GIANT AFRICAN LAND SNAIL (GALS)

aka Giant African Snail (GAS)

(Liss)Achatina fulica

(Férussac 1821)

Origin and Spread

- Native to East Africa (Kenya, Tanzania).
- Records of dispersal exist from 1804.
- Introduced to West Africa (*e.g.* Nigeria) where it largely displaced native related species.
- Subsequently found in China, Taiwan, Philippines, India, Indian Ocean islands, Australia, New Zealand, and the Pacific region including Hawaii.
- Also now found in the West Indies (*e.g.,* Puerto Rico and Lesser Antilles) and South America.

United States

- Established in Hawaii around 1935.
- Frequently intercepted at ports, esp. California, but also other states including Oregon, Texas, Louisiana, and Maryland.
- Boy visiting Hawaii brought back specimens to Arizona in 1958. Given to zoo.
- Specimens have been found in Illinois, Indiana, Iowa, Michigan, Ohio, Pennsylvania, West Virginia, and Wisconsin. These records start about 2004.
- Most of these latter records are due to the pet trade and to teachers wanting educational displays.

Possession of Live GALS

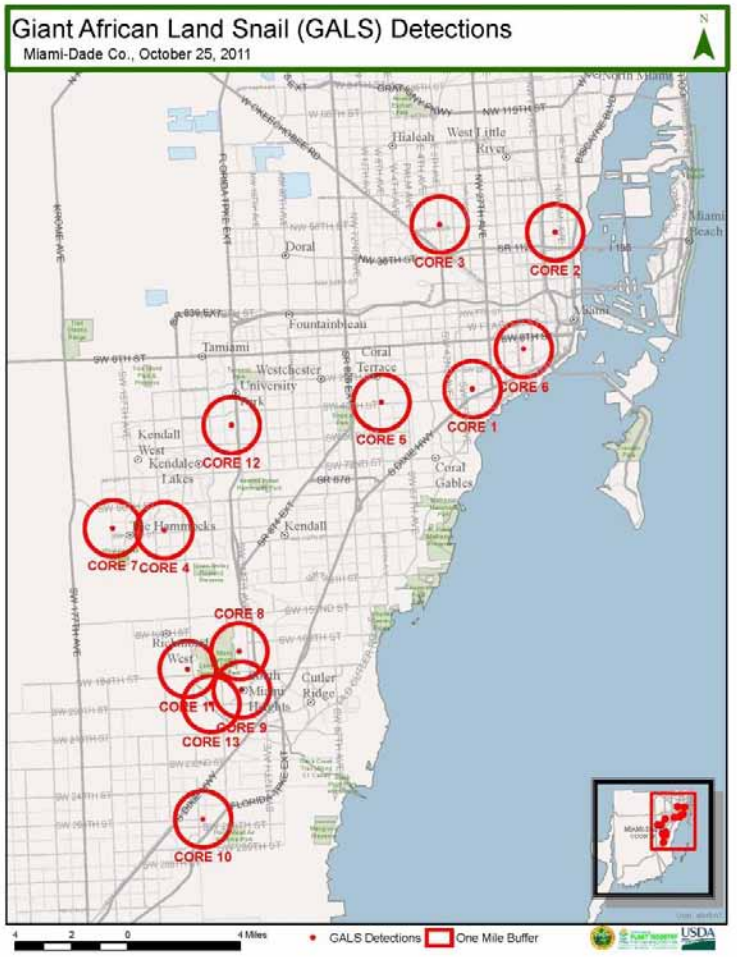
- It is illegal to possess live GALS in the United States for any purpose without a permit!
- Permit required is USDA/APHIS form PPQ 526, and shipping must be accompanied by label PPQ 599.
- No permits are being given for this snail!
- Properly sanitized shells only are permitted for possession as these pose no environmental or health risk.

Historical Florida Infestation

- 3 pet specimens released in North Miami.
- Undiscovered for 3 years, snails found in 1966.
- Eventually 18,000 specimens collected.
- 4 years to eradicate.
- Cost ~ $1,000,000.00.
- With subsequent survey to confirm eradication, entire program from beginning of infestation took about 9 years.
- Lack of eradication would have cost $11,000,000.00 per year to control.

Present Florida Infestation

- 13 cores so far, much larger infested area.
- About 32,000 snails collected to date.



Feeding Biology

- Eat almost anything!
  - Their herbivore diet includes over 500 different plant species, including food plants such as banana, breadfruit, cassava, citrus, coffee, cocoa, papaya, peanut, beans, peas, carrots, lettuce, onions, potatoes (white and sweet), spinach, broccoli, cauliflower, cabbage, cucumbers, pumpkin, and melons.
  - They also feed on many types of ornamentals (*e.g.,* marigolds), and on other economic crops (*e.g.,* cotton and rubber trees).
  - In addition, they forage on lichens, leaf litter, algae and fungi.
  - Will eat other animal matter (*e.g.,* bones), other snail shells, stucco, plaster, and concrete (limestone) as they need a lot of calcium to grow the large shells.

Life Cycle

- Eggs are white, round and 3-5 mm in diameter. They are laid in leaf litter or under a shallow layer of soil.
- Hatchling and smaller snails are similar to other native and naturalized snails.
- Become reproductive at about 6 months of age and 2+ inches in length.
- Normally live 5-6 years, with range 3-9 years.

Reproduction

- Hermaphroditic (have both sexes). Need mate.
- Can store sperm from one mating up to 2 years and fertilize multiple batches.
- At earliest maturity may lay only 10 eggs per batch.
- At full maturity typically lay 200 eggs per batch.
- In ideal climates, lay 5-6 batches per year, therefore 1000-1200 eggs per year!

Other Biological Notes

- Primarily nocturnal (like moderately warm and humid conditions).
- Can move up to 50 m per night.
- Smaller ones usually found in leaf litter and under ground cover.
- Larger ones will climb into bushes, trees, and onto manmade objects such as buildings, fences, and vehicles.

Temperature Requirements

- Generally active between 48-84 degrees F.
- Will hibernate under prolonged cool, dry conditions by burying in soil (below 48 F).
- Cannot withstand freezing.
- Will aestivate under prolonged hot, dry conditions (above 84 F).
- Can remain inactive for a year (up to 3 years according to some sources).

Identification

- Typically reddish brown with alternating dark and cream longitudinal stripes. No bands following whorls.

Identification

Columella truncate, curled inward, and lilac (light purple) in color.

Truncate columella (arrow)

Identification

- Relatively broad foot.

Identification

- Most have ‘right’ twist to shell (aperture on right when looking in to it).
- ‘Lefties’ relatively rare, cannot mate with ‘righties.’ Have been found in Cores 4 and 7.
- Full grown adults with 7 to 9 whorls.
- Can reach 20 cm long and 12 cm wide (8 x 4.7 inches). Largest we have seen about 5+” long.
- Similar natives all under 3” in length.

Other Snails - Elongate

Liguus fasciatus
Florida tree snail

Orthalicus reses
Stock Island tree snail

Other Snails - Elongate

Euglandina rosea
Rosy wolf snail

Orthalicus floridensis
Banded tree snail

Other Snails – Elongate (Small)

Bulimulus guadalupensis
Guadeloupe snail

Drymaeus multilineatus
Many-lined tree snail

Other Snails - Round

Pomacia spp.
Apple snail
Aquatic

Caracola marginella
Banded caracol

Zachrysia provisoria
Cuban garden snail

Threats from GALS

- Massive plant foraging, both individually and by repeated and prolific reproduction that build up enormous populations, threatening both the food and ornamental industries, and the natural environment.
- Carry and transmit parasitic diseases, especially **meningitis** caused by the rat lungworm, *Angiostrongylus cantonensis*.
- Other hazards:
  - Traffic – movement of large numbers of snails on streets at night can create slick spots from being hit by vehicles.
  - Lawn mowing – hitting snail shells with a mower can create instant shrapnel.

Detection – Easter Eggs Gone Bad!

- In or under anything on ground, including pots, debris, logs, rocks, leaf litter, grass clumps, and other ground cover vegetation.
- On leaves, branches or trunks of shrubs and trees, sometimes in a fork, other times hanging like fruit.
- In downspouts (like slot machines!).
- Under AC units.
- On vehicles (wheels, bumpers, undercarriage).
- Under piles of feces (dog, cat, etc.).
- Eggs in soil, under litter, or under other objects.

Basic Equipment for Sampling

- Disposable gloves – must wear!
- Rakes, large and small (litter sampling).
- Ziploc bags, assorted sizes.
- Sharpie to write data on bags.
- Pencil to write on data sheets and specimen submission slips.
- 10% bleach solution in spray bottle.
- Hand sanitizer.

Sampling Protocols for Entomology

- New positive properties:
  - Take a few minutes to try and find a range of shell sizes, which can give data for minimum length of local infestation.
- Previous positive properties:
  - Use a sharpie to write the address on the outside of the sample bag so that the address can be confirmed as a previous positive, but this comes off in alcohol, so put the sample bag into a second bag. Write the address on a piece of paper in pencil and put inside the outer bag.
- Make sure Core and Survey Grid numbers are on submitted samples.

Specimen Form Submission

- Please fill out the form completely in the highlighted areas. Some parts of the form are pre-filled out for you.
- No nicknames.
- Use pencil (ink will be erased if alcohol gets on the form).
- Write legibly!
- Include Core and Survey Grid numbers!
- Double check your information.

References

- USDA/APHIS. 2007. New Pest Response Guidelines - Giant African Snails: Snail Pests in the Family Achatinidae.
- http://www.columbia.edu/itc/cerc/danoff-burg/invasion_bio/inv_spp_summ/Achatina_fulica.htm
- http://edis.ifas.ufl.edu/in275
- http://edis.ifas.ufl.edu/in305