Wiss. Berl.*, p. 831-854.

p. 836. *E. fasciata* and *G. minuta* (New Britain).

1061. PHILIPPINE DEPT. OF NATIONAL DEFENCE 1973.

1972 *National Economic Atlas of the Philippines*. Dept. of Natl. Defence, Philippine, Coast and Geodetic Survey, Manila.

Map 17 displays slipmouth fishing grounds throughout the Philippine archipelago.

1062. PILLAI, N. GOPALAKRISHNA AND K. DORAIRAJ 1985.

Results of the trawling survey by an Institutional Boat *Cadalmin II* in the Palk Bay and Gulf of Mannar, Mandapam, during 1977-80. *Indian J. Fish.*, 32 (1): 123-132.

The bulk of the catch was silverbelly which ranged from 1,994 kg in 1979 to 16,566 kg in 1977 with an annual average of 9,518 kg. The percentage contribution was 79.9%. The density distribution of silverbellies was higher (41.3 kg/h) in the Palk Bay when compared with that in the Gulf of Mannar (37.9 kg/h). *Leiognathus jonesi* dominated the catch from the Palk Bay, followed by *L. brevis*, *L. berbis* and *Secutor ruconius*. In the Gulf of Mannar, *L. dussumieri* was the dominant species followed by *L. jonesi*, *L. brevis*, *Gazza minuta*, *S. ruconius*, *L. bindus* and *L. lineolatus*.

1063. PILLAI, T. G. 1965.
 Brackishwater fishery resource. *Bull. Fish. Res. Stn. Ceylon*, 18 (2): 75-90.
 Among *Leiognathidae*, *Leiognathus equulus* and *L. fasciatus* are marine species. Their Sinhalese and Tamil names are given.
1064. PILLAI, N. KRISHNA 1973.
 Three new bomolochid parasites fishes of the Kerala coast. *Indian J. Fish.*, 20 (2): 487-496.
Nothobomolochus quadriceros sp. nov. a single female parasite from the inner surface of the opercle of *Gazza minuta* is described from Trivandrum.
1065. PILLAI, P. K. MAHADEVAN 1972.
 Fecundity and spawning habits of some silverbellies. *Indian J. Fish.*, 19: 196-199.
 The results of fecundity and ova diameter frequency studies on four species of silverbellies, viz. *Secutor insidiator*, *S. ruconius*, *Leiognathus dussumieri* and *Gazza minuta* are presented. The former three species seem to have a prolonged spawning season, while the last one has a restricted spawning period.
1066. PILLAI, P. K. MAHADEVAN, N. JAYABALAN, M. SRINATH AND S. SUBRAMANI 1983.
 The catch trend of the commercial trawl fisheries off Rameswaram. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 48, p. 17-19.
 The silverbellies represented by the genera *Leiognathus*, *Secutor* and *Gazza* formed the major group and contributed to about 52% and 50% of the total catch during 1980 and 1981 respectively. Their catch increased from 7,474 tonnes in 1980 to 10,310 tonnes in 1981. Though maximum landings were noticed in the first quarter of both the years, good quantities were landed in the remaining quarters also.
1067. PILLAI, V. N. AND R. SATHIARAJAN 1987.
 Observations on the fishing potentiality of the shelf and slope waters along the S. W. coast of India based on the fishing results of IFP vessels. In: *Proceedings of International Seminar on Training and Education for Marine Fisheries Management and Development*. 28 - 30 January, 1986, Cochin, India, p. 18-28.
 p. 20. *Leiognathus bindus* and *L. splendens* were among silverbellies represented in the shallow water trawl catches.
1068. PILLAY, T. G. 1965.
 Brackishwater fishery resources. *Bull. Fish. Res. Stn. Ceylon*, 18 (2): 75-85.
L. equulus (Sinhalese: "Maskarella") and *L. fasciatus* are listed among the marine fishes occurring in brackish waters.

1069. PILLAY, T. V. R. 1948.
 Marine fisheries of Kodinar in Kathiawar. *J. Bombay. Nat. Hist. Soc.*, 48 (1): 47-61.
 Scientific and vernacular names of *Equula dussumieri*, *E. edentula* and *E. fasciata* are given.
1070. PILLAY, T. V. R. 1967.
 Estuarine fisheries of the Indian Ocean coastal zone. In: *Estuaries*. Lauff (Ed.), p. 647-667. Amer. Assoc. Adv. Sci. Publ.
L. brevirostris, *L. blochii*, *L. equulus*, *L. fasciatus*, *S. ruconius*, *S. insidiator* and *G. minuta* are listed as common estuarine fishes in the Indian Ocean coastal zone.
1071. PILLAY, T. V. R. AND K. K. GHOSH 1962.
 The bag net fishery of the Hooghly -Matlah estuarine system (West Bengal). *Indian. J. Fish.*, 9 (1): 71-99.
Leiognathus spp. the major species, are grouped as miscellaneous fishes.
1072. PLAYFAIR, R. L. AND A. GUNTHER 1866.
The Fishes of Zanzibar. Acanthopterygii. By R. L. Playfair and Pharyngognathi, etc. A. Gunther, van Voorst, London.
 p. 65. lists *Equula edentula* from Aden and Zanzibar and *Gazza equulaeformis* from Zanzibar.
1073. PLESSIS, Y. AND P. FOURMANOIR 1966.
 Mission d'etude des re'cifs corallien de Nouvelle Cale'donie. Lists des poissons recoltés par Y. Plessis on 1961. *Cah. Pac.*, 9: 123-147.
L. fasciatus listed.
1074. POR, F. D. 1971.
 One hundred years of Suez Canal - a century of Lessepsian migration: retrospective and view points. *Syst. Zool.*, 20: 138-159.
 Distribution of *Leiognathus klunzingeri* is given.
1075. POWNALL, P. C. 1975.
 Marine fisheries. In: *Fisheries of Indonesia-Special Feature*. *Aust. Fish.*, 34 (2): 2-30.
 "Slipmouths" are considered among the demersal species of commercial value.
1076. PRABHU, M. S. 1955.
 Some aspects of the biology of the Ribbon fish *Trichiurus haumela* (Forskål): *Indian J. Fish.*, 2 (1): 132-163.

Trichiurus haumela (Forsk.) ranging in size from 17-45 cm showed a tendency to feed on *Leiognathus* sp. from March to July. *Leiognathus* sp. was found to be one of the important food items.

1077. PRABHU, M. S. 1972.

Marine fisheries of Goa. *Mahasagar*, 5 (2): 74-79.

p. 78. Popular, scientific and local names of *Leiognathus* sp. are given.

1078. PRABHU, M. S. AND R. M. DAWAN 1974.

Marine fisheries resources in the 20 and 40-metre region off the Goa coast. *Indian J. Fish.*, 21 (1): 40-53.

Heavy concentration of *Leiognathids* was noticed at all the stations in 40 metre areas, especially at Betul, Polem and Chapora. Station-wise distribution of *Leiognathus* sp. was as follows: Terekhol (16.00%), Chapora (33.46%), Betul (8.66%), Polem (4.15%) and zone-wise catches were : North Zone (21.19%) and South Zone (6.15%).

1079. PRABHU, P. V., A. G. RADHAKRISHNAN AND M. ARUL JAMES 1975.

Beverage preparation from fish hydrolysates. *Fish. Technol.*, 12 (2): 127-130.

Analytical value of fish hydrolysate and amino acid composition of silverbelly are presented.

1080. PRABHU, P. V., P. MADHAVAN AND K. G. RAMACHANDRAN NAIR 1978.

Fishery by-products and utilization of fishery wastes in India. *Proc. Indo-Pacific Fish. Coun.*, 18 (3): 515-519.

About 10% of the fish landings are converted into fishmeal. With increase of fish landings, the production of fish meal has also increased considerably. The miscellaneous fish caught along with prawns during trawling, form the major source of raw materials for fishmeal. Silverbellies, small jew fish, sole and ribbon fishes are the common.

1081. PRABHU, M. S., S. RAMAMURTHY, M. D. K. KUTHALINGAM AND M. H. DHULKHED 1967.

On the experimental fishing off Ullal (Mangalore). *Indian J. Fish.*, 14 (1-2): 225-231.

Experimental fishing by trawl and gill nets was conducted at 2 stations of 12 and 25 m depths off Ullal (Mangalore) and the variations in the catch, catch/hr and catch composition have been discussed. The fluctuations in the catch/hr in relation to temperature and salinity have also been studied. Certain observations on the biological aspect of the important species caught have also been given.

1082. PRASAD, N. K. 1972.

Marine fisheries of India. *Seafood Export Journal*, 4 (1): 165-170.

Silverbellies and miscellaneous groups of fishes are plentiful in our seas.

1083. PRASAD, R. RAGHU 1953.
Swarming of *Noctiluca* in the Palk Bay and its effect on the 'Choodai' fishery with a note on the possible use of *Noctiluca* as an indicator species. *Proc. Ind. Acad. Sci.*, 28: 40-47.
p. 44. *Leiognathus* spp. found with others in the catches.
1084. PREMALATHA, P. 1982.
Observations on the demersal fishery resources of the Wadge Bank. *Bull. Dept. Mar. Sci., Uni. Cochin*, 13: 35-45.
p. 40. Occurrence of silverbelly *Leiognathus* spp. is reported.
1085. PROBST, K. 1963.
Meeresaquaristik. Teil III. Fische: 77 Lehrmeister Bucherei No. 75. Albrecht Philler Verlag, Minden.
Mentions *L. klunzingeri* and its lessepsian migration.
1086. PURUSHOTHAMAN, E. 1981.
Present status of small-scale fisheries in Pondicherry. Present status of small-scale fisheries in India and a few neighbouring countries. *Bull. Cent. Mar. Fish Res. Inst.*, No. 30 B, p. 39-46.
Occurrence of silverbellies in the catch in December is reported.
1087. QASIM, S. Z. 1972.
The dynamics of food and feeding habits of some marine fishes. *Indian J. Fish.*, 19 (1 & 2): 11-28.
Earlier works on food of silverbellies are referred.
1088. QASIM, S. Z. 1973.
An appraisal of the studies on maturation and spawning in marine teleosts from the Indian waters. *Indian J. Fish.*, 20 (1): 166-181.
Mentions earlier work on maturation and spawning of some silverbelly species namely *L. bindus* and *L. splendens*.
1089. QASIM, S. Z. AND T. W. KUREISHY 1986.
Biological diversity in the seas around India: Present status and major threats. *Proc. Indian. Acad. Sci. (Anim. Sci./Plant Sci.)*. Suppl., p. 1-17.
Mentions silverbellies dominant on the east coast.
1090. QURESHI, M. R. 1961.
Pakistan's Fisheries. Govt. Press, Karachi.
Leiognathus is listed among the important genera of fishes in Pakistan.

1091. RABINDRA NATH, P. 1966.
 Biology and seasonal distribution of the pelagic food fishes of Travancore coast. *Bull. Dept. Mar. Biol. Oceanogr., Univ. Kerala*, 1: 1-71.
 Analysis of stomach contents of fishes *D. hasseltii*, *D. acuta*, *D. russelli*, *A. thazard*, *C. crumenophthalmus*, *S. tumbil* and *Chorinemus sanctipetri* showed the presence of *Leiognathus* sp. and larvae of *L. brevirostris* as food.
1092. RADHAKRISHNAN, E. V., M. KATHIRVEL, K. DEVARAJAN, M. VIJAYAKUMAR, P. POOVANNAN, R. THANGAVELU, K. SAHUL HAMEED, S. SANKARALINGAM, A. RAMAKRISHNAN AND V. THANGARAJ 1989.
 An unusual congregation of organisms in the catches off Kovalam, Madras. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 99, p. 16-18.
Leiognathus splendens and *L. lineolatus* are also reported among demersal fishes.
1093. RADHAKRISHNAN, N. 1973.
 Pelagic fisheries of Vizhinjam. *Indian J. Fish.*, 20 (2): 584-598.
 Average annual landings of silverbellies among demersal fishes in three zones ('K - 1' zone, 'K - 2' zone and 'K - 3' zone) for 1965-'67 are reported.
1094. RADHAKRISHNAN, N. 1974.
 Demersal fisheries of Vizhinjam. *Indian J. Fish.*, 21 (1): 29-39.
Secutor ruconius and *S. insidiator* are the most important species of silverbellies available at Vizhinjam. Other species in the catches were *Leiognathus splendens*, *L. bindus*, *L. equulus*, *L. brevirostris* and *L. dussumieri*. This group occurred in the catches practically throughout the year. The total landings were 29,706, 61,242 and 43,967 kg in 1965, 1966 and 1967 respectively with an average of 44,971 kg. April appeared to be the best period of this fishery at Vizhinjam. The growth of *S. ruconius* after it attains a size of 25 mm is about 10 mm per month. This fish is assumed to grow to about 105-110 mm in one year. It is reasonable to believe that the 35 mm size group might be about 2 months old and it can be concluded that the fishery of *S. insidiator* is mainly composed of 0 - year class.
1095. RADHAKRISHNA, K., S. REUBEN AND M. V. SOMA RAJU 1981.
 Unusually heavy catches of ribbon fish close to the shore at Visakapatnam. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 31, p. 15-16.
 Small quantities of juveniles of *Leiognathus* sp. and *Gazza* sp. were landed in shore-seines. *Leiognathus* sp. formed the major food item of ribbon fishes.
1096. RAINER, S. F. AND I. S. R. MUNRO 1982.
 Demersal fish and cephalopod communities of an unexploited coastal environment in northern Australia. *Aust. J. Mar. Fresh. Res.*, 33: 1039-55.

p. 1046. *Leiognathus splendens* was found distributed in inshore waters, *Leiognathus* sp. *L. brevisrostris* and *L. blochii* in shallow offshore waters and *Equulites leuciscus* and *L. bindus* in deep offshore waters.

1097. RAJA, B.T. ANTONY 1980.

Current knowledge of fisheries resources in the shelf area of the Bay of Bengal. BOBP/WP/8, SIDA, FAO, Madras, 23 pp. Bay of Bengal Programme. Development of Small-scale Fisheries.

p. 16. Reports catches of Leiognathids in the coastal waters of India and Burma.

1098. RAJA, B. T. ANTONY 1984.

Improved trawling techniques in Palk Bay and Gulf of Mannar: Have they affected fishery resources? *Bay of Bengal News*, No. 15, 20 pp.

Silverbellies are among the species in the high opening bottom trawl.

1099. RAJA, B. T. ANTONY 1987.

High-opening bottom trawling in Tamil Nadu, Gujarat and Orissa, India: A summary of effort and impact. Bay of Bengal Programme. Development of Small-scale Fisheries, Rep. No. 37, FAO, 25 pp.

Gives the trawl landings of ponyfish at important centres of Tamil Nadu and catch and effort data at Tuticorin.

1100. RAJAN, S. 1964.

Environmental studies of the Chilka Lake. 1. Feeding spectrum of fishes. *Indian J. Fish.*, 11 (2): 521-532.

Leiognathus equulus was found to feed mainly on lamellibranchs.

1101. RAMACHANDRAN, V. J., P. S. JAY AND V. A. PUTHRAN 1973.

Local and scientific names of fishes of Karnataka. *Seafood Export Journal*, 5 (10): 7-13.

p. 11 gives scientific, Kanarese and popular English names of *Secutor insidiator*, *L. bindus* and *L. splendens*.

1102. RAMAIYAN, V., K. P. SIVAKUMAR AND M. MANICKASUNDARAM 1987.

Trash fish resources of Parangipettai coast and suggestions for their utilisation. *National Symposium on Marine Resources, Techniques, Evaluation and Management*, May 14-16, 1987, Visakhapatnam. Abstract. pp. 10-11.

Leiognathid among other fishes is the major group of fin fishes exploited and landed along the Parangipettai coast.

1103. RAMAMOORTHY, K. AND N. JAYABALAN 1982.

Free living and symbiotic bioluminescent bacteria. In: *Bioluminescence in the Pacific*. I. I. Gitelson and J. N. Hastings (Eds.), U. S. S. R., pp. 279-290.

Free living bioluminescent bacteria occurring in the marine, estuarine, backwater and mangrove biotopes of Porto-Novo region were isolated and subjected to taxonomic analysis. The luminescent bacterial symbionts harbouring the light organs of silverbellies (Fam: Leiognathidae) of Porto Novo belong to three genera viz., *Secutor*, *Gazza* and *Leiognathus* representing 8 species (*S. insidiator*, *S. ruconius*, *G. minuta*, *G. achlamys*, *L. splendens*, *L. equulus*, *L. dussumieri* and *L. berbis*). The bacteria were also isolated and compared with the free-living isolates. The results showed that *Beneskea harveyi*, *Photobacterium fisheri* and *P. leiognathi* could be isolated directly from water. The isolates from light organs were *P. leiognathi* which were found to be a specific symbiotic association with leiognathids. The density of the symbiotic luminescent bacterial cells in light organs of different species of host leiognathids varies considerably. (Abstract translated to Russian).

1104. RAMAMURTHI, S. 1972.

Trawl fisheries of the South Kanara coast during 1967-'70. *Indian J. Fish.*, 19 (1 & 2): 54-59.

Silverbellies mainly *Leiognathus splendens*, *L. bindus*, *Secutor ruconius* and *S. insidiator* represented in the catches in the years 1967-'68, 1968-'69, 1969-'70, the percentage being 3.5, 2.6 and 1.7.

1105. RAMAMURTHY, S., J. C. GNANAMUTHU, E. VIVEKANANDAN, P. RAMADOSS AND S. CHANDRASEKAR 1988.

Marine fish calendar. VII. Madras. *Mar. Fish. Infor. Serv., T & E Ser.*, No. 85, p. 1-9.

Scientific popular and vernacular names, gear, percentage in the catch, peak period, depth of occurrence, length range, size at first maturity and spawning seasons of *Leiognathus bindus* and *Secutor insidiator* are given.

1106. RAMAN, K. AND S. PATNAIK 1976.

A preliminary survey of the lagoon fishery of Balasore and Cuttack districts of Orissa. *Madras J. Fish.*, 7: 54-61.

p. 61. *Leiognathus* spp. were found in the central zone.

1107. RAMANATHAN, N. AND R. NATARAJAN 1980.

Food and feeding habits of *Psettodes erumei* (Bloch and Schn.) and *Pseudorhombus arsius* (Ham. and Buch.). *Matsya*, 6: 30-42.

Leiognathus sp. forms the food of male, female and juveniles of *P. erumei* occasionally during the month of February, June, August and October and *P. arsius* feeds on *Leiognathus* sp. during the months of February, July and August in small quantity.

1108. RAMASWAMI NAYUDU, M. 1921.

A statistical analysis of an inshore fishing experiment at Madras during 1919. *Madras Fish. Bull.*, 12: 115-133.

'Karapodi' (*Equula* spp. and *Gazza* spp.) formed among thirteen most important food fishes of Madras caught by canoes during 1919.

1109. RAMESH, A. 1984.

Role of bioluminescence in marine fisheries. *Seafood Export Journal*, 16 (5): 13-15.

Huge catches of *L. bindus* due to the luminescence emitted by shoals of the species as reported by Balan is referred.

1110. RAMSAY, E. P. AND J. D. OGILBY 1886.

A contribution to the knowledge of the fish fauna of New Guinea. *Proc. Linn. Soc. N.S.W., 2nd Ser., 1*, 11pp.

Original description of *L. smithursti* from Hood Lagoon, New Guinea. p. 8 lists *G. minuta* from Papua, New Guinea.

1111. RANDALL, J. E., G. R. ALLEN AND W. F. SMITH-VANIZ 1971.

Illustrated identification guide to commercial fishes. F:DP/RAB/71/278/3, pp. 221. Reg. Fish. Surv. Dev. Proj., Doha, Qatar.

p. 101 includes a figure of *Leiognathus bindus* from the Persian Gulf.

1112. RANI SINGH AND P.K. TALWAR 1978.

Species of silverbelly, *Leiognathus indicus*, Pisces : Leiognathidae (from the Bay of Bengal). *Bull. Zool. Surv. India*, 1 (3): 275-277.

A new species of silverbelly, *Leiognathus indicus* is described from the Bay of Bengal and its affinities with related forms in the Indo-Pacific region are discussed.

1113. RANI SINGH AND N. C. DATTA 1984.

Results of studies on some aspects of cranial anatomy of Indian leiognathids (Perciformes : Leiognathidae). Part. I. Osteology. *Rec. Zool. Surv. India*, 81 (1-2): 205-235.

Study of the cranial osteology of seven species of leiognathids namely *Leiognathus splendens*, *L. equulus*, *L. brevisrostris*, *L. bindus*, *Secutor insidiator*, *S. ruconius* and *Gazza minuta* are given.

1114. RANI SINGH AND P. K. TALWAR 1978.

On the little known ponyfish, *Gazza achlamys* Jordon and Starks (Pisces : Leiognathidae) in the Indian waters. *Curr. Sci.*, 47 (23): 930-931.

The identity of the species *Gazza achlamys* is reported for the first time in the Indian waters based on a specimen from the Great Nicobar Island in the Arabian Sea.

1115. RAO, G. R., K. RAMAN AND K. V. RAMAKRISHNAN 1985.

Observations on the seasonal abundance of larvae and juveniles of some percid fishes entering into Lake Pulicat. *Proc. Symp. Coastal Aquaculture*, pt. 3, p. 750-757.

The author recorded the small postlarvae and the juveniles of the silverbellies. Two peaks of occurrence were noticed; one during Jan.-Feb., and other in April-May.

1116. RAO, HANUMANTHA 1971

Observations on digenetic trematodes from air bladder of cat fishes. *J. mar. biol. Ass. India*, 15 (2): 750-753.

The genus *Peloroelminis* Fischttal and Kuntz is described from the intestine of the leiognathid *Gazza minuta* (Bloch) from Palawan.

1117. RAO, S. NAGARAJA 1963.

Fish Products Ltd., Rajamundry. In: *An Introduction to Fisheries*. p.231.

Silver bellies (*Leiognathus*) are included among valuable food fish.

1118. RAO, K.V. RAMA 1973.

On collections of shore fishes from the Coromandel coast, Palk Bay and Gulf of Mannar. *Rec. Zool. Surv. India*, 67: 15-57.

A systematic account is given with size ranges, area of collection, date of collection, collector's name and geographical distributions of *Leiognathus dussumieri*, *L. insidiator*, *L. lineolatus*, *L. ruconius* and *L. splendens*. *L. dussumieri*, *L. lineolatus*, *L. insidiator* and *L. ruconius* are spread from the East African area (Persian Gulf, Arabia and Red Sea) to Malayan area including one more West Pacific areas (Japanese Australian and Polynesian) and *L. splendens* is wide spread throughout the Indo-West Pacific region ranging from east coast of Africa to Australian, Japanese and Polynesian areas.

1119. RAO, K. V. RAMA, V.S. RAMACHANDRAN AND P. S. JAY 1978.

A list of common marine and freshwater fishes of Andhra Pradesh with their scientific, Telugu and popular English names (part-II). *Seafood Export Journal*, 10 (8): 19-29.

p. 23. Telugu and popular English names for *Gazza minuta*, *Leiognathus bindus* and *L. splendens* are given.

1120. RAO, S. V. S RAMA., A. V. V. SATYANARAYANA, J. SITARAM RAO, R. M. NAIDU AND G. NARANAPPA 1975.

An appraisal of twin-trawling with sled on the east coast. In : *Harvest and Post-harvest Technology of Fish*. Ravindran, K., Unnikrishnan Nair, N., Perigreen, P.A., Madhavan, P., Gopalakrishna Pillai, A.G., Panicker, P.A., and Mary Thomas (Eds.), pp. 289-291. Society of Fisheries Technologists (India), Cochin.

Silverbellies and other fishes were caught more in bulged-belly net, perhaps due to its better vertical height. Catch rate of silverbellies by 10mm nets, and 20m bulged belly net for the period March, 1982 - October, 1982 and in depth range of 5-18m and 5-18m are given.

1121. RAO, K. SATYANARAYANA 1967.

Reproductive cycles and lipid levels in *Leiognathus splendens* (Cuvier) *J. mar. biol. Ass. India*, 9 (2): 303-322.

The reproductive cycles of the fish *Leiognathus splendens* (Cuvier) have been studied with special reference to the lipid content of the gonads. Mature individuals of the fish have been observed during different months of the year suggesting that the fish breeds through a greater part of the year. There is a peak spawning activity in January-February and again in June. A study of the gonad indices shows that the values increase during maturation and decrease after spawning. In the ripe stages, the gonad indices show high values.

Lipid accumulates in lateral muscles of the fish in immature stages in both sexes and progressively decreases during maturation of gonads and following spawning activity suggesting utilization of stored lipid in relation to maturation of gonads and spawning. Lipid accumulates in the liver and intestine in the spent stage and shows a fall as the fish reaches the mature stage. Feeding intensities of the fish and accumulation of lipids in storage organs showed parallel changes (increase and decrease).

The percentage of lipid content of the testes and ovaries of the fish in terms of dry weight is higher in the immature stages and decreases during maturation suggesting that there is accumulation of lipids in the early stages to meet the energy requirements of growth of gonads and the energy requirements are less in the latter stages of maturity.

1122. RAO, K. SRINIVASA 1962.

Observations on the food and feeding habits of *Scomberomorus guttatus* (Bl. Schn.) and of the juveniles of *S. commerson* (Lac.) of the Waltair Coast. *Proc. Symp. Scombroid Fishes*. Part 2, 591-598. Marine Biological Association of India.

Leiognathus sp. is reported as food.

1123. RAO, K. SRINIVASA 1964.

Food and feeding habits of fishes from trawl catches in the Bay of Bengal with observations on diurnal variation in the nature of the feed. *Indian J. Fish.*, 11 (1): 277-314.

Food of *Secutor ruconius*, *Leiognathus dussumieri*, *L. daura*, *L. bindus* and *Gazza minuta* at different times of the day is given in percentages. *L. bindus* and *S. ruconius* are the common leiognathids off Waltair and their favourable food items are foraminifera and polychaetes along with calanoid copepods and Alima.

1124. RAO, G. N. SUBBA 1967.

Fish processing in the Indo-Pacific area. *Reg. Stud. Indo-Pacific Fish. Council.*, 4, 23 pp.

Leiognathus sp. is dried in Burma. Called 'nga-tanga'. *Leiognathus* sp. form raw material for fermented fish sauce in the Philippines.

1125. RAO, K. SUBBA 1983.

Fisheries development in Andhra Pradesh. *Seafood Export Journal*, 17 (12): 13-19.

p. 15. *Leiognathus* sp. is reported to have caught in large quantity in estuary, lagoon and backwaters.

1126. RAO, P. S. 1971.

Price policy for marine fish. *Seafood Export Journal*, 3 (5): 17-25.

Average whole sale prices of silverbelly per kg at Cochin, Sassoon Dock Market (Bombay), Karwar, Mandapam and Kakinada are given.

1127. RAO, P. S. 1972.

Fishery economy of Mysore State. *Seafood Export Journal*, 4 (7): 31-37.

Silverbelly (*Leiognathus*) production for 1968 with average production for one year (1964-'68) and percentage in total production is given.

1128. RAO, P. S. 1978.

Fishery resources of India and production. In: *Fishery Economics and Management in India*, Part 1. Vol. 1. 129 pp. Central Institute of Fisheries Education, Bombay.

p. 85. Landings of *Leiognathus* in different depth range (m) from lower east coast and Andaman region are given.

1129. RAO, P. S. 1983

Fishery Economics and Management in India. 356 pp. Pioneer Publishers and Distributors, Bombay.

p. 125. *Leiognathus* (silverbellies) accounting for nearly 4 per cent of the total catches, is fairly abundant in east as well as west coasts. They appear in trawl catches, besides being traditionally caught by shore and boat seines. Though it is available all along the coast, greater part of the catch comes from Madras and Kerala coasts. About 16 species were observed in this groups. Dominant among them is *Leiognathus splendens*. Silverbelly is small in size and flatty in appearance. Though it is generally good for fish meal purpose, at present it is consumed in dried form by weaker section, particularly in the interior areas of Mangalore.

1130. RAO, K. VENKATA SUBBA 1981.

Food and feeding of lizard fishes (*Saurida* spp.) from north western part of Bay of Bengal. *Indian J. Fish.*, 28 (1 & 2): 47-64.

Leiognathus spp. as food according to the size group, feeding index and intensity in percentage. *Leiognathus bindus* is the dominant food item in *Saurida tumbil*. Juveniles also prefer *Leiognathus* as food.

1131. RAO, K. VIRABHADRA 1967.
 Exploratory fishing. In: *Souvenir, 20th Anniversary*, p. 25-36. Central Marine Fisheries Research Institute, Cochin.
 Landings of *Leiognathus* sp. from Karwar, Mangalore, Cochin, Tuticorin, Mandapam and Pondicherry are given.
1132. RAO, K. VIRABHADRA 1969.
 Distribution pattern of the major exploited marine fishery resources of India. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 6, p. 1-69.
 Discusses catch data of Leiognathidae from the commercial catches along the east and west coasts. Bulk of the catches come from Madras, Kerala and Andhra Pradesh with heavy landings at Mandapam, Rameswaram and Pamban. Average landings of silverbellies from 1961 to 1965 and percentage of its occurrence in each state are given.
1133. RAO, K. VIRABHADRA 1969.
 Trawl fishing in India. *Proc. Indo-Pacific Fish. Counc.*, 13 (3): 566-575.
 States that most of the heavy catches in the Palk Bay and Gulf of Mannar area consisted of small fishes, predominantly silverbellies.
1134. RAO, K. VIRABHADRA 1973.
 Distribution pattern of the major exploited marine fishery resources of India. In: *Proceedings of the Symposium on Living Resources of the Seas around India*, p. 18-101. Cent. Mar. Fish. Res. Inst., Cochin.
 Discusses catch data of Leiognathidae from the commercial landings along the east and west coasts. Bulk of the catches come from Madras, Kerala and Andhra Pradesh with heavy landings at Mandapam, Rameswaram and Pamban. Average landings of silverbellies from 1961 to 1965 and percentage of its occurrence in each state are given.
1135. RAO, V. VISWESWARA 1976.
 The non-clupeoid fishes of Godavari estuary. *Matsya*, 2: 54-62.
 Lists *Secutor insidiator*, *S. ruconius*, *Leiognathus dussumieri*, *L. fasciatus*, *L. equulus*, *L. splendens* and *L. brevisrostris* from the family Leiognathidae.
1136. RAPSON, A. M. AND C. R. MCINTOSH 1971, 1972.
 Prawn surveys in Papua, New Guinea. First ed. (1971). *Biol. Ser.*, 10/5
 Second ed. (1972). *Res. Bull.* No. 3, 98 pp. Dept. Agric. Stock Fish. Port Moresby.
 Lists Leiognathidae (genera *Gazza*, *Secutor*, *Equula*, *Equulites* and *Leiognathus*) among the fishes commonly associated with prawns (prawn indicators). Suggests that Leiognathidae compete for food with prawns.

1137. RAU, N. AND A. RAU 1980.

Commercial Fishes of the Philippines. German Agency for Technical Co-operation (GTZ). Eschborn, Germany, 623 pp.

p. 306. Description and drawings of *G. minuta*, *L. bindus*, *L. brevirostris*, *L. daura*, *L. elongatus*, *L. equulus*, *L. fasciatus*, *L. leuciscus*, *L. lineolatus*, *Leiognathus* sp. (as in Kuhlmoegen Hille, 1974), *L. splendens*, *S. insidiator* and *S. ruconius* are included. *L. rivulatus*, mentioned as a first record from the Philippines is probably a misidentification.

1138. REEVE, M. BAILEY, HOWARD ELLID-WINN AND C. LAVETT SMITH 1954.

Fishes from the Escambia river, Alabama and Florida, with ecological and taxonomic notes. *Proc. Acad. Nat. Sci. Philadelphia*, 106: 109-164.

p. 145. Under family Leiognathidae Moharr *Eucinostomus argenteus* was represented by 3 species.

1139. REGAN, C. T. 1913.

The classification of the percoid fishes. *Ann. Mag. Nat. Hist.*, 12 (8): 111-145.

Leiognathidae (dorsal fin depressible into a sheath) is characterised with 9 or 10 spines, the first short, the second longest, soft rays subequal, 2 to 5 anal spines. Pelvics with large axillary processes. Mouth very protractile, the long premaxillary pedicel lying in a groove or chamber formed by the bifurcation of the occipital crest, maxillary variable in form, but always with the anterior edge curved more or less in the shape of an S; distal extremity exposed, no supramaxillary palate, toothless, vertebrae 24 (10+14): first 3 without parapophyses, first rib sessile, rest on parapophyses.

1140. REGAN, C. T. 1920.

Freshwater fishes from Madagascar. *Ann. Mag. Nat. Hist. Ser.*, 9 (5): 419-424.

Leiognathus dussumieri Cuv. & Val. collected in Madagascar in 1911 by the Hon. P. A. Methuen for determination of species is described.

1141. REUBEN, S., G. SUDHAKARA RAO, G. LUTHER, T. APPA RAO, K. RADHAKRISHNA, Y. APPANNA SASTRY AND G. RADHAKRISHAN 1989.

An assessment of the bottom trawl fishery resources of the north-east coast of India. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 44 (Part I), p. 59-77.

The authors reported silverbelly among 17 major species studied. *L. bindus* formed the bulk of the catch. The very rich grounds of silverbellies are also reported.

1142. RICHARDSON, J. 1845.
 Report on the ichthyology of the seas of China and Japan. *Rep. Brit. Assoc. Adv. Sci. 15th meeting*, p. 187-320.
 Lists *E. rivulata* and *E. nuchalis*.
1143. RICKER, W. E. 1973.
 Russian-English dictionary for students of fisheries and aquatic biology. *Bull. Res. Board Cen.*, No. 183, 428 pp.
 Gives Russian equivalents for Leiognathidae and *Leiognathus*.
1144. RITRAGSA, S. 1976.
 Results of the studies on the status of demersal fish resources in the Gulf of Thailand, from trawling surveys, 1963-'72. In: *Proceedings of the International Seminar on Fisheries Resources and their Management in Southeast Asia*. K. Tiews (Ed.), Berlin (West), 19 November - 9 December, 1974, pp. 198-223, Westkruetz-D ckerei, Berlin.
 Contains catch data for Leiognathidae, by sub-area and year.
1145. RIZALINA, M. FEGASTO, CORAZON, M. DEL MUNDO, KENT CARPENTER 1967.
 On the socio-economic survey and hydrobiological survey of Maqueda Bay, Villareal Bay and part of Zumarraga Channel for the proposed fish nurseries/reservations. *Philippine J. Fish.*, 13 (1): 102-149.
 p. 121. Reports on *L. splendens* and slipmouth in the catch composition in trawling No. 1 and 2 from Maqueda Bay.
1146. RIZALINA, M. LEGASTO, CORAZON, M. DEL MUNDO KENT AND E. CARPENTER 1975.
 On the hydro-biological and socio-economic surveys of San Miguel Bay for the proposed fish nursery/reservations. *Philippine J. Fish.*, 13 (2): 205-246.
 p. 211. Reports on slipmouths among the fish landings of San Miguel Bay, Sabang, Calabanga on November 18, 1978.
1147. ROFEN, R. R. 1963.
Hand Book of the Food Fishes of the Gulf of Thailand. George Vanderbilt Foundation and Scripps Inst. of Oceanography, La Jolla, California.
 p. 52-65. General characters, technical characters, common names, fisheries, use and references of *Leiognathus equulus*, *L. splendens*, *L. fasciatus*, *L. brevirostris*, *L. daura*, *L. elongatus*, *Secutor ruconius*, *S. insidiator* and *Gazza minuta* are given with some photographs of some species.
1148. ROMER, A. S. 1966.
Vertebrate Paleontology. 3rd ed. Univ. Chicago Press, Chicago.
 Gives occurrence of Leiognathidae from the Oligocene-Miocene to recent.

1149. RONQUILLO, I. A. 1950.
 Anatomical evidence in cases of fish killed by explosive. *Bull. Fish. Soc. Philipp.*, 1: 52-56.
Leiognathus sp. is listed among the fishes commonly caught by the use of explosives.
1150. RONQUILLO, I. A. 1954.
 Food habit of tuna and dolphins based upon the examination of their stomach contents. *Philipp. J. Fish.*, 2 (1): 71-83.
 Quotes Nakamura (1936) who mentions *Leiognathus* as frequent food item of *Neothunnus macropterus*.
1151. RONQUILLO, I. A. 1972.
 Status of the round scad (*Decapterus* spp.) catch by purse seine. In: *The Kuroshio II; Proceedings of the Second Symposium on the Results of the Co-operative Study of the Kuroshio and Adjacent Regions*. K. sugawara (Ed.), Tokyo, Japan, September 28-October 1, 1970, pp. 417-423. Saikon Publ. Co., Tokyo.
 In Philippine leiognathid catch by bag nets (9,473 tonnes) and purse seine (2,344 tonnes) are reported.
1152. RONQUILLO, I. A. 1974.
 A review of the round scad fishery in the Philippines. *Proc. Indo-Pacific Fish. Counc.*, 15 (3): 351-375.
Leiognathus spp. are listed under the species caught by light fishing (bag net and purse seine).
1153. RONQUILLO, I. A. AND P. CACES-BORJA 1968.
 Notes on the infestation of *Chanos chanos* by a parasitic isopod. *Philipp. J. Fish.*, 8 (1): 113-117.
 Notes that an isopod (*Ichthyoxenus jellinghausii*) infects several species of fishes, including slipmouths.
1154. RONQUILLO, I. A., P. CACES AND A. N. MINES 1972.
 Preliminary observations on the otter trawl fishery of Manila Bay. *Proc. Indo-Pacific Fish. Counc.*, 13 (3): 638-648.
 The authors have reported high percentage of slipmouth, mostly *Leiognathus* in different months during 1957-'59. This group formed the main stay of the trawl fishery in the Manila Bay.
1155. ROUNSEFELL GEORGE, A. 1975.
World Fisheries. Ecology, Utilization and Management of Marine Fisheries. Chapter 6.
 World landings of slipmouth in temperate zone is given. The group ranked 4th in the landings.

1156. RUPPELL, E. 1835.
 Neue Wirbeltiere zu der Fauna von Abyssinien gehorig. Fische des Rothen Meeres. Siegmund Schmerber, Frankfurt.
 p. 4. *Gazza equulaeformis* (type loc. Massua, Red Sea).
1157. RUSSELL, D. 1803.
 Descriptions and figures of 200 fishes collected at Visakhapatnam on the coast of Coromandel. Vol. 1. London.
 p. 48. *E. splendens*, p. 48 *Zeus tottah* karah, p. 50 *E. bindus*, p. 51 *E. daura*.
1158. RUTTER, C. 1898.
 A collection of fishes obtained in Swatow, China, by Miss. Adele, M. Fielde. *Proc. Acad. Nat. Sci. Phila.*, 56-90.
 p. 73. *L. nuchalis*.
1159. SACHITHANANTHAN, K. AND A. THEVATHASAN 1970.
 'Sirahu valai' - a passive fishing gear in Ceylon. *Bull. Fish. Res. Stn. Ceylon*, 21 (2): 87-95.
 p. 92. *Leiognathus* sp. is included among the species of fish caught in the 'Sirahu valai' in the Jaffna lagoon.
1160. SADANANDAN, K. A., K. N. KARTHA, T. P. GEORGE AND H. KRISHNA IYER 1988.
 Economics of gill netting and two-boat midwater trawling. *Fish. Technol.*, 25 (1): 5-7.
 Silverbellies occurred among speices caught.
1161. SAEGER, J., P. MARTOSUBROTO AND D. PAULY 1976.
 First report of the Indonesian-German Demersal Fisheries Project (results of a trawl survey in the Sunda Shelf area). *Mar. Fish. Res. Rep. (L. P. P. L)/ Contrib. Demersal Fish. Proj.*, No. 1, 46 pp.
 Catch data of Leiognathidae are given.
1162. SAETRE, R. AND R. De PAULA e SILVA 1979.
 The marine fish resources of Mozambique. Reports of surveys with R/V *Dr. Fridtj of Nansen*. *Serv. Invest. Pesq., Maputo and Inst. Mar. Res., Bergen*, 179 pp.
Gazza minuta, *Leiognathus elongatus*, *L. equulus*, *Secutor ruconius* and *S. insidiator* were recorded from Mozambique coast. Various biological characteristics (spawning season, circadian movement etc). as well as catch rate in various areas are given.

1163. SAMBANDAMURTHY, P. S. 1966.
 Food and feeding habits of perches of Tuticorin coast, Gulf of Mannar. *Madras J. Fish.* Director of Fisheries, Tamil Nadu.
 p. 53. *Leiognathus* formed 25.22% of gut content.
1164. SAMUEL, C. T. 1968.
Marine Fisheries in India. S. T. Reddiar and Sons, India.
 Silverbelly fishery, its occurrence in Andhra, Madras and Kerala with size range and fishery of *Leiognathus splendens*, *L. equulus*, *L. bindus*, *L. insidiator* and *L. ruconius* and landing data from 1957-'68 are given on p. 132.
1165. SANDERS, MICHAEL, J., KEDIDI, M. SALAH, AND HEGARZY, R. MOHAMED 1984.
 Catches, fishing efforts, catch per fishing effort and fishing locations for the Gulf of Suez and Egyptian Red Sea coast trawl fishery during 1979 to 1982. Development of fisheries in Areas of the Red Sea and Gulf of Aden. RAB/81/002. (UNDP) FAO, 54 pp.
 p. 6. *Leiognathus* sp. represented less than 5 per cent in the catch.
1166. SAROEUNG, S. 1976.
 Quantitative studies of demersal fauna of the Khmer coastal water. In: *Proceedings of the International Seminar on Fisheries Resources and their Management in Southeast Asia.* K. Tiews (Ed.), p. 256-268. Berlin (West), 18 November-6 December, Westkruez-Drukkerel, Berlin.
 Lists *Leiognathus* among the trash fish sent to meal plants or thrown overboard when boats are short of ice.
1167. SASTRY, Y. APPANNA AND M. CHANDRASEKAR 1986.
 The small commercial trawl fisheries off Visakhapatnam during 1982-'83 and 1983-'84. *J. mar. biol. Assn., India*, 28 (1 & 2): 74-83.
 Landings of silverbellies, its seasonal occurrence and size ranges of important species which contribute the fishery are given.
1168. SATHIADHAS, R. 1989.
 Comparative economic efficiency of sail boats operating different gears in Tamil Nadu. *Mar. Fish. Infor. Serv., T & E Ser.*, No. 97, p. 8-16.
 Author has reported on silverbellies from 'Thallumedi' at Tuticorin during 1986-'87 with its value.
1169. SATHIADHAS, R AND K. K. P. PANIKKAR 1988.
 A study of marketing and price behaviour of marine fish in Tamil Nadu. *Seafood Exp. J.*, 20 (12): 5-19.
 The authors have reported on silverbellies and other fishes sold in fresh condition and processed. Average prices at primary wholesale and retail market at Madras during 1984-'85 are also reported.

1170. SATHIADHAS, R AND K. K. P. PANIKKAR 1989.
 Cost and earnings of trawlers operating at Tuticorin Fisheries Harbour (Tamil Nadu). *Mar. Fish. Infor. Serv., T & E Ser.*, No. 100, p. 1-8.
 Authors have reported on silverbelly landings during 1985-'86 with its value.
1171. SATYANARAYANA, A. V. V. AND G. NARAYANAPPA 1972.
 A review of experimental trawling from small and medium sized mechanised vessels off Kakinada. *Fish. Technol.*, 9 (2): 97-103.
 Silverbellies and other fishes caught in the trawl net are given on p. 100.
1172. SATYANARAYANA, A. V. V., G. NARAYANAPPA AND D. A. NARASIMHA RAJU 1970.
 On the relative utility of different methods to increase the vertical height in an otter trawl. *Fish. Technol.*, 7 (1): 23-32.
 p. 28-29. The percentage catch composition in four different gear showed that silverbellies contributed 13.32%, 8.24%, 10.26% and 13.26%.
1173. SATYANARAYANA, A. V. V., G. NARAYANAPPA AND D. A. NARASIMHA RAJU 1972.
 On the comparative fishing experiments with four seam and two seam trawls on the east coast. *Fish. Technol.*, 9 (2): 169-179.
 p. 174. Carangids and silverbellies were found more in inshore areas in two-seam net with 20% in total, against 20% in the four-seam net.
1174. SAUVAGE, M. H. 1891.
 Historie naturell de poissons. (being Vol. 16) Grandider, Histoire physique, naturell et politique de Madagascar. Paris.
 Describes *Equula parviceps* and lists *E. dussumieri*, *E. edentula*, *E. ensifera*, *E. fasciata*, *E. filigera*, *E. insidiator*, *E. lineolata*, *E. splendens*, *Gazza equulaeformis* and *G. minuta* among Leiognathidae.
1175. SAVILLE-KENT, W. 1893.
The Great Barrier Reef of Australia: its Products and Potentialities. W. H. Allen and Co., London.
 p. 369. *E. asina* (listed only), *E. decora* and *E. argentea*.
1176. SCHMELTZ, J. D. E. 1864.
 Museum Godeffroy, Catalogue 1.
 p. 9. *E. filigera* (South Seas).
1177. SCHMELTZ, J. D. E. 1865.
 Museum Godeffroy, Catalogue 2.
 p. 7. *E. filigera*.

1178. SCHMELTZ, J. D. E. 1866.
Museum Godeffroy, Catalogue 3.
p. 9. *E. fasciata* (Samoa).
1179. SCHMELTZ, J. D. E. 1869.
Museum Godeffroy, Catalogue 4.
p. 18. *G. minuta* (Kandavu) and *E. Fasciata* (Samoa, Viti Isl.).
1180. SCHMELTZ, J. D. E. 1874.
Museum Godeffroy, Catalogue 5.
p. 27. *E. fasciata* (Samoa, Viti Tahiti); p. 28. *Gazza equulaeformis* (Rarotonga).
1181. SCHMELTZ, J. D. E. 1879.
Museum Godeffroy, Catalogue 7.
p. 46. *E. fasciata* (South Seas).
1182. SCHMICT, G. D. AND R. E. KUNTZ 1969.
Nematode parasites of Oceanica. V. Fauna new species from fishes of Palawan, P. I. with a proposal for *Oceanicucullanus* gen. nov. *Parasitology*, 59 (2): 389-396.
On a nematode parasite of *G. minuta*.
1183. SCHMIDT, P. J. 1930.
A list of the fishes of the Riu-Kiu Islands. *Bull. Acad. Leningrad*, p. 541-548.
Also *J. Pan. Pac. Res. Inst.*, 8 (4): 2-6.
Lists *L. edentulus*. Mentions that the Riu-Kiu Islands are the northern limit for true tropical fishes.
1184. SCHMIDT, P. J. 1931.
A list of fishes collected in Japan by Dr. A. Bunge and N. Grebnitzky. *Bull. Acad. Sci. USSR*, 1: 101-122. (In English with Russian summary).
Lists *L. rivulatus*.
1185. SCHMIDT, P. J. 1931.
Fishes of Japan collected in 1091. *Trans. Pac. Comm. Acad. Sci.*, 2: 1-176. (in English with Russian summary).
Lists *L. rivulatus*.
1186. SCHROEDER, R. E. 1977.
Preliminary results of the size-maturity survey of commercially important fishes of Honda Bay. *Philipp. J. Fish.*, 15 (2): 127-173.
Length-weight, size frequency and maturity data of *Leiognathus daura* are given from Honda Bay, Palawan.

1187. SCHROEDER, R. E. 1980.
Philippine Shore Fishes of the Western Sulu Sea. National Media Production Center, Manila, 266 pp.
 Photo and descriptions of *L. equulus*, *L. smithursti*, *L. splendens*, *L. breviostris*, *L. bindus*, *L. elongatus*, *G. minuta* and *S. insidiator* are given.
1188. SCHULTZ, LEONARD, P. 1948.
The Ways of Fishes. D Van Nostrand Company, Inc., New York, 264 pp.
 p. 240. Combines Leiognathidae and Gerridae into one family - Gerridae.
1189. SCHULTZ, L. P., L. P. WOODS AND E. A. LACHNER 1966.
 Fishes of the Marshall and Marianas Islands. *Bull. U. S. Nat. Mus.*, 202 (3): 1-176.
 Lists *Leiognathus equulus* in Addendum to Vol. 1.
1190. SCHULTZ, L. P., E. S. HERALD, E. A., LACHNER, A. D. WELANDER AND L. P. WOODS 1953.
 Fishes of the Marshall and Marianas Islands. Vol. 1. Families from Assymetroniidae through Siganidae. *Bull. U. S. Nat. Mus.*, 202 (1): 1-685.
 Combines Leiognathidae and Gerridae into one family (Gerridae); lists *L. equula*.
1191. SCHULTZ, L. P., L. P. WOODS AND E. A. LACHNER 1966.
 Fishes of the Marshall and Marianas Islands. *Bull. U. S. Nat. Mus.*, 202 (3): 1-176.
 Lists *Leiognathus equulus* in Addendum to Vol. 1.
1192. SCHUSTER, W. H. AND R. R. DJADJADIREDA 1950.
 (Fish culture in salt water ponds in Java). *Kementerian Pertanian, Pengumuman*, No. 2, 245 pp. (in Indonesian with English Summary).
 Mentions that *S. insidiator*, *L. equulus* and *G. minuta* are also caught in tidal ponds (for milkfish culture) as a result of deliberate stocking of 'tambak' with 'wild' fish larvae and juveniles.
1193. SCHUSTER, W. H. AND R. R. DJADJADIREDA 1952.
 Local common names of Indonesian fishes. Ministry of Agriculture, Laboratory for Inland Fisheries.
 Gives Indonesian names for 7 species of Leiognathidae.
1194. SCOTT, J. S. 1950.
An Introduction to the Sea Fishes of Malaya. pp. 180. Ministry of Agriculture, Federation of Malaysia.
 Description of *Equula insidiatrix*, *E. splendens*, *Gazza minuta* and *E. daura* are given with Malay names.

1195. SEAFDEC 1978.
 Fishery statistical bulletin for South China Sea area 1976. Southeast Asian Fisheries Development Center, Thailand.
 Countrywise and gearwise catches of leiognathids are given.
1196. SEALE, A. 1901.
 Report of a mission to Guam. Part 2. Fishes. *Occas. Pap. Bernice P. Bishop. Mus.*, 1 (3): 61-128.
 p. 74. *L. obscurus* Seale.
1197. SEALE, A. 1908.
 The fishery resources of the Philippine Islands. Part 1. Commercial fishes. *Philipp. J. Sci.*, 3 (6 A): 513-531.
 p. 529. *L. splendens*.
1198. SEALE, A. 1910.
 Fishes of Borneo, with descriptions of four new species. *Philipp. J. Sci.*, 5 (4 D): 263-289.
 Lists and describes *Leiognathus caballa*, *L. splendens*, *L. blochii*, *Secutor ruconius* and *Gazza minuta*.
1199. SEALE, A. 1914.
 Fishes of Hongkong. *Philipp. J. Sci.*, 9 (1 D): 59-81.
 Lists *Secutor insidiator*, *S. ruconius*, *Leiognathus edwardsi*, *L. virgatus* and *L. daura*.
1200. SEALE, A. AND B. A. BEAN 1907.
 On a collection of fishes from the Philippine Islands, made by Maj. Edgar A. Mearns, Surgeon, U. S. Army, with descriptions of seven new species. *Proc. U. S. Nat. Mus.*, 33: 229-248.
 p. 242. *L. dussumieri* and *L. edentula*.
1201. SEBA, A. 1758.
 Locupletissimi rerum naturalium thesauri accurate descriptio et iconibus, artificiosissimis expressio, per universam physicis historiam ... Ex toto tertrarum orbe collegit, digessit, descript, et depingendum curavit Albertus Seba. *Fishes*, 3: 58-109.
Scomber flavescens.
1202. SEIGEL, J. A. 1982.
 Median fin-spine locking in the ponyfishes (Perciformes: Leiognathidae). *Copeia*, 1: 202-205.
 Dorsal and anal fin spine locking mechanisms and function are described.

1203. SEKHARAN, K. V. AND R. V. NAIR 1975.
 The fishery resources of the shelf waters around India. In: *Proc. Symp. Fish. Processing Industry in India*, 28-35.
 p. 30. Average and percentage landings of *Leiognathus* and *Gazza* during 1950-'54 and 1967-'73 are given.
1204. SEKHARAN, K. V., M. S. MUTHU, K. VENKATA SUBBA RAO, V. RAMAMOHANA RAO, P. MOJUNDER AND S. REUBAN 1973.
 Exploratory trawling on the continental shelf along the north-western part of the Bay of Bengal. In: *Proc. Symp. Living Resources of the Seas around India*, p. 280-337. Spec. Publ. Cent. Mar. Fish. Res. Inst., Cochin.
 Landing of *Leiognathus* is reported in the squares 1, 12, 14, 15, 23, 28, 30, 31 - 35, 48, 51 A, 55 B, 56-59, 60 A, 61-64, 66, 66 A, 67, 70, 70 A, 71, 79, 88, 89, 90, 92, 97-99, 101, 104 on the continental shelf along the north-western part of the Bay of Bengal by exploratory trawling.
1205. SELVANATHAN, M. AND K. KALIYAMURTHY 1973.
 On some new records of fishes from the Pulicat Lake, eastcoast of India. *Rec. Zool. Surv. India*, 67: 367-371.
Leiognathus blochii, *L. equulus* and *L. insidiator* are recorded from the Pulicat Lake.
1206. SENTOS, L. M. 1975.
 Report on the species distribution of some commercially important fishes. In: *Fourth Fisheries Forum, Philippine*. Council for Agriculture and Resources Research, Los Banos, Philippines.
 Presents occurrence lists including leiognathid species for different areas of the Philippines. Some aids for identification are given.
1207. SHARIFF, A. T. 1973.
 A brief note on the exploratory bottom trawl operations off Madras. By M. V. Meenabharathi in 1969. *Proc. Seminar on Mariculture and Mechanised Fishing* p. 112-118.
 p. 113. Miscellaneous fishes comprised of predominantly silverbellies.
1208. SHAW, G. 1803.
General Zoology or Systematic Natural History. Vol. 4. G. Kearsley, London.
 p. 587. *S. edentulus*; p. 594. *S. minuta* and p. 596. *S. equula*.
1209. SHENOY, A. S. 1988.
 Scope for export of diversified products from low cost fish. *Seafood Exp. J.*, 20 (9): 5-9.
Leiognathus sp. and other trash fish which form significant percentage can be exported in different forms.

1210. SHEN SHIH-CHIEH AND WEN-WEN LIN 1985.

Study on the leiognathid fishes of Taiwan. *Bull. Inst. Zool. Academia Sinica.*, 24 (1): 125-138.

In the present revision of leiognathid fishes found in the surrounding waters of Taiwan and its adjacent islands, twelve species belonging to three genera are recognized. They are *Gazza minuta*, *G. achlamys*, *Secutor ruconius*, *S. insidiator*, *Leiognathus equulus*, *L. splendens*, *L. brevirostris*, *L. nuchalis*, *L. bindus*, *L. leuciscus*, *L. berbis* and *L. lineolatus*. Among them, three species *Gazza achlamys*, *Secutor insidiator* and *Leiognathus nuchalis* are new records for Taiwan. A key to genera and species, description, figures and remarks (if any) on each species are presented.

1211. SHETTY, H. P. C.

Fishery by-products. In: *A Systems Framework of the Marine Foods Industry in India*. G. K. Kulkarni and U. K. Srivastava (Ed.), Concept Publishing Company, New Delhi, p. 521-558.

Silverbelly landings of India from 1969-'79 and state-wise landings during 1979 are given.

1212. SHINDO, S. 1973.

General review of the trawl fishery and the demersal fish stocks of the South China Sea. *FAO Fish Tech. Pap.*, No. 120, 1-49.

Includes leiognathid catch data.

1213. SHIVAJI, P. AND A. P. KAMALAKARA RAO 1987.

LDH profile of *Gazza minuta* (Bloch) (Leiognathidae - Pisces). *Nat. Symp. Environmental Biol.*, 2-4 April, 1987, Palayamkottai, p. 4. (Abstract).

A study of LDH profile of 18 tissues of *Gazza minuta* was carried out by polyacrylamide disc gel electrophoresis. Muscle, stomach, intestine, liver, spleen, vertebrae, kidney, fin system and skin showed only one fraction A (LDH₅). Vitreous humour showed two fractions A₄ (LDH₅) and B₄ (LDH₁). Brain, gill and heart revealed the presence of three fractions, A₄ (LDH₅), A₃ B₁ (LDH₄), A₁ B₂ (LDH₃). Eye lens alone exhibited all the five fractions A₄ (LDH₅), A₃ B₁ (LDH₄), A₂ B₂ (LDH₃), A₁ B₃ (LDH₂) and B₄ (LDH₁). In brain A₄ (LDH₅), showed highest activity. In eye lens A₃ B₁ showed highest activity. Enzyme activity has been interpreted in the light of electrophorograms. The Reflection of gene activity from the expression of LDH isoenzyme has been explained. The LDH pattern of vitreous humour, brain, heart, eye lens and gills may be used as biochemical markers to identify *Gazza minuta*.

1214. SHIINO, S. M. 1972.

English and Japanese names of Japanese fishes with proposition of new names. *Sci. Rep. Shina Marineland*, 1: 1-210.

As per title for *L. elongatus*, *L. equulus*, *L. lineolatus*, *L. nuchalis* and *L. rivulata*.

1215. SHIINO, S. M. 1976.
 List of common names of fishes of the world (Those prevailing among English speaking nations). *Sci. Rep. Shina Marineland*, 4: 1-262.
 p. 191-192. English and Japanese names are given for 19 species of the family Leiognathidae.
1216. SHUNBNIKOV, D. A. AND G. I. TOKAREVA 1973.
 Material on fish resources on the shelf of the Indian Peninsula. In: *Soviet Fisheries Investigations in the Indian Ocean*. A. S. Bogdanov (Ed.). Israel Progr. for Sci. Transl., Jerusalem, p. 84-96.
 p. 94. Catch data lists *L. commersoni*, *L. daura*, *L. splendens*, *L. fasciatus*, *L. leiognathus* and *S. insidiator*.
1217. SHUNBNIKOV, D. A. AND G. I. TOKAREVA 1973.
 Some data on the ichthyofauna of the eastern part of the Bay of Bengal and the Andaman Sea. In: *Soviet Fisheries Investigations in the Indian Ocean*. A. S. Bogdanov (Ed.). Israel Progr. for Sci. Transl., Jerusalem, p. 97-126.
 Leiognathids mentioned among the fishes of low commercial value. p. 104 catch list mentions *G. minuta*, *L. fasciatus*, *L. splendens* and *S. insidiator*.
1218. SHUNTOV, V. I. 1971.
 Some data on the biology of fishes of the Arafura Sea and their environmental conditions. *J. Ichthyol.*, (Vopr. Ikthiol.), 11 (1): 1-8.
 Presence of leiognathid is related to seasonal upwelling.
1219. SILAS, E. G. 1977.
Indian Fisheries 1947-1977. Issued on the occasion of the 5th Session of the Indian Fishery Commission held at Cochin, 19th-26th October, 1977.
 p. 13. Silverbelly belonging to the genera *Leiognathus* and *Gazza* contributes to 4 to 5% of the total marine fish catch.
1220. SILAS, E. G., S. K. DHARMARAJA AND K. RENGARAJAN 1976.
 Exploited marine fishery resources of India. A synoptic survey with comments on potential resources. *Bull. Cent. Mar. Fish. Res. Inst., Cochin*, No. 27, p. 1-25.
 Includes catch data of silverbellies.
1221. SIMPSON, A. C. 1982.
 A review of the data base on tropical multispecies stocks in the Southeast Asian region. In: *Theory and Management of Tropical Fisheries*. D. Pauly and G. I. Murphy (Ed.), ICLARM, p. 5-32.
 p. 24. Selected references on *Leiognathus splendens* are given.

1222. SIN-CHE LEE 1978.
 Food and feeding habits of ribbon fishes *Trichiurus japonicus* and *T. lepturus*, *Bull. Inst. Zool. Academic Sinica*, 17 (2): 117-124.
Leiognathus ruconius, *L. rivulatus* and *L. brevirostris* formed food of ribbonfishes.
1223. SINDERMANN, CARL 1970.
Principal Diseases of Marine Fish and Shellfish. Academic Press, New York, 369 pp.
 Mentions occurrence of tissues forming conspicuous external bulges surrounding the eyes of *L. fasciatus*.
1224. SIRIKANCHANA, P. 1982.
 Check lists of parasites of fishes in Thailand. *Notes from Faculty of Fisheries*, p. 1-11, Kasetsart Univeristy, Bangkok.
 Recorded nematod parasite *Philometra* sp. in the ovary of *Leiognathus elongatus* and *Leiognathus* sp., copepod parasite in the chin of *Leiognathus iliskae* and the gill of *Leiognathus splendens* and *L. brevirostris*, isopod parasite *Grrathia* sp. (larval stage) in the gill of *Leiognathus ruconius* and *Livoneca* sp. in the mouth of *Leiognathus* sp.
1225. SIVALINGAM, S. 1956.
 A survey of the Balapitiya Lagoon prawn fishery. *Progress Reports, Biological and Technological*, No. 2, p. 5-11. Fisheries Research Station, Department of Fisheries, Ceylon.
 Recorded *Leiognathus daura* as a result of three surveys carried out.
1226. SIVALINGAM, S. 1969.
 Wadge Bank trawl fishery studies. *Bull. Fish. Res. Stn. Ceylon*, 20: 27-38.
Leiognathus sp. is recorded.
1227. SIVAN, T. M., S. D. DESHPANDE AND S. V. S. RAMA RAO 1970.
 Some observations on the performance of 10.5 m mid-water trawl operated off Veraval. *Fish. Technol.*, 7 (2): 207-210.
 p. 210. Silverbelly, *Leiognathus* sp. was present among a variety of fish caught, its percentage being 0.26.
1228. SIVASUBRAMANIAN, K. 1985.
 Marine fishery resources of the Bay of Bengal. Bay of Bengal Programme. Marine Fishery Resources Management. *BOBP/WP/36*, UNDP, FAO Sri Lanka.
 Percentage of the ponyfish catch in the Project area of Maldives, Sri Lanka, India, Bangladesh, Burma, Thailand, Malaysia and Indonesia are given. Changes in percentage of *Leiognathids* in Thailand in 1966-'82 are also reported.

1229. SIVASUBRAMANIAN, K. AND R. MALDENIYA 1985.
 The demersal fisheries of Sri Lanka. Bay of Bengal Programme. Development of Small-scale Fisheries. BOBP/WP/41, SIDA, FAO, Sri Lanka, 41 pp.
Leiognathus spp. and *Secutor* sp. are mentioned among demersal fish species on p. 6.
1230. SMITH, J. L. B. 1951.
 Thirteen noteworthy additions to the South East African marine fauna. *Ann. Mag. Nat. Hist.*, 12 (4): 49-66.
 Reported *L. elongatus* from East Africa.
1231. SMITH, J. L. B. 1961.
The Sea Fishes of Southern Africa. Central News Agency Ltd., South Africa. 573 pp.
 Under family Leiognathidae (slimys soapys), *Secutor ruconius*, *S. insidiator*, *Leiognathus equulus* and *Gazza minuta* are given.
1232. SMITH, J. L. B. AND M. M. SMITH 1963.
The Fishes of Seychells. 215 pp. Department of Ichthyology, Rhodes University, Grahamstown.
 Lists *Gazza minuta*, *Leiognathus equulus*, *L. fasciatus* and *Secutor insidiator* among Leiognathidae.
1233. SMITH, I. 1978.
 An economic analysis of the structure and performance of the milkfish *Chanos chanos* (Forsk.) fry industry in the Philippines and related aquaculture development policies. University of Hawaii, Honolulu, Hawaii, 307 pp. *Ph.D. dissertation*.
 Lists slipmouth (local name: lanay or laway-laway) among fishes found in milkfish fry catch or in pond harvest of marketable milkfish.
1234. SMITH LAVETT, C. AND REEVE, M. BAILEY 1962.
 The Subocular shelf of fishes. *J. Morphol.*, 10 (1): 1-18.
 Absence of the subocular shelf in *Gazza minuta*, *Leiognathus nuchalis* and *L. ruconius* is reported.
1235. SMITH, H. M. AND T. E. B. POPE 1906.
 List of fishes collected in Japan in 1903, with descriptions of new genera and species. *Proc. U. S. Nat. Mus.*, 31: 459-499.
Leiognathus elongatus is reported from Kagoshima, Japan.

1236. SMITH H. M. AND A. SEALE 1906.
Notes on a collection of fishes from the island of Mindanao, Philippine Archipelago, with description of new genera and species. *Proc. Biol. Soc., Washington*, 19, p. 73-82.
p. 77. *E. minuta*.
1237. SMITH, M. M. AND P. B. N. JACKSON 1975.
Common and scientific names of the fishes of southern Africa. Part 1: Marine fishes. Part 2. Freshwater fishes. *Spec. Publ. J. L. B. Smith Inst. Ichthyol.*, 14: 1-178. Rhodes Univ.
p. 47 lists *G. minuta*, *L. equulus*, *L. elongatus*, *S. insidiator* and *S. ruconius*.
1238. SNIGIELSKA, T. 1979.
Fish otoliths from the Korytnica clays (middle Miocene: Holy Cross Mountains, Central Poland). *Acta geol. pol.*, 29 (3): 295-337 (Polish summary).
Parequilla crenata sp. nov. is described.
1239. SNYDER, J. O. 1912.
Japanese shore fishes collected by the United State Bureau of Fisheries Steamer "Albatross" Expedition of 1906. *Proc. U.S. Nat. Mus.*, 42: 399-450.
L. argenteus from Suraga Market, Japan is reported on p. 412.
1240. SOEWITO, S. 1961.
(Trial fishing with a trawl in Indonesian waters) Djawatan Perikanan Laut Pusat, Djakarta/Marine Fisheries Service. (In Indonesia).
50-60% of the catch consisted of Leiognathidae.
1241. SOMVANSHI, V.S., AND P. K. BHAR 1984.
A note on the demersal fishery resources survey of the Gulf of Mannar. *Bull. Fish. Surv. India*, 13: 12-17.
Described silverbelly as one of the main species that supported the demersal fishery in the Gulf of Mannar.
1242. SOUSA, M. J. 1983.
Report on the survey with R/V *Pantikapey* in the Sofala Bank (21 July-7 August, 1981). Demersal fish and by-catch of horse and spanish mackerel. Relatorio do cruzeiro realizado no Bance de Sofala pelo navio Pantikapey de 21 de Julho a 7 de Agosto de 1981 - peixes pelagicos e fauna acompanhante de carapan e cavala. *Rev. Invest. Pesq. (Maputo)*, No. 4.
Cruise report contains fishery, biology and geographical distribution of Leiognathidae from ISW, Mozambique, Sofala Bank.

1243. SOUSA, M. J., AND J. GJOESAETER 1987.
A revision of growth parameters of some commercially exploited fishes from Mozambique. *Re. Invest. Pesq. (Maptuo)*, 16: 19-40.
Data on age and growth of *Leiognathus equulus* has been discussed.
1244. SPURGEON, V. S. AND P. KRISHNASWAMY 1967.
Statistics of marine fisheries of Madras State 1964-'65. *Madras Fisheries Statistics Report*, No. 63. Govt. of Madras.
District-wise landings of silverbellies in Madras State during 1963-'64, 1964-'65, whole sale price range during 1964-'65 and landings and value of silverbellies from fish landing centres like Ennore, Cuddalore, Nagapattinam, Sethubavachatram, Athankarai, Pamban, Rameswaram, Kilakarai, Mookaiyur, Ovari, Kootapuli, Cape Comorin and Pulicat are given.
1245. SREEKRISHNA, Y. 1970.
Comparative fishing experiments with two trawl designs used in the inshore waters off Kakinada (Andhra Pradesh). *Fish. Technol.*, 7 (1): 42-47.
Catch of silverbellies (in percentage) in three series of experiment using oval otter board, horizontal curved otter board and horizontal oval curved otter boards in two types of nets are given.
1246. SRINATH, M. 1989.
Trend of the major exploited marine fishery resources of India during 1961-'85. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 44 (Part 1), 272-283.
Estimated landings of silverbelly from 1961-'85 are tabulated comparing landing for both southeast and southwest coasts of India. About 95% of the catch comes from southeast coast.
1247. SRINIVASAN, R. 1966.
On the production and nutritive value of fishmeal from silverbelly (*Leiognathus* spp.) landings at Rameswaram. *Fish. Tech.*, 3 (1): 52-58.
Silverbelly (*Leiognathus* sp.) formed a major fishery in the Rameswaram Island but fetched very low prices for the fishermen ranging from Rs. 0.03 to 0.12/kg only, there being practically no demand for the fish. The possibilities of utilizing this cheap fish for large-scale production of fish meal are discussed and the processing methods described.
1248. SRINIVASAN, R. AND K. C. JOSEPH 1966.
A survey of quality of salt cured fish produced in Kanyakumari District, Madras State. *Fish. Technol.*, 3 (2): 103-112.
Silverbelly and other fishes were sun dried on the beach sand or other open ground where the fishes get dried by the solar heat. Biochemical analysis of trade samples of salted silverbelly showed moisture, sodium chloride (7.89-11.83), total ash (20.68-15.00), acid insoluble (156.00 to 312.00), total volatile basic nitrogen (65.00-68.50) and trimethylamine.

1249. SRINIVASAN, P. V. 1974.
 Observation on the food and feeding habits of the 'torpedo travally' *Megalaspis cordyla*. (Linnaeus) from Vizhinjam Bay. *Indian J. Fish.*, 21 (1): 76-84.
Leiognathus sp. and *Gazza* sp. were recorded occasionally in the stomach content.
1250. SRINIVASAN, P. V. 1979.
 Feeding biology of the Scad *Decapterus dayi* Wakiya. *J. mar. biol. Ass. India*, 21 (1 & 2): 97-102.
Leiognathus spp. formed significant part of the diet, its percentage being 11.94%.
1251. SRIVASTAVA, U. K., M. DHARMA REDDY AND V. K. GUPTA 1982.
 Management of marine fishing Industry. *CMA Monograph*, No. 80. Oxford and IBH Publishing Co., Delhi, 236 pp.
 p. 32. *Leiognathus* are included among low priced species. Annual yield from the Indian Exclusive Economic Zone (1972-'76) is also presented.
1252. SRIVASTAVA, U. K., M. DHARMA REDDY, B. SUBRAHAMANYAN AND U. K. GUPTA 1986.
 Impact of mechanization of small fishing crafts: Analysis and case studies. Centre for Management in Agriculture. *Monograph Series*, No. 114. Indian Institute of Management Ahmedabad, 571 pp.
 p. 86. Landings of silverbelly during pre-mechanisation (1968-'69) and current (1981-'82) periods in villages in Gujarat and Karnataka are given.
1253. SRIVASTAVA, C. B. L. 1985.
A Text Book of Fishery Science and Indian Fisheries. Kitab Mahal, Allahabad, 307 pp.
 p. 20. Occurrence of silverbellies in Coromandal coast, Tuticorin, Gulf of Mannar, Palk Bay and Cape Comorin is reported.
1254. SRIVASTAVA, K. R. 1953.
 Lists of various species of fish and crustaceans caught by the Japanese trawler 'Taiyo Maru No. 17' in Saurashtra waters (with notes) from operations from Nov. '51 to June '52). Department of Industries and Supplies, Govt. of Saurashtra, p. 1-23.
 Occurrence of *Equula edentula* is reported with local name and size range.
1255. STARKS, E. C. 1911.
 The osteology and relationships of *Leiognathus*, a genus of scombroid fishes. *Stanford Univ. Publ., Univ. Ser.*, 5: 5-15.
 Osteology of *L. fasciatus* is given.

1256. STARKS, E. C. 1926.
 Bones of the ethmoid region of the fish skull. *Stanford Univ. Publ. Ser. Biol. Sci.*, 5 (3): 139-338.
 p. 235. Cranium of Samoan specimen of *L. fasciatus* is described.
1257. STEINDACHNER, F. 1879.
 Über einige neue und seltene Fischarten Sue den k. k. zoologischen Museum zu Wien, Stuttgart, and Warschau. *Denk. schr. Akad. Wiss. Wien.*, 41 (1): 1-52.
E. novaehollandiae sp. n. is described on p. 11.
1258. STEINDACHNER, F. 1880.
 Zoologischer Jahresbericht für 1879. 2: 1023-1082. W. Engelman, Leipzig.
Parequula n. g. is described on p. 1060.
1259. STEINDACHNER, F. 1893.
 Ichthyologische Beiträge. *Sitzb. Akad. Wiss. Wien.*, 102 (1): 215-243.
 p. 236. *Equula ruconius*.
1260. STEINDACHNER, F. 1898.
 Über einige neue Fischarten aus dem Rothen Meere, gesammelt während der 1. und 2. österreichischen Expedition nach dem Rothen Meere in den Jahren 1895-1896 und 1897-1898. *Sitzb. Akad. Wiss. Wien.*, 107 (1): 780-788.
Equula klunzingeri nov. sp. is described from Suez.
1261. STEINDACHNER, F. 1902.
 Fische aus Sudarabien und Sokotra. *Denkchr. Akad. Wien.*, 71: 123-168.
 p. 144. *E. daura*.
1262. STEINDACHNER, F. 1906.
 Zur Fischfauna der Samoa Inseln. *Sitz. Akad. Wiss. Wien.*, 115: 1369-1425.
 p. 1383 *E. edentula* and *E. fasciata*.
1263. STEINMAN, H. M. AND P. V. DUNLOP 1986.
 Distribution of bacteriocuprein superoxide dismutase in prokaryotes. In: *Superoxide and Superoxide dismutase in Chemistry, Biology and Medicine*. G. Rotilio (Ed.), p. 270-273.
 To characterize the distribution of bacteriocupreins in *P. leiognathi* nine new symbiotic strains of *P. leiognathi* were isolated from the light organs of six additional species of ponyfish. Sonic extracts of these strains were compared with the type strain by Western blotting, using a monospecific polyclonal antibody raised against the bacteriocuprein purified from the type strain (7), and by *in situ* staining for SOD activity. The observations

though drawn from a limited number of symbiotic strains of *P. leiognathi* suggests that the bacteriocuptein variations might relate to differences in the species, sex and geographical source of the ponyfish.

1264. STEURBAUT, E. 1982.

Les otolithes de teleosteens de gisement de Peyrere a Peyreborade (Couches de passage de l'Oligocene au Miocene d'Aquitaine Meridionale, France). *Mededelingen Wkgrp Tert. Kwart. Geol.*, 19 (2): 35-57. (In French with English summary).

Gazza orthensis sp. nov. is described.

1265. SUBRAHMANYAN, M. 1976.

The status of prawn industry in Godavari estuarine system. *Jour. Madras Fish.*, 7: 32-51.

Equula edentula associated with *Palaemon tenuipes*, *E. edentula*, *E. bindus*, *E. ruconius*, *E. insidiatrix*, *E. dussumieri*, *Equula* sp. *E. fasciatus*, *E. splendens* and *E. blochii* associated with the penaeid prawns caught in drag net and *E. ruconius*, *E. edentula*, *E. insidiator*, *E. bindus*, *E. dussumieri* and *E. blochii* associated with the prawns caught in stake net are reported.

1266. SUDARSAN, D. 1978.

Result of exploratory survey around the Andaman Island. *Bull. Expl. Fish. Proj.*, No. 7, p. 1-43.

Leiognathids were present among the group of fishes collected in trawl catches during 1975-'76. Among small miscellaneous fish, leiognathids formed 28.8%. Highest catch per hour was noticed in December and June, in the depth of 40-59 and 60-79 metres.

1267. SUDARSAN, D. 1986.

Key to species of fishes occurring in the trawl catches of Visakhapatnam. *Bull. Fish. Surv. India*, 14: 34-68.

Key to the species *Gazza minuta*, *Secutor ruconius*, *S. insidiator*, *Leiognathus dussumieri*, *L. bindus*, *L. brevirostris*, *L. daura* and *L. equulus* is given.

1268. SUDHIRANJAN, J. 1978.

Indian fisheries - A bird's eye view. *Industrial Fisheries Association Souvenir*. Department of Industrial Fisheries. University of Cochin. 111 pp.

Silverbellies and other fishes contributed 1.6 million tonnes from marine side.

1269. SUDRAJAT, A. AND U. BECK 1978.

Report on the southern China Sea demersal trawl survey, June and July 1978. *Contrib. Demersal Fish. Proj. Mar. Fish. Res. Inst., Jakarta*, 4: 81-40.

Catch rates for Leiognathidae and *Leiognathus splendens*, with a map showing the catch rate of *L. splendens* are presented.

1270. SUDRAJAT, A., UDO REMPE AND S. EHRICH 1982.
- Biometric comparison of the splendid ponyfish *Leiognathus splendens* (Cuvier) from Sunda Shelf. *Bull Pen Perikannan*, 2 (1): 17-36.
- A total of 553 specimens from 14 localities were collected aboard stern trawler R. V. *Mutiara* during the joint research of the Indonesian-German Project in the Sunda Shelf. The methods used were (1) Size Independent Discriminant Function Analysis and (2) the Generalized Distance Technique of *Mahalanobis* and the construction of a phylogentic tree. Two or maximally four populations were detectable by morphometric peculiarities and distribution.
1271. SUJASTANI, T. 1980.
- The marine fishery resource of the north coast of West Java. In: *Proceedings of the Jakarta Workshop on Coastal Resource Management*. E. C. F. Bird and S. Soegiarto (Eds.), p. 65-69.
- Defines the "inshore" fish community characterized by the presence of *L. splendens* and the "offshore" community characterized by the presence of *L. elongatus*. Lists *Leiognathidae* caught off the North Java coast.
1272. SUJASTANI, T., P. MARTOSUBROTO AND D. PAULY 1974.
- A review of the demersal fishery of Indonesia in the Malacca Strait, based on recent demersal surveys and catch and effort data. In: *Report of the Workshop on the Fishery Resources of the Malacca Strait*. Part I. SCS/GEN/76/2, p. 23-47. South China Sea Fish. Dev. Coord. Progr., Manila.
- Catch data for *Leiognathidae* are given.
1273. SUKUMARAN, K. K., K. Y. TELANG AND O. THIPPESWAMY 1982.
- Trawl fishery of South Kanara with special reference to prawns and by-catches. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 44, p. 8-14.
- Silverbelly was the dominant group among fishes, contributing to 31.2% and 24.5% at Mangalore and Malpe respectively during 1981-'82. Though a number of *Leiognathus* and a single species of *Gazza* occurred regularly in trawl catches, *Gazza minuta*, *Leiognathus splendens*, *L. bindus* and *Secutor insidiator* were the abundant species. Maximum catch was recorded during September-October.
1274. SULIT, J. I., O. B. NAVARRO, R. C. SAN JUAN AND E. B. CALDITO 1953.
- Proximate chemical composition of various species of Philippine market fishes. *Philipp. J. Fish.*, 2 (1/2): 106-120.
- Moisture, ash, protein, fat, carbohydrate and calorific content of *Leiognathus equulus* (large, medium and small) are given on p. 112.
1275. SUNADHIHARGA, K. 1970.
- On the replacement of the trap nets by gill nets. Bogor. Agri. Inst., Indones, 69 pp. *Thesis* (In Indonesian).

Mentions *Leiognathus* spp. as first or second (after *Stolephorus* spp.) most important species in lift-net catches.

1276. SUNDARA RAJ, B. (Ed.) 1931.

Fishery reports for 1928. *Bulletin* No. 22. Fish Statistics for 1925-'26 (Supplement to the Administration Report for 1926-'27), p. 1-48.

Statement of seasons and localities where hooks and line ('Beppu') was used is given. Silverbellies were caught among other fishes. They were also caught in 'Chala vala', 'Patti vala', 'Kantha vala', 'Mathi vala', 'Paithu vala', 'Kai rampini', 'Rampini' and other nets. Statement of occurrence of silverbellies in different seasons at different places is given.

1277. SUNDARA RAJ, B. 1931.

Fish statistics for 1927-'28. Report No. 2 of Madras Fisheries Department. *Madras Fish. Bull.*, 24: 105-197.

Catch data for Leiognathidae are presented.

1278. SUNDARA RAJ, B. 1932.

Administration Report of the Department of Fisheries for the Year Ending 30th June, 1931. Report No. 1 of 1932, 112 pp.

Leiognathus spp. are reported among the chief fish caught on the east and west coasts.

1279. SUNDARA RAJ, B. 1933.

Report on a systematic survey of deep sea fishing grounds by S. T. "Lady Goschen" 1928-'29. Report No. 3 of 1930. *Madras Fisheries Bulletin*, 24: 199-232.

Occurrence of silverbellies is reported.

1280. SUNDARA RAJ, B. 1934.

Fisheries Administration Report for the Year Ending 30th June, 1934. Fisheries Department, Madras, 83 pp.

Silverbellies (*Leiognathus* sp.) were the fishes collected and recorded to study the economically important shoaling fish.

1281. SUNDARA RAJ, B. 1935.

Fisheries Administration Report of the Fisheries Department for the Year Ending 30th June, 1935, 74 pp.

A special study of the 'Karral' fisheries of the Pamban area was made and a detailed report was prepared in September describing the seasons, fishing grounds, the nets used, the various species (*Leiognathus* spp. and *Gazza* sp.) contributing to the fishery, the relative abundance of the fish, their feeding habits and their commercial importance.

1282. SUNDARA RAJ, B. 1936.
Fisheries Administration Report of the Fisheries Department for the Year Ending 30th June, 1936.
 Silverbellies (*Leiognathus* and *Gazza*) formed the sixth most important fish of the Northern Circars. Among the other important fishes of west coast, silverbelly appeared from July to September, 1935 and again from April to June, 1936, but were not in such abundance as in 1935.
1283. SUNDARA RAJ, B. 1937.
Fisheries Administration Report of the Fisheries Department for the Year Ending 30th June, 1937, 66 pp.
Leiognathus bindus and other shoaling fishes of the west coast are recorded.
1284. SUNDARA RAJ, B. 1938.
Fisheries Administration Report of the Fisheries Department for the Year Ending 30th June, 1938, 78 pp.
 Occurrence of *Leiognathus bindus* was reported among shoaling fishes during other fishery investigations in the west coast.
1285. SUNDARA RAJ, B. 1939.
 Fish statistics for 1928-'29, 1929-'30 and 1930-'31. Report No. 1, 2 and 4 of 1937. *Madras Fisheries Bulletin*, 27. Madras Fisheries Department.
 Monthly and yearly landings of silverbellies and the values for the years are given.
1286. SUNDARA RAJ, B. 1939.
Fisheries Administration Report of the Fisheries Department for the Year Ending 30th June, 1939.
 Ecological studies of shoaling fish *Leiognathus bindus* were continued along with other fishes in the west coast.
1287. SUNDARARAJ, V., V. K. VENKATARAMAN AND B. SRIKRISHNADOSS 1987.
 Marine fisheries of Tamil Nadu- An analysis. *Seafood Exp. J.*, 29 (6): 21-28.
Leiognathus splendens with percentage composition of commercially important marine fishes of Tamil Nadu during 1982-'85 is given.
1288. SUYEHIRO, Y. 1962.
 Fishes of Egypt (U. A. R.). *Japanese Journal of Ichthyology*, 9 (1-6), October, 31, 1962.
Leiognathus lineolatus reported to contribute about 0.20% of total catch.
1289. SUSEELAN, C. AND K. V. SOMASEKHARAN NAIR 1969.
 Food and feeding habits of the demersal fishes of Bombay. *Indian J. Fish.*, 16 (1 & 2): 56-74.

Leiognathus sp. is reported as food of *Pseudosciaena diacanthus*, *Otolithus ruber* and *Johnius dussumieri*.

1290. SUSEELAN, C., P. PARAMESWARAN PILLAI, M. AYYAPPAN PILLAI AND K. RAMAKRISHNAN NAIR 1985.

Some observations on the trend on zooplankton and its probable influence on local pelagic fisheries at Colachel during 1973-'74. *Indian J. Fish.*, 32 (3): 375-386.

Leiognathus sp. and other fish group formed 37% of the fish catch of the inshore fishery.

1291. SUVATTI, C. 1936.

Index to Fishes of Siam. Bureau of Fisheries, Bangkok.

p. 119. *L. oblongus*.

1292. SUVATTI, C. 1950.

Fauna of Thailand. Dept. of Fisheries, Bangkok.

Lists *L. berbis*, *L. bindus*, *L. blochii*, *L. daura*, *L. dussumieri*, *L. equulus*, *L. fasciatus*, *L. insidiator*, *L. leuciscus*, *L. splendens*, *G. equulaeformis* and *G. minuta*.

1293. SWAINSON, W. 1839.

The natural history of fishes, amphibians and reptiles or Monocardian animals. In: *Lardner's Cyclopaedia*, London, Vol. 2.

p. 247. On *Argyriepes*, a synonym of *Leiognathus* Lac.

1294. TALWAR, P. K. 1973.

On the shore fishes of Goa. *Rec. Zool. Surv. India*, 67: 191-232.

A systematic account and geographical distribution of *Leiognathus berbis*, *L. blochii*, *L. daura*, *L. insidiator*, *L. ruconius* and *L. splendens* are given.

1295. TALWAR, P. K. AND R. K. KACKER 1984.

Commercial Sea Fishes of India. Zoological Survey of India, Calcutta, 997 pp.

Description of the family Leiognathidae (ponyfishes-slipmouths), key to the genera namely *Gazza*, *Secutor* and *Leiognathus* and key to the species with description of *G. minuta*, *L. blochii*, *L. brevirostris*, *L. daura*, *L. equulus*, *L. fasciatus*, *L. jonesi*, *L. leuciscus*, *L. longispinis*, *L. splendens*, *Secutor insidiator* and *S. ruconius* with synonyms, geographical distribution and fishery importance are given.

1296. TAMPI, P. R. S. 1959.

The ecological and fisheries characteristics of a salt water lagoon near Mandapam. *J. mar. biol. Ass. India*, 1 (2): 113-138.

Gazza minuta (Bloch) and *Leiognathus* spp. collected from the lagoon near Mandapam are reported.

1297. TAMURA, T. 1957.
 A study of visual perception in fish, especially on resolving power and accommodation. *Bull. Jap. Soc. Sci. Fish.*, 22 (9): 536-557.
 Includes data on *Leiognathus*.
1298. TANAKA.
Dr. Tanaka's Japanese Fishes in Life Colours. Tokyo.
 Colour illustrations of *Leiognathus argentia* and *L. rivulata* are given.
1299. TANAKA, SHIGEHO 1931.
 On the distribution of fishes in Japanese waters. *Jour. Fac. Sci. Imp. Univ. Tokyo*, 4 (3): 1-90.
 p. 24 *Leiognathus argentea*, *L. rivulata*, *L. lineolata* and *L. elongata* are given among the marine fishes of southern Japan area.
1300. TANDON, K. K. 1960.
 Biology and fishery of 'Choo Parai' *Selaroides leptolepis* (Cuvier and Valenciennes). *Indian J. Fish.*, 7: 82-100.
 Stomachs of *Caranx melampygus* were found to be full of *Leiognathus* and other fishes.
1301. TANDON, K. K. 1960.
 On the biology and fishery of 'Choo Parai' *Selaroides leptolepis* (Cuvier and Valenciennes). *Ph.D. Thesis*, Punjab University.
 Guts of *Caranx melampygus* were full of *Leiognathus* and other fishes.
1302. TANG, C. T., SHI Z-M CAO HUA, GUAN AND C. S. PAN 1983.
 Studies on the trematodes of marine fishes from Fujian. I. Hemiurid trematodes. *Acta Zootaxon. sin.*, 8 (1): 33-42.
Leiognathus brevirostris, digenean parasites and *Hyterolecithoides multiglandularis*, a new parasitic species, are described from China.
1303. TANUJA, R AND A. RAMACHANDRAN 1988.
 'Ghol' fish and its utilisation. *Seafood Exp. J.*, 20 (4): 15-19.
Leiognathus formed food of *Pseudosciaena diacanthus*.
1304. TARBIT, J. 1980.
 Demersal trawling in Seychelles waters. *Fish. Div. Dept. Agri. and Land Use, Fish. Bull.*, No. 4, 84 pp.
 p. 75 lists *G. minuta*, *L. fasciatus*, *L. equulus*, *L. elongatus* and *L. leuciscus* (all "sap-sap") from Seychelles waters, the latter two being new distributional records.

1305. TAYLOR, W. R. 1964.
 Fishes of Arnhem Land. *Rec. Amer. Aust. Sci. Exped. Arnhem Land*, 4: 45-307.
 p. 213-218 give key to five leiognathid species of Arnhem Land (included in family Gerridae) with description and synonymy.
1306. TCHAW-REN, C. 1960.
 Contributions to the fishes from Quemoy (Kinmen). *O. J. Taiwan Mus.*, 13: 191-213.
 Key to genera and species of leiognathids from Quemoy is given.
1307. TEMMINCK, C. J. AND H. SCHIEGEL 1842.
Fauna Japonica (Part 1 R, Pisces). C. T. E. von Siebold (Ed.).
 Gives original description of *L. nuchalis*.
1308. THAM AH KOW 1973.
 Sea fish. In: *Animal Life and Nature in Singapore*. S. H. Chuang (Ed.), Singapore Univ. Press, Singapore, p. 202-226.
 Mentions that large "kekek" such as *L. equulus*, *L. fasciatus* and *L. splendens* are popular as food fish while the smaller ones are used as duck food. Leiognathidae are plankton feeders and are commonly caught by kelong and beach seines. Bioluminescence and slime production are mentioned.
1309. THAM AH KOW 1974.
Stolephorus resources in the South China Sea. *Proc. Indo-Pacific Fish. Council.*, 15 (3): 182-191.
Gazza minuta is mentioned as predator of *Stolephorus* in Singapore Strait.
1310. THANGARAJA, M. 1982.
 Studies on development, distribution and abundance of fish eggs and larvae in the Vellar estuary, Porto-Novo (South India). *Ph.D. Thesis*. Annamalai University.
 p. 128. Descriptions of developing eggs and larvae reared in the laboratory and postlarvae collected from plankton are given.
1311. THIEMMEDH, J. 1966.
 Fishes of Thailand: their English, scientific and Thai names. (Reprinted 1968). *Bull. Kasetsart Univ. Fish. Res.*, 4: 1-212.
G. minuta, *L. daura*, *L. equulus*, *L. splendens*, *S. insidiator* and *S. ruconius* are included and details as per title.
1312. THIYAGARAJAN, S. AND FREDA CHANDRASEKHARAN 1976.
 Observations on the trawl fisheries in Punnakayal Madai off Tuticorin with special reference to prawn catches. *Jour. Madras. Fish.*, 7: 67-76.

The bulk of the catches by trawl comprised of uneconomic small fish such as silverbellies.

1313. THIEMMEDH JINDA 1966.

Fishes of Thailand: their English, scientific and Thai names. *Kasetsart Univ. Fish. Res. Bull.*, 4: 1-212.

p. 102-103 English, scientific and Thai names of *L. daura*, *L. equulus*, *L. ruconius* and *L. insidiator* are given. Illustrations of silverbelly are also given.

1314. THOILLIERE, V, J. 1857.

Essai sur la faune de l'île de Woodlark ou Moïou, par le P. Montrouzier. *Ichthyologie. Ann. Soc. Hist. Nat. Lyons*, 139-222.

Equula neb (type loc. Woodlark Island).

1315. THOLASILINGAM, T., G. VENKATARAMAN AND K. N. KRISHNAKARTHA 1964.

A study of the fishery and estimation of abundance of ground fish off Cochin. *Indian J. Fish.*, 11 (2): 709-739.

Leiognathus bindus formed 1.3%. The percentage distribution and distribution in relation to depth zones are also given.

1316. THOLASILINGAM, T., K. C. GEORGE, M. G. DAYANANDAN, P. KARUNAKARAN NAIR AND K. NANDAKUMAR 1973.

Exploratory trawl fishing and ground resources along the Kerala coast and adjacent waters. In: *Proc. Symp. Livi. Res. of the Seas around India*. Spl. Publ., Cent. Mar. Fish. Res. Inst., Cochin, p. 241-257.

Leiognathus spp. is reported in April, May, July, November and December 1965 and in February, 1966, in the shallow fishing grounds of Cochin.

1317. THOMAS CHERYAN 1970.

Indian Fisheries Year Book and Who's Who 1970.

Reported *Leiognathus* and *Gazza* among the state-wise marine fish landings.

1318. THOMAS, P. A. 1969.

The goatfishes (Family: Mullidae) of the Indian Seas. *Mem. III., Mar. biol. Ass. India*, 174 pp.

Leiognathus sp. formed the food of *Upeneus tragula*.

1319. THOMPSON, J. C. AND A. SCOTT 1903.

Copepods. *Ceylon Pearl Oyster Fisheries Report*.

Reports the parasitic copepod *Anchoviella* (= *Clavella*) *uncinata* from the operculum folds of *Gazza minuta*.

1320. THOMSON, J. M. 1959.

Some aspects of the ecology of Lake Macquaire, N. S. W., with regard to an alleged depletion of fish. IX. The fishes and their food. *Aust. J. Mar. Freshwater Res.*, 10 (3): 365-374.

Equulites moretonensis (spotted ponyfish) is recorded from Lake Macquaire.

1321. TIEWS, K. 1959.

Report to the Government of the Republic of the Philippines on marine fishery resources. *Rep. FAO/ETAP*. No. 1141, p. 1-88 and *Philipp. J. Fish.*, 6 (2): 107-208 (1962).

Results of research on the leiognathid stock in Manila and San Miguel Bay are given. Food, fecundity etc. are described. Mentions *Saurida* as predator of Leiognathidae, primarily of *L. insidiator*.

1322. TIEWS, K. 1961.

Research activities of marine fisheries biology in 1957. *Philipp. J. Fish.*, 6 (1): 71-105.

Leiognathus species were the most abundant of demersal fish in Manila Bay.

1323. TIEWS, K. 1966.

Third report to the Director General of the Department of Fisheries on marine fisheries research programming - Marine Fisheries Laboratory. *Circ. Pap. Mar. Fish. Lab. Bangk.*, (2): 1025 (In Thai and English).

Mentions *Leiognathus* as object of research.

1324. TIEWS, K. 1973.

Fishery development and management in Thailand. *Arch. Fischereiwiss.*, 24 (1/3): 271-300.

Quantitative catch data for leiognathids and other groups are given for Gulf of Thailand.

1325. TIEWS, K. AND P. CACES BORJA 1965.

On the availability of the fish of the family Leiognathidae Lacepede in the Manila Bay and San Miguel Bay and on their accessibility to controversial fishing gears. *Philipp. J. Fish.*, 7 (1): 59-86.

In the course of this study, fifteen species of *Leiognathus* and two species of *Gazza* were found in San Miguel Bay. In addition, a new identification key is given. Most of the species were observed to be present in Manila Bay or San Miguel Bay from commercial otter trawl, baby trawl and fish coral. Catch and species composition varied among the fishing gears.

1326. TIEWS, K., P. DIVINS, I. A. RONQUILLO AND J. MARGUES 1968.

On the food and feeding habits of eight species of *Leiognathus* found in Manila Bay and San Miguel Bay. *Indo-Pacific Fish. Counc.*, 13 Session Part III, 13 pp.

The paper describes and tabulates the food organisms and notes specific feeding habits of *Leiognathus splendens*, *L. bindus*, *L. insidiator*, *L. ruconius*, *L. blochii*, *L. daura*, *L. equulus* and *L. leuciscus*, noting particularly the differences between the consumption of plankton and benthos by several species.

1327. TIEWS, K., A. MINES AND I. A. RONQUILLO 1972.

On the biology of *Saurida tumbil* (Bloch, 1801) Family Synodontidae in Philippine waters. *Proc. Indo-Pacific Fish. Counc.*, 13 (3): 100-120.

Leiognathids, especially *L. insidiator* and *L. bindus* were found to be important food items of *S. tumbil*.

1328. TIEWS, K., J. A. ORDONEZ AND I. A. RONQUILLO 1972.

On the benthos biomass and its seasonal variations in Manila Bay and San Miguel Bay and a comparison of their foraminiferan fauna. *Proc. Indo-Pacific Fish. Counc.*, 13 (3): 121-138.

Mentions that certain genera of foraminiferans not found in benthos sample were recorded from the diet of *Leiognathus*.

1329. TIEWS, K., P. SUCONDHMARN AND A. ISARANKURA 1967.

On the changes in the abundance of demersal fish stocks in the Gulf of Thailand from 1963/1964 to 1966 as a consequence of the trawl fishery developemnt. *Contrib. Mar. Fish. Lab. Bangkok*, No. 8, 39 pp. (In Thai and English).

Reports a decrease of 70% from the catch of 1963 to 1966 effort of Leiognathidae, while prices went up from 0.85 to 4.00 baht/kg at Bangkok fish market. Note that only large *Leiognathus* (*L. equulus*) are used for human consumption.

1330. TIWES, K. F. W. 1962.

Report to the Government on the Philippines marine fisheries resources. *Philipp. J. Fish.*, 6 (2): 107-208.

Seventeen species of Leiognathidae are distinguished in Philippines. Most of the species were observed to be present in Manila Bay and San Miguel Bay. *L. lineolatus* and *L. berbis* were found only in Manila Bay samples and *L. dussumieri*, *L. smithursti* and *L. fasciatus* were observed only in San Miguel Bay samples. In both areas the four most abundant species were *L. splendens*, *L. bindus*, *L. ruconius* and *L. insidiator*. *L. elongatus*, *L. berbis*, and *L. brevirostris* were found only rarely. Comparison of the catches of the three different gears in Manila Bay showed that the weight share of slipmouth species on the total catch was highest in the fish corals; amounting to more than 80%. *L. splendens*, was observed to be the most abundant species in the fish corals followed by *L. bindus* and *L. insidiator*. Length composition and distribution of different age group are given in detail. Bionomics and population characteristics of silverbellies are given in detail.

1331. TILLIER, J. B. 1902.
 Le Canal de Suez et sa faune ichthyologique. *Mem. Soc. Zool. Fr.*, **15**: 279-318.
L. klunzingeri is reported from Suez Canal.
1332. TIRANT, G. 1983.
 Memoire sur les poissons de la riviere de Hue. *Bull. Soc. Etudes Indochinoise*. Reprint (1929) as: Reimpression de L'Oeuvre ichthyologique de G. tirant. *Serv. Oceanogr. Peches de l'indochine*, **6** Note: 7-32.
 Lists under Carangidae: *E. brevirostris*, C. & V. and *E. edentula* Bl. collected in 1882, in Hue.
1333. TOMIYAMA, J. 1972.
 List of the fishes preserved in the Aitsu Marine Biological Station, Kumamoto University. Amakusa Rinkai Jinkkenjo Reikoku/Publ. *Amakura Mar. Biol. Lab.*, **3** (1): 1-21.
 Lists *L. nuchalis* and *L. rivulatus*.
1334. TORTONESE, E. 1948.
 Ricerche zoologiche nel canale di Suez, II. *Arch. Zool. Ital.*, **33**: 275-292.
L. klunzingeri is reported.
1335. TORTONESE, E. 1953.
 Check-list of the Fishes of the North-eastern Atlantic and the Mediterranean, (CLOFNAM). Hureau, J. C. and T. Monod (Eds.), Unesco, Paris.
L. klunzingeri is reported from the Mediterranean.
1336. TORTONESE, E. 1964.
 The main biogeographical features and problems of the Mediterranean fish fauna. *Copeia*, **1**: 98-107.
Leiognathus klunzingeri and a number of others have dispersed through the canal.
1337. TORTONESE, ENRICO 1972.
 Mediterranean fishes in the Indian Ocean. *J. mar. biol. Ass. India*, **14** (2): 460-486.
 A gradual spreading of some immigrants in a western direction has been noticed. *Leiognathus klunzingeri* reached Tunisia.
1338. TORTONESE, E. 1975.
 Fauna d'Italia. Osteichthys (Pesci, Ossei). Parte Seconda Edizioni Calderini. Bologna.
 Descriptions of Leiognathidae and *Leiognathus* are given. Also recorded *L. klunzingeri* from Lampredusa Island, Italy.

1339. TWEEDIE, M. W. F. 1936.
A list of the fishes in the collections of the Raffles Museum. *Bull. Raffles Mus., Singapore*, 12: 16-28.
Lists *L. blochii* from Singapore and *L. fasciatus* from the east coast of the Malay Peninsula.
- 1340 TWEEDIE, M.W.F. 1940.
Additions to the collection of fishes in the Raffles Museum. *Bull. Raffles Mus., Singapore*, No. 16, p. 68-82.
L. equulus, *L. insidiator* and *L. ruconius* are reported from Singapore and Selangor, Malaysia.
- 1341 UKHIN 1948.
Fisheries in Burma. Govt. Printing, Rangoon.
p. 20. Described silverbellies with figure of *L. splendens* and Burmese names. Reports that it is caught in very large quantities.
1342. UMALI, A. F. 1934.
Fishing industry of southwestern Samar. *Philipp. J. Sci.*, 54: 365-392.
p. 371. *L. equulus*.
1343. UMALI, A. F. 1937.
The fishery industry of San Miguel Bay. *Philipp. J. Sci.*, 63: 227-258.
p. 234. *L. equulus*.
1344. UMALI, A. F. 1950.
Key to the families of common commercial fishes in the Philippines. *U.S. Fish. Wildl. Serv., Res. Rep.* No. 21, 47 pp.
Key to the family Leiognathidae is given with figures. Leiognathidae (slipmouth) in the Philippines include : *Gazza minuta*, *L. bindus*, *L. daura*, *L. equulus*, *L. fasciatus*, *L. insidiator*, *L. ruconius* and *L. splendens*. Distributed throughout the Philippines, especially in bays, gulfs and straits with smooth bottoms.
- 1345 UNAR, M. 1972.
The 'chantrang' Danish seine fishery of the north coast of Java. *Proc. Indo-Pacific Fish. Coun.*, 13 (3): 546-553.
The catches of the gear 'chantrang' consisted predominantly of demersal fishes including Leiognathidae and other fishes, shrimp, squid and scallop. *Leiognathus dussumieri*, *L. splendens*, *L. insidiator*, *L. ruconius* and *Gazza minuta* were the species identified among Leiognathids from the trawl landings at Batang.

1346. UNAR, M. AND M. SACHLAN 1960.
 A list of commercial fishes of Indonesia. *Proc. Indo-Pacific Fish. Counc.*, 8 (2): 32-33 (Abstract).
 Lists *L. splendens*.
1347. UPADHYAY, S. P. AND R. G. UPADHYAY 1984.
 Marine fish production and export. A study of growth in India. *Seafood Export Journal*, 16 (7): 13-22.
 p. 17. Growth rate of silverbelly production in India during 1969-'79 is given showing regression coefficient. Compound growth rate percentage was significant at 0.001 level. S.E. of growth rate was 0.00001317.
1348. UYENGCO, V., I. LAWAX, P. R. BRIONES AND R. S. TARUC 1952.
 Mechanics of bagoong (fish paste) and patis (fish sauce) processing. *Proc. Indo-Pacific Fish. Counc.*, 4 (2): 1-13.
 Lists *Leiognathus* among the fish used to make "patis".
1349. VAKILY, J. M. 1982.
 Catch and effort in the trawl fishery of small-scale fisheries of San Miguel Bay, Philippines : biology and stock assessment. *ICLARM Technical Report*. No. 7, Philippine, p. 65-94.
 'Trash fish' consisted mainly of undersized slipmouth and goat fishes in San Miguel Bay. Total catch of *Leiognathidae* with effort, percentage and monthwise catch for the period March, 1979 to February, 1980 and March, 1980 to February, 1981 from small medium trawlers in San Miguel Bay are given.
1350. VAN DER ELST, R. P. 1976.
 Game fish of the east coast of Southern Africa. I. The biology of the elf. *Pomatus saltatrix* (Linnaeus) in the coastal waters off Natal. *Ocean. Res. Inst. Invest. Rep. S. Afr.*, No. 44, 59 pp.
Secutor insidiator and *L. equulus* are recorded as food items.
1351. VAN ROSENDAAL, A. M. AND P. M. VAN KAMPEN 1909.
 Verslag van de verrichtingen van het Onderzoekings vaarttuig "Gier" etc..... Mededelingen van het visscherij-station te Batavia (3). Buitenzorg.
 Trawl catch data are given for *Leiognathidae*.
1352. VASANTH, N. AND P. SITHA RAMI REDDI 1984.
 Studies on the osteology of silverbellies *Leiognathus splendens* and *Gazza minuta*. *Indian J. Fish.*, 31 (1): 47-60.
 Osteological studies on *Leiognathus splendens* (Cuvier) and *Gazza minuta* (Bloch) revealed dissimilarities and similarities in both the axial and appendicular skeletons. The need for investigation on the osteological

structure of silverbellies is indicated, as it may provide the necessary supporting evidence in the taxonomy of the rather confusing family, Leiognathidae.

1353. VATANACHAI, S. 1974.

The identification of fish eggs and larvae obtained from the survey cruises in the South China Sea. *Proc. Indo-Pacific Fish. Council.*, 15 (3): 111-130.

Occurrence of *Leiognathus* spp. is reported during April and key for identification of families or larvae of Leiognathidae is given. Figure of larva of *Leiognathus* sp. (TL 5.6 mm) is given.

1354. VELASQUEZ, C. C. 1975.

Digenetic Trematodes of Philippine Fishes. Univ. of the Philipp., Guezon City. Leiognathidae (*G. minuta* and *Leiognathus* sp.) as host species and their parasites described.

1355. VELU, M. 1972.

Development of mechanised fishing in Tamil Nadu - Requirement of vessels and machinery. *Seminar on Mariculture and Mechanised Fishing*. Abstracts of papers. Dept. of Fisheries, Govt. of Tamil Nadu, Madras.

p. 37. Silverbellies formed a major group among other fishes which are capable of considerable development along Tamil Nadu coast.

1356. VENKATARAMAN, G. 1960.

Studies on the food and feeding relationships of the inshore fishes off Calicut on the Malabar coast. *Indian J. Fish.*, 7 (2): 275-306.

The common food of *Leiognathus insidiator* was found to be copepod, namely *Acartia*, *Paracalanus*, *Temora* and *Pseudodiaptomus*. Polychaetes were dominant in October and November. *Evadne*, *Lucifer*, larval bivalves, post-larval fishes, decapod larvae and diatoms were also observed. The food of *L. bindus* comprised of *Acartia*, *Centropages*, *Pseudodiaptomus* and *Eucalanus* which were very common in November and polychaetes in May and October. The common food of *L. splendens* included *Fragilaria nitzschia*, *Coscinodiscus pleurosigma* and polychaetes common in September. *S. ruconius* mainly a plankton feeder fed on copepod, cirriped larvae and *Evadne*. *L. blochii* found to feed on copepods, small penaeids and *Evadne* and occasionally on polychaetes and few diatoms *Coscinodiscus* and *Fragilaria*.

1357. VENKATARAMAN, G. AND M. BADRUDEEN 1974.

On the diurnal variation in the catches of silverbellies in Palk Bay. *Indian J. Fish.*, 21 (1): 254-265.

A comparison of the trawl landings from Palk Bay by day and night fishing showed a marked variation in the catches of silverbellies between the two. Another interesting feature noted was that even in night fishing, unusually higher catches of silverbellies were observed on full moon nights than on

new moon nights both in Palk Bay and Gulf of Mannar. From an analysis of the size groups of *Leiognathus jonesi* and *L. brevirostris* caught, it was seen that the proportion of smaller size group was greater in the night catches than in the day catches whereas the proportion of the larger size group was greater in the day catches than in the night catches. The diurnal variation in the catches of silverbellies showed that they stayed at the bottom during day time and at nights good many of them migrated to surface and sub-surface waters. This and the instances of sharp difference in the catch rates observed between full moon and new moon nights indicated a close link between light and the process of migration in silverbellies. The probable cause for the variation in the size groups in the catches by day and night fishing is pointed out. Fishing at the surface, sub-surface and midwater levels at night by using suitable gear is suggested for augmenting the production of silverbellies.

1358. VENKATARAMAN, G., M. BADRUDEEN AND R. THIAGARAJAN 1981.

Population dynamics of silverbelly *Leiognathus jonesi* in Palk Bay. *Indian J. Fish.*, 28 (1 & 2): 65-86.

Based on catch effort and length-distribution data on *Leiognathus jonesi* collected at Mandapam over a period of six seasons, age and growth, selection factor, coefficient of total mortality (Z) and coefficient of natural mortality (M) were derived. For the estimated natural mortality rate (2.1) and for the mesh size (25 mm cod end) in operation, the optimum effort has been found to be 50,000 standard night effort. (=5,000 std. day effort), the yield per hundred recruits being 310 g. The isopleth diagram indicated that there was overfishing of silverbellies in 1873-'74 and 1974-'75 when the effort far exceeded the optimum level. The isopleth diagram also showed that the present mesh size yields the best catch, and an increase in mesh size to 35 mm or decrease to 15 mm leads only to a decrease in yield. For a scientific management of the fishery, it is suggested that the effort be maintained at 50,000 night standard effort with the present mesh size at 25 mm so as to obtain sustained yield of this fish in the coming years.

1359. VENKATARAMAN, R. S. 1944.

Food of ribbon fishes. *Curr. Sci.*, 13 (9): 239.

Records *Leiognathus* spp. as food of ribbon fishes.

1360. VENKATARAMAN, R. S. AND S. T. CHARI 1955.

Trimethylamine oxide content of marine fishes. *Indian J. Fish.*, 2 (1): 37-40.

Trimethylamine oxide content of the muscle of *Leiognathus bindus* is given as 64.8 mgm %.

1361. VENKATARAMAN, R. S. AND S. T. CHARI 1957.

Amino acid composition of some marine fishes. *Indian J. Med. Res.*, 45 (1): 77-80.

Leiognathus bindus contained all essential amino acids.

1362. VENKATARAMAN, R. S. AND A. G. VASAVAN 1950.

Salt curing of marine fishes of the east coast (Madras State). *Fisheries Station Reports and Year Book, April, 1954 - March, 1955*, p. 391-421. Department of Fisheries, Madras.

Storage studies of salted silverbellies showed that the values of T. V. B. and moisture increased uniformly for all the samples. The organoleptic test No. 1 scored the highest and as the values for T. V. B and moisture were comparatively low, 1: 5 is prescribed.

1363. VENKATARAMAN, R. S. AND R. NATARAJAN 1983.

Food and feeding habits of *Carangoides malabaricus* (Bloch and Schn.) and *Alepes kalla* (Cuv. and Val.) off Porto-Novo coast. *Rec. Zool. Surv. India*, 81: 369-406.

Leiognathus spp. formed the food of (juveniles and adult) *C. malabaricus*, the spent and recovering female preferred to feed on *Leiognathus* spp. and *Alepes kalla* preferred *Leiognathus* spp. among fishes.

1364. VENKATA SUBBA RAO, K., V. RAMAMOZHANA RAO, P. MOJUMDER, T. APPA RAO, S. REUBEN, S. S. DAN AND B. NARAYANA RAO 1980.

Pelagic fishery resources of Lawson's Bay, Waltair. *Indian J. Fish.*, 27 (1 & 2): 35-53.

Silverbellies are caught mostly by boat seines, shores seines and gill nets. The average annual catch by all gears was about 4 tonnes of which nearly half was landed by boat seines, 2/5 by shore-seines and the rest by gill nets. Silverbellies are caught almost throughout the year by different gears. High catch rates were obtained by boat seines during May to September and in some years by shore seines from December to May. The average annual catch rate ranged from 0.52 to 2.39 kg for boat seines, 1.5 to 9.1 kg for shore seines while the catch rates by gill nets were very poor. Among thirteen species, *Leiognathus bindus*, *L. splendens*, *Secutor insidiator* and *G. minuta* contributed to the fishery. *L. bindus* was the dominant species occurring almost throughout the year.

1365. VENKATESWARLU, T. 1984.

Scientific, common and vernacular names of fishes of India. *Rec. Zool. Surv. India*, 56: 1-96.

p. 66-67. Scientific, common and vernacular names of *Gazza minuta*, *Gerres filamentosus*, *G. poeti*, *Leiognathus bindus*, *L. daura*, *L. dussumieri*, *L. equulus*, *L. fasciatus*, *L. splendens*, *Secutor insidiator* and *S. ruconius* are given.

1366. VENUGOPALAN, V. AND T. K. GOVINDAN 1967.

Utilisation of trash fish. I. preparation of fish flake. *Fish. Technol.*, 4 (1): 35-43.

Leiognathus spp. have been included among the trash fish landed during the year 1966.

1367. VENUGOPALAN, V. AND M. ARUL JAMES 1969.
Utilization of trash fish. II. Studies on preparation of fish soup mix. *Fish. Technol.*, 6 (1): 148-152.
p. 148. Silverbelly (*Leiognathus* spp.) among other fishes used for preparation of fish soup mix.
1368. VENUGOPALAN, V.K. AND A. RAMESH 1985.
Luminous microflora on marine fish - A culture review. In : *Harvest and Post-harvest Technology of Fish*. Ravindran, K., Unnikrishnan Nair, N., Perigreen P.A., Madhavan, P., Gopalakrishna Pillai, A.G., Panicker, P.A., and Mary Thomas (Eds.), Society of fisheries Technologists (India), Cochin, p. 473-481.
p. 480 refers to luminous fishes like *Leiognathus* (Reichert and Bauman, 1973; Bassot, 1975) which possess light organs that open into the gut of the fish.
1369. VERMEIJ, G. J. 1978.
Biogeography and Adaptation Pattern of Marine Life. Harvard Univ. Press, Cambridge.
p. 25 discusses possible effect of *Saurida undosquamis* predation on *L. klunzingeri* biomass in the Mediterranean.
1370. VIJAYARAGHAVAN, P. 1949.
Food factors and migration of a new fish of the Madras coast. *Jour. Mad. Univ.*, 19 B: 59-68.
Food of *Gazza minuta* is described.
1371. VIJAYARAGHAVAN, P. 1953.
Studies on fish eggs and larvae of Madras coast. *Ph.D. Thesis*. University of Madras. Marine Fisheries in Tamil Nadu. *Seafood Export Journal*, 2 (1): 11-18
Silverbellies are included among the principal varieties of fishes landed in Tamil Nadu in 1969. Silverbelly landings off Tuticorin and Palk Bay and its utilisation for Mandapam Fish Meal Plant are discussed.
1372. VIKAYAN, P. K., P. K. SURENDRAN AND K. K. BALACHANDRAN 1989.
Incidence of histamine in marine fishes sold in retail market in relation to their content of histidine decarboxylating bacteria. *J. mar. biol. Ass. India*, 31 (1 & 2): 202-204.
Bacterial quality and histamine content of *Leiognathus* spp. in relation to their histidine decarboxylating bacteria are reported.
1373. VILLALUZ, D. K. 1953.
Fish Farming in the Philippines. Bookman, Manila.

Lists *Leiognathus caballus* (C. & V.) ("malaway") among the marine fishes known from Lake Naujan, northeastern Mindoro, Philippines.

1374. VILLADOLID, D. V. 1940.

Philippine and problems of their conservation. *Proc. 6th Pac. Sci. Cong.*, p. 369-384.

p. 379. *Leiognathus equulus*.

1375. VILOSO, E. P. AND V. L. APRIETO 1983.

On the relative abundance and distribution of slipmouths (Pisces: Leiognathidae) in Lingayen Gulf, Philippines. *Fish. Res. J. Philipp.*, 8 (1): 26-43.

Monthly research cruises on board the M/V *Albacore* were undertaken in Lingayen Gulf from Feb., 1978 to Jan., 1979. A total of 10,804 kg of fish were captured in the otter trawl between 39-90 metres. About 43.3% of the trawl catch consisted of slipmouths caught at an average rate of 21.83 kg/hr. Nine species of slipmouths were identified from the collection. *Leiognathus bindus* (Val.) made up of 97.38% of the slipmouth catch. The estimated stock size and mean stock density of slipmouths in the sandy area were 637 tonnes and 577 kg/km respectively.

1376. VISWANATHAN, R. AND V. K. PILLAI 1968.

Paper chromatography in fish taxonomy. *Proc. Indian Acad. Sc., Sect B* 43 (6): 334-339.

Also on *Leiognathus* spp.

1377. VISWESWARA RAO, V. AND S. A. RAJAKUMAR 1979.

Area-wise, depth-wise and month-wise abundance of six important varieties of fishes in waters north and south of Visakhapatnam. *Exploratory Fisheries Project News Letter*, Vol. II, No. 1, p. 1-6. Govt. of India.

Silverbellies and other fishes are grouped as miscellaneous fishes which formed about 55%. Large sized leiognathids formed the catches in area around Kalingapatnam.

1378. VIVEKANANDAN, E. AND B. KRISHNAMOORTHY 1985.

Estimated resources of demersal fisheries of north Tamil Nadu - south Andhra coasts based on exploratory surveys. In: *Harvest and Post-harvest Technology of Fish*. Ravindran, K., Unnikrishnan Nair, N., Perigreen, P. A., Madhavan, P., Gopalakrishna Pillai, A. G., Panicker, P. A. and Mary Thomas (Eds.), p. 69-76. Society of Fishery Technologists (India), Cochin.

p. 74. Among the 10 major categories of demersal fishery for which EPY was calculated, silverbellies recorded the maximum in all years. The estimated resources ranged from a maximum of 1.04 t/km² in 1977 to a minimum of 0.16 t/km² in 1978. The 9 year average amounted to 0.35 t/km². Zone 14° 10'N sustained the maximum yield of 0.62 t/km² followed by 14° 40'N (0.42 t/km²).

1379. VIVEKANANDAN, E., S. K. BALAKUMAR AND R. SOUNDARARAJAN 1986.
Some recent observations on small-scale fishery in the vicinity of Madras. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 70, p. 18-19.
The major catch component from the demersal trawls of this area was silverbellies.
1380. VIVEKANANDAN, E., M. KATHIRVEL, V. SELVARAJ, K. G. GIRIJAVALLABHAN, M. RAJAGOPALAN AND L. CHIDAMBARAM 1983.
Spurt in fish landings along north Tamil Nadu coast. *Mar. Fish. Infor. Serv., T & E. Ser.*, No. 49, p. 17-19.
Leiognathus spp. were among other fishes mainly landed at Kovalam landing centre.
1381. VOELTZKOW, A. 1916.
Flora und fauna der Comorin. In: *Reise in Ostafrika in den Jahren 1903-1905*. A. Voeltzkow (Ed.), Band III, p. 429-480. Schweizerbartsche Verlag Stuttger.
p. 460. *Equula fasciata* C. & V. from Mayottee.
1382. WALLACE, J. H. 1975.
The estuarine fishes of the east coast of South Africa. 1. Species composition and length distribution in the estuarine and marine environment. 2. Seasonal abundance and migrations. *Ocean. Res. Inst. Invest. Rep. S. Afr.*, No. 40, p. 1-72.
Discuss distribution, occurrence and abundance of *L. equulus*.
1383. WALLACE, J. H. 1975.
The estuarine fishes of the east coast of South Africa. 3. Reproduction. *Ocean. Res. Inst. Invest. Rep. S. Afr.*, No. 41, p. 1-51.
Gives miscellaneous data on reproduction of *L. equulus*.
1384. WALLACE, J. H. AND R. F. VAN DER ELST 1975.
The estuarine fishes of the east coast of South Africa. 4. Occurrence of juveniles in estuaries. 5. Ecology, estuarine dependence and status. *Ocean. Res. Inst. Invest. Rep. S. Afr.*, No. 42, p. 1-63.
Brief discussion of *L. equulus* autecology is given.
1385. WARFEL, H. E., AND P. H. MANACOP 1950.
Otter trawl explorations in Philippine waters. *U. S. Fish. Wildl. Serv. Res. Rep.*, No. 25, 49 pp.
Catch data for leiognathids with marketable species taken by exploration and trawl operations are given. Scientific and Tagalog names are also given.

1386. WEBER, M. 1894.
 Die Susswasser-Fische des Indischen Archipels. *Zool. Ergebn. Reise Niederl Ost - Indian*, 2: 406-476.
 p. 409. *E. dussumieri*.
1387. WEBER, M. 1911.
 Die fischer der Aru-und Kei-Insein. *Ein Beitrag zur Zoogeographic dieser Insein. Abhand. Senck. Naturf. Gesell.*, 34: 1-49.
 p. 5. *E. ensifera*, *E. fasciata*, *E. splendens* from Aru Islands.
1388. WEBER, M. 1913.
 Die Fische der Siboga Expedition, Leiden. *Siboga-Expeditie*.
 Lists *L. splendens*, *L. bindus*, *L. lincolatus*, *L. elongatus*, *S. insidiator*, *S. ruconius* and *G. minuta* with partial synonymy.
1389. WEBER, M. AND L. F. DE BEAUFORT 1911.
The Fishes of the Indo-Australian Archipelago. Vol. 1. Index of the Ichthyological papers of P. Bleeker. E. J. Brill, Leiden, Second edition (1964) with addenda and corrigenda.
 As per title (see Bleeker 1844).
1390. WEBER, M. AND L. F. DE BEAUFORT 1931.
The Fishes of the Indo-Australian Archipelago. No. 6. E. J. Brill, Leiden.
 p. 310-341. Description and synonyms are given for *Leiognathus insidiator*, *L. ruconius*, *L. elongatus*, *L. fasciatus*, *L. equulus*, *L. splendens*, *L. dussumieri*, *L. leuciscus*, *L. blochii*, *L. brevisrostris*, *L. smithrusti*, *L. daura*, *L. bindus*, *L. berbis*, *L. lineolatus* and *Gazza minuta* including the gerridae. Key to the Indo-Australian genera and species of Leiognathidae are also given.
1391. WEBER, W. 1976.
 The influence of hydrographical factors on the spawning time of tropical fish. In: *Proceedings of the International Seminar of Fisheries Resources and their Management in Southeast Asia*. K. Tiwes (Ed.), Berlin (West), 19 Nov. - 6 Dec., 1974, p. 269 - 281. Westrkuez - Druckerei, Berlin.
Leiognathus bindus is included in the discussion.
1392. WEILER, W. 1955.
 Untersuchungen an Fischen aus dem Alttertiar der Umgebung Von Basel Part II. *Palaontologischer Teil Eclogae Geol. Helv.*, 48 (2): 430-447.
 p. 434, pl. 17, fig. 2. Original description of *L. altapinnus*, the first leiognathid fossil species is given.
1393. WEST, W. O. B. 1973.
 Fishery resources in the upper Bay of Bengal. *IOFC/DEV/73/28*, 44 pp. Indian Ocean. Fish. Comm. FAO, Rome.

- Estimates the potential of *Leiognathus* spp. in the shelf areas off the northern coast of India to be 22.6×10^3 tonnes out of 117×10^3 total fishery potential.
1394. WHEELER, A. 1975.
Fishes of the World - an Illustrated Dictionary. Macmillan Publ. Co., New York.
 p. 230 discusses Leiognathidae in general and *Leiognathus equula* in particular. p. 328 discussess *Secutor ruconius*.
1395. WHITE, A. AND M. BARWANI 1971.
Common Sea Fishes of the Arabian Gulf and Gulf of Oman. Trucial States Council, Vol. 1.
 p. 41-42. *L. equulus*, *L. daurus*, *E. bindus*, *L. lincolatus* and *L. elongatus*.
1396. WHITEHEAD, P. J. P. 1975.
How Fishes Live. Elsevier Phaidon, London.
 p. 44 reports that a leiognathid of 6 cm can shoot its mouth outward and inward a centimeter or more.
1397. WHITEHOUSE, R. H. 1923.
 A statistical study of young fishes from Silvatturai Lagoon, Tuticorin. *Mad. Fish. Bull.*, 17: 49-103.
 Month-wise occurrence of young fishes of *Equula edentula* and their sizes are given. From the data available, it is inferred that the growth rate of this species is half a centimetre per month.
1398. WHITLEY, G. P. 1927.
 A check-list of fishes recorded from Fijian waters. *J. Pan. Pac. Res. Inst.*, 2 (1): 3-8.
 Lists *L. equula*, *L. splendens*, *L. smithursti*, *L. fasciatus* and *G. minuta*.
1399. WHITLEY, G. P. 1928.
 A check-list of the fishes of the Santa Cruz Archipelago, Mclanesia. *J. Pan. Pac. Res. Inst.*, 3 (1): 11-13.
 p. 12. *Gazza minuta*, syn. *Equula dentex* (C. & V.).
1400. WHITLEY, G. P. 1929.
 Studies in ichthyology. No. 3. *Rec. Aust. Mus.*, 17 (3): 101-143.
 Description, figure and synonymy are given for *L. devisi* (new name).
1401. WHITLEY, G. P. 1932.
 Some fishes of the family Leiognathidae. *Mem. Queensl. Mus.*, 10: 99-116.
 Attempted revision of the Leiognathidae. The species dealt with are

Aurigequula longispinis, *Equula asina*, *E. smithursti*, *E. decora*, *E. argentea*, *L. devisi*, *Equulites hastatus*, *Leiognathus hastatus*, *E. moretonensis*, *L. moretonensis*, *Eubleekeria*, *Equula blochii*, *Eubleekeria ovalis*, *E. simplex*, *Nuquequula*, *Macilentichthys*, *M. popei*, *Leiognathus elongatus*, *Equula elongata*, *M. stercorarius*, *M. leuciscus*, *E. leuciscus*, *M. edwardsi*, *Secutor profundus* and *E. profundus*.

1402. WHITLEY, G. P. 1954.

New locality records for some Australian fishes. *Proc. R. Zool. Soc. N. S. W. for 1952-'53*, p. 23-30.

Equulites moretonensis and *Gazza dispar* are given as new records for West Australia.

1403. WHITLEY, G. P. 1964.

Proc. Linn. Soc. N. S. W., 89 (1): 11-127.

p. 45 lists *Gazza minuta*, *Equula equula*, *Equulites novaehollandiae*, *Equulites hastatus*, *Equulites moretonensis*, *Equulites bindus*, *Aurigequula longispinis*, *Secutor profundus*, *Eubleekeria ovalis* and *Eubleekeria (Nuquequula) nuchalis* from Australia.

1404. WHITLEY, G. P. 1966.

Marine Fishes. Vol. 1. Jacaranda Pocket Guides - Jacaranda Press, Brisbane, Australia.

Description of *Leiognathidae*, with a figure of *Aurigequula longispinis* is given.

1405. WIDODO, J. 1976.

A check-list of fishes collected by Mutiara 4 from November, 1974 to November, 1975. *Mar. Fish. Res. Rep. (L. P. P. L)/Contrib. Demersal Fish Proj.*, No. 1, p. 47-77.

L. bindus, *L. smithursti*, *L. splendens*, *L. lineolatus*, *L. elongatus*, *L. leuciscus*, *Leiognathus* sp. (see Kuhlmoegen-Hille 1974), *G. minuta*, *S. insidiator* and *S. ruconius* are reported from Western Indonesian waters (mainly Java Sea) with English and Indonesian common names and partial synonymy.

1406. WILLIAMS, P. P. 1981.

Present status of small-scale (traditional) marine fisheries in Andhra Pradesh. *Bull. Cent. Mar. Fish. Res. Inst.*, No. 30 B, p. 46-54.

Percentage catch composition of *Leiognathus* (5.9%) is given for 1977.

1407. WONGRATANA, T. 1968.

A check-list of fishes caught during the trawl surveys in the Gulf of Thailand and off the east coast of the Malay Peninsula. *Contrib. Mar. Fish. Lab., Bangkok*, No. 13, 96 pp.

Lists *G. minuta*, *L. bindus*, *L. brevisrostris*, *L. daura*, *L. elongatus*, *L. equula*, *L. fasciatus*, *L. leuciscus*, *L. smithursti*, *L. splendens*, *Leiognathus* sp. *S. insidiator* and *S. ruconius*.

1408. WONGRATANA, T. 1972.

Contribution to the sea fishes from Thailand in the Biologische Anstalt Helgoland. In: *Third Symposium on Marine Fisheries, Hamburg*. MF 72/9, 121 pp. Marine Fish. Lab. Bangkok.

Lists and describes *L. daura*, *L. equulus* and *L. fasciatus* with synonymy.

1409. WONGRATANA, T. 1988.

Leiognathus pan, a new pony fish (Pisces : Leiognathidae) from Thailand with comments on Thai Leiognathids. *Proc. Biol. Soc. Wash.*, 101 (3): 496-502.

Leiognathus pan n. sp. is described based on ten specimens from the Gulf of Thailand and the Andaman Sea. It is chiefly distinguishable from its congeners in having scaly breast, a dark blotch on nape, four series of broken longitudinal lines on sides dorsally and upper half of spinous dorsal fin between second and sixth spines with a prominent dark patch. Leiognathids are important in the fisheries of Thailand.

1410. WOOD, C. D. AND D. KING 1985.

Recovery and yields of minces from silverbelly (*Leiognathus* spp.), mackerel (*Scomber scombrus*) and the sardine-like species (*Centegraulis mysticetus*) using a baader 694 meat/bone separator. In: *Harvest and Post-Harvest Technology of Fish*, 638-642.

p. 640. Composition of mechanically deboned fish flesh of silverbelly is given showing moisture, crude protein, crude fat, ash, acid soluble ash and calcium. Bone contents are shown in percentages.

1411. WRIGHT, J. M. 1988.

Seasonal and spatial difference in the fish assemblage of the non-estuarine sulalbikhat Bay, Kuwait. *Mar. Biol.*, 100 (1): 13-20.

Leiognathus brevisrostris was captured as small, mostly of individuals in the intertidal region and as larger fish in the subtidal region.

1412. YABUMOTO, Y. 1979.

Leiognathus bindus and *L. splendens* (Pisces : Leiognathidae) first record for Japan. *Bull. Kitakyushu Mus. Nat. Hist.*, No. 1, p. 61-65.

Japanese with English summary.

1413. YABUMOTO, Y., Y.YOGO AND H. TSUKAHARA 1984.

First record of leiognathid fish, *Gazza minuta* from Japan. *Jap. J. Ichthyol.*, 31 (3): 327-330.

Gazza minuta is distributed in the coastal water of the Indo-Pacific region:

the Red Sea, the east coast of Africa, the Indian Ocean, the Philippines, the Taiwan, the East China Sea and the North Australia to the Society Islands. Specimens of *G. minuta* are recorded from Okinawa Island, Japan for the first time.

1414. YOO, J. M., AND S. S. CHA 1988.

Variation of abundances of Ichthyoplankton in Kwangyang Bay. *Ocean Res.*, **19** (1): 79-84.

Leiognathus sp. 6.0% of larvae among the sample collected during 1983-'85 in Kwangyang Bay.

1415. YUKI, K. AND S. YOSHIMATSU 1987.

Two fish-killing species of *Cochlodinium* from Harima-Nada, Seto Inland Sea, Japan. Paper presented at International Symposium on Red Tides, Takamatsu, Japan. In: *Red Tides: Biology, Environmental science and Toxicology*. T. Anderson, D. M. Nemoto (Ed.), p. 451-454. Elsevier Publishing Co., NY.

Morphological features of two *Cochlodinium* species, *C. polykrikoides* (*C. heterolobatum*) and *Cochlodinium* sp. isolated from Harima-Nada eastern Seto inland sea are described. In laboratory test, both these species were toxic to the juveniles of the fish *Leiognathus nuchalis*.

1416. ZUPANOVIC, S. AND S. Q. MOHIUDDIN 1973.

A survey of the fishery resources in the northeastern part of the Arabian Sea. *J. mar. biol. Ass. India*, **15** (2): 496-537.

p. 505. Table giving catch (kg/hr) and percentage composition of *Secutor insidiator*, *Leiognathus equulus* and *Gazza minuta* and other fishes at different depth classes are presented.

II. ADDITIONS WITHOUT ANNOTATION

1417. BLOCH, M. E. 1785-1797.
Naturgeschichte der Ausländischen Fische. Berlin. Part 1, pl. 428.
S. edentulus; part 8, p. 41-42, *Zeus insidiator* (type loc. Surratte): Part 9, p.
110. *Scomber minutus* (type loc. Malabar).
1418. BOISVERT, H., R. CHATELAIN AND J. M. BASSOT 1967.
Etude d' un Photobacterium isole de l'organe lumineux de poissons
Leiognathidae. *Ann. Inst. Pasteur (Paris)*, 112 (4): 520-524.
1419. DUNLAP, P. V. 1983.
Luminescence, respiration and density of *Photobacterium leiognathi* in light
organs of leiognathid fishes. Evidence for oxygen competition. 83rd. *Ann.*
Meet. An. Soc. Microbiol, New Orleans. (Abstr. p. 160).
1420. DUNLAP, P. V. 1984.
The ecology and physiology of the light organ symbiosis between *Photo-*
bacterium leiognathi and pony fishes. *Ph.D. Thesis*.
1421. FITZGERALD, J. M. 1978.
Studies on the taxonomy and bioluminescence of some luminous, marine
bacteria. *Ph.D. Dissertation*. Monash University, Victoria, Australia.
1422. FLOBE, L. W. A., SNA. GUNZLER, KIM. F. OTTING, G. J. STEFFENS, J. V.
BANNISTER, W. H. BANNISTER 1984.
The phylogenetic position of the Cu-Zn-SOD of *P. leiognathi*. In: *Oxygen*
radicals in Chemistry and Biology, Water de Gunzler. Bors, W. (Ed.), Berlin, p.
793-802.
1423. HANEDA, Y. 1938.
On the luminous fishes of the South Sea Islands. *Kagakunanyo*, 1 (2):21-27.
1424. HANEDA, Y. 1940.
On the luminescence of the fishes belonging to the family Leiognathidae
of the tropical Pacific. *Palao. Trop. Biol. Sta. Stud.*, 2 (1): 29-39.
1425. HANEDA, Y. 1967.
Luminous fishes of Morton Bay, Australia and adjacent waters. *Sci. Rep.*
Yokosuka City Mus., (13): 25-27.
1426. HARRINGTON, A. 1975.
Behavioural observations on leiognathid luminescence. *Alpha Helix*
Bioluminescence Expedition, Indonesia.
1427. HARVEY, E. N. 1952.
Bioluminescence. Academic Press, New York, 649 pp.
1428. HASAN, H. AND M. R. QURESHI 1967.
A field key to the identification of fishes: Order Perciformes. family
Leiognathidae. *Agric. Pak.*, 18 (3): 361-375.

1429. HASTINGS, J. W. AND K. H. NEALSON 1977.
Bacterial bioluminescence. *Ann. Rev. Microbiol.*, **31**: 549-599.
1430. HASTINGS, J. W. AND K. H. NEALSON 1981.
The symbiotic luminous bacteria. In: *The Prokaryotes*. MP Starr, H. Stolp, H. G. Truper, A. Balows and H. G. Schlegel (Eds.), p. 1332-1345. Springer - Verlag, New York.
1431. HASTINGS, J. W., A. HARRINGTON AND J. G. MORIN 1976.
Endosymbiotic luminous bacteria of the ponyfish. Manuscript. *Alpha Helix Bioluminescence Expedition, Indonesia*, 1 p.
1432. JAYABALAN, N. AND K. RAMAMOORTHI 1976.
Marine luminous bacteria. In: *Contributions to Marine Sciences Dedicated to C. V. Kurian on the Occasion of his 60th Birthday*. G. S. Sharma, A. Mohandos and A. Antony (Eds.).
1433. MCFALL-NGAI, M. J. 1983.
The gas bladder as a central component of the leiognathid bacterial light organ symbiosis. *Am. Zool.*, **23**: 907.
1434. MCFALL-NGAI, M. J. 1983.
Patterns, mechanisms and control of luminescence in leiognathid fishes. *Ph.D. Dissertation*, University of California, Los Angeles.
1435. NEALSON, K. H. 1979.
Alternative strategies of symbiosis of marine luminous fishes harbouring light-emitting bacteria. *Trends Biochem. Sci.*, **4**: 105-110.
1436. PAULY, D. 1980.
The use of a pseudo catch-curve for the estimation of mortality rates in *Leiognathus splendens* (Pisces - Leiognathidae) in Western Indonesian waters. *Meeresforschung Rep. M. M. Res.*, **28** (1): 56-60.
1437. REICHELT, J. L. AND P. BAUMANN 1975.
Photobacterium mandapamensis Hendric *et al.*, a later subjective synonym of *Photobacterium leiognathi* Boisvert *et al.* *Int. J. Syst. Bacteriol.*, **25**: 208-209.
1438. REICHELT, J. L., K. NEALSON AND J. W. HASTINGS 1977.
The specificity of symbiosis : Ponyfish and luminescent bacteria. *Arch. Microbiol.*, **112**: 157-161.
1439. YABUMOTO, Y. 1980.
Caudal skeleton of three genera of leiognathid fishes. *Bull. Kitakyushu Mus. Nat. Hist.*, No. 2, 33-39.
1440. YABUMOTO, Y. 1981.
Squamation patterns in leiognathid fishes and implication on speciation. *Bull. Kitakyushu Mus. Nat. Hist.*, **3**: 79-84.

III. SUBJECT INDEX

1. Age and growth	719	1034	1035	1036	1039	1040	1041	1043	1045	1046	1056
	1243										
2. Anomalies	692	1234.									
3. Bait fish	199	200	410	863	890	908					
4. Behaviour	335	548	1357	1396							
5. Bibliography	1049										
6. Biochemical studies	208	343	437	464	465	526	531	535	550	582	637
	653	723	732	772	775	800	818	823	843	879	974
	1053	1078	1186	1213	1249	1274	1361	1410			
7. Biological studies	166	179	190	198	454	689	693	694	809	810	895
	964	1019	1032	1281	1286	1323					
8. Bioluminescence	11	212	213	233	249	329	334	345	346	409	458
	459	461	462	527	585	586	587	589	590	597	599
	600	602	603	604	606	633	635	636	704	707	709
	712	713	714	720	721	739	740	796	849	868	905
	914	915	916	917	948	949	998	1033	1103	1109	1263
	1368	1418	1419	1420	1421	1422	1423	1424	1425	1426	1429
	1430	1431	1432	1433	1434	1435	1437	1438			
9. Biometric features	365	1270									
10. Bionomics	52	366	367	401	438	439					
11. Byproducts	1	138	183	580	581	727	728	729	911	1086	
12. Catch data	5	6	37	38	41	43	44	45	46	47	48
	49	54	55	56	57	58	59	60	61	62	63
	64	65	66	67	68	69	70	71	72	73	74
	75	76	77	78	79	80	81	82	85	86	87
	88	89	90	91	92	93	94	95	96	97	98

99	102	104	105	107	109	110	113	114	115	116
117	118	119	120	121	122	123	124	125	126	127
128	129	130	131	132	133	134	135	137	140	141
142	143	144	145	146	147	148	149	150	151	153
155	156	157	159	160	162	164	165	166	167	168
169	170	171	172	173	174	176	181	187	202	203
205	209	242	243	245	374	384	385	389	403	430
444	445	450	475	543	544	553	574	575	576	598
638	649	656	665	666	667	668	669	670	687	703
710	750	776	777	778	779	782	784	786	794	822
828	832	837	841	896	902	903	906	907	934	944
945	946	975	980	986	987	988	989	990	1003	1021
1029	1047	1048	1052	1062	1093	1094	1096	1097	1099	1108
1127	1128	1131	1132	1144	1146	1151	1155	1161	1167	1170
1203	1204	1211	1212	1216	1217	1220	1228	1240	1244	1245
1246	1251	1252	1266	1268	1269	1272	1273	1277	1278	1279
1285	1287	1290	1297	1312	1317	1324	1351	1366	1383	1385

13. Commercial value

7	337	391	400	647	1057	1117	1124	1126	1129	1169
1247	1308	1329	1367							

14. Cytology

182	1030
-----	------

15. Fish curing

84	386	730	774	852	1362
----	-----	-----	-----	-----	------

16. Diseases

1223

17. Ecology

554	804	1020
-----	-----	------

18. Eggs and larvae

14	192	193	194	196	211	220	369	474	528	546
737	815	817	850	931	932	970	977	979	991	1025
1115	1310	1353	1397	1414						

19. Fishery

13	17	20	21	23	25	26	27	29	30	31
32	33	35	39	51	53	101	108	111	112	161
180	18	185	195	206	219	236	350	354	355	357
370	371	372	373	375	376	377	378	380	382	383
414	426	440	443	453	456	470	473	479	481	482
532	533	534	536	545	601	679	681	684	691	715
747	748	773	798	816	830	840	842	844	870	882
884	894	898	919	935	936	950	953	961	968	978

981	982	993	1020	1023	1024	1042	1050	1051	1066	1067
1078	1081	1105	1120	1125	1133	1134	1141	1145	1149	1154
1159	1160	1162	1164	1165	1166	1171	1192	1173	1195	1207
1209	1219	1227	1241	1242	1276	1259	1315	1316	1321	1322
1330	1341	1345	1347	1364	1371	1375	1377	1378	1379	1380
1393	1406	1411	1416							

20. Food and feeding habits

152	204	246	368	433	448	530	547	555	584	718
726	833	835	900	999	1100	1123	1309	1326	1328	1356
1370										

21. Food of other fishes

178	226	333	396	434	435	436	673	674	676	682
696	700	702	743	834	836	838	851	857	880	881
892	938	976	983	984	985	1014	1018	1027	1067	1087
1091	1107	1116	1122	1130	1150	1163	1222	1250	1300	1301
1303	1318	1327	1350	1359	1363	1369				

22. Host of parasites

10	15	399	447	571	572	573	578	671	678	781
805	856	1064	1153	1182	1224	1302	1319	1354		

23. Length frequency

365	408	579	812	858	923	973				
-----	-----	-----	-----	-----	-----	-----	--	--	--	--

24. Maturity and spawning

163	446	695	706	708	717	1065	1088	1121	1383	1391
-----	-----	-----	-----	-----	-----	------	------	------	------	------

25. Mortality

237	672	1436								
-----	-----	------	--	--	--	--	--	--	--	--

26. Name of silverbellies in different languages

18	40	128	358	390	418	449	549	605	607	646
650	654	698	791	821	901	926	937	1031	1069	1077
1101	1119	1143	1193	1214	1215	1311	1313	1365		

27. Occurrence (Distribution)

2	4	12	16	19	24	34	36	42	100	103
136	139	158	177	186	189	197	201	210	215	216
217	218	221	222	223	224	225	230	231	238	247
248	330	338	339	340	341	347	348	349	351	352
353	361	362	363	364	379	381	392	393	394	395
402	404	405	407	412	417	421	422	431	432	442
451	452	455	457	463	466	467	468	471	472	476
478	483	487	488	489	490	491	492	493	494	497
498	499	500	501	502	503	504	505	506	507	508
509	510	511	512	513	514	515	516	517	518	519

520	521	522	524	525	529	537	539	541	542	556
559	560	561	562	565	569	577	583	591	592	593
594	595	596	608	609	610	611	612	613	614	615
616	617	618	619	620	621	622	623	624	625	626
627	628	629	630	631	632	634	639	640	641	642
643	644	645	652	655	657	658	659	660	661	662
663	664	680	685	690	697	699	701	722	724	731
733	734	735	736	738	742	746	749	752	753	756
757	759	761	762	764	765	766	767	768	769	770
771	780	783	785	787	788	789	790	792	795	797
801	802	803	807	811	813	814	824	825	826	829
839	845	846	847	848	853	854	855	859	860	861
864	865	866	872	873	874	875	876	877	878	883
885	886	887	888	889	891	893	897	899	920	922
924	927	928	929	933	939	947	949	951	952	959
963	968	971	992	994	995	996	997	1000	1001	1002
1006	1009	1010	1011	1012	1013	1015	1016	1017	1022	1054
1055	1058	1059	1060	1061	1063	1068	1070	1071	1072	1073
1074	1082	1083	1084	1085	1086	1089	1090	1092	1098	1102
1105	1106	1111	1135	1138	1142	1148	1152	1156	1158	1168
1176	1177	1178	1179	1180	1181	1183	1184	1185	1189	1191
1192	1196	1197	1198	1199	1200	1202	1205	1206	1210	1218
1225	1226	1229	1230	1232	1233	1235	1236	1237	1238	1239
1253	1254	1265								

28. Osteology

8	341	427	557	688	1113	1202	1255	1256	1352	1439
---	-----	-----	-----	-----	------	------	------	------	------	------

29. Population studies

175	793	966	967	1037	1038	1044	1358			
-----	-----	-----	-----	------	------	------	------	--	--	--

30. Sexual dimorphism

716										
-----	--	--	--	--	--	--	--	--	--	--

31. Taxonomy (Systematics)

3	9	28	50	83	106	188	191	207	227	228
229	235	239	240	331	332	336	344	359	360	397
398	406	413	415	419	420	424	425	428	429	460
469	477	480	484	485	495	523	538	540	551	552
558	564	566	567	568	570	648	651	675	676	683
686	703 a	705	711	725	741	744	745	751	754	755
758	763	799	806	808	819	820	827	831	867	868
869	871	904	909	910	912	913	923	925	930	940
941	942	943	944	955	956	957	958	960	962	972
1004	1006	1007	1008	1110	1112	1114	1118	1137	1139	1140
1147	1157	1174	1187	1188	1190	1194	1208	1231	1257	1258
1259	1260	1261	1262	1264	1267	1293	1294	1295	1298	1305
1306	1307	1338	1339	1340	1344	1376	1388	1389	1390	1392
1400	1401	1404	1405	1409	1412	1413	1428			