

Achatina fulica (Giant African Snail)

Superfamily Achatinoidea (Land Snails)

Class: Gastropoda (Snails and Slugs)

Phylum: Mollusca (Molluscs)



Fig. 1. Giant African snail, *Achatina fulica*.

[http://www.infobibos.com/Artigos/2009_1/Caracois/3.jpg, downloaded 29 February 2016]

TRAITS. One of the largest of all land snails, when fully mature *Achatina fulica* can reach 10cm in diameter and up to 30cm in length (MIPOP, 2008). The typical adult shell has a conical shape, shell colour varies with environmental conditions; most are light to dark brown marked with vertical stripes of a darker shade of brown (Fig. 1), whereas others can be brownish-red etched with pale yellow streaks or have dark stripes across the whorls (Stokes, 2006). Shells usually comprise 7-9 whorls (turns) at full maturity (Cowie, 2010).

DISTRIBUTION. *Achatina fulica* is indigenous to eastern Africa, inclusive of Mozambique, Kenya, Tanzania and Somalia, but has been widely introduced (Fig. 2) and flourishes in areas such as the Caribbean and Pacific islands, United States, Madagascar, New Zealand and Australia (Snail World 2016; Vogler et al., 2013). It is now invasive in Trinidad, initially discovered in the Diego Martin area.

HABITAT AND ACTIVITY. The ideal milieu for the snail is a tropical climate with annually warm temperatures ranging between 9°C and 29 °C. However, it can survive unfavourable conditions such as 2°C by hibernating in soft soil and 30 °C by aestivation (a slow and sluggish movement) until favourable conditions arise (Animal Diversity, 2016). Snails exhibit nocturnal locomotory activities and tend to remain hidden during the day and become active at night or with rainfall. Young adults disperse more than older adults and lack homing ability, usually preventing return to initial resting sites (Tomiyama, 1992).

FOOD AND FEEDING. The snails are herbivorous and consume a wide array of vegetables, fruits and plants. Foods rich in calcium are a crucial part in their diet to ensure shell durability hence, if calcium-rich plants are not consumed, they may feed on small stones, sand and even carcass bones (Snail World, 2016). They are primary consumers and exist on the second trophic level. By utilizing the radula (toothed, tongue-like chitinous ribbon) they can cut, scrape and feed on plant matter, fungi and lichens.

POPULATION ECOLOGY. On average *Achatina fulica* has a lifespan of 5-6 years but are known to live up to 9 years, with predators and unfavourable living conditions being the main causes of mortality (Raut and Barker, 2002). It has been introduced accidentally and purposefully to coast-landing, agrarian, urban, garden, and natural habitats and has a non-endemic distribution pattern. They have become such a widely distributed and highly invasive species that their novel territories often lack predators. *Achatina fulica* are solitary and only interact for mating purposes.

REPRODUCTION. Externally fertilised hermaphrodite snails usually exhibit outcrossing. They usually interbreed but can self-fertilize if necessary and begin laying large egg clutches (eggs 4.5-5.5mm in diameter) (Fig. 3) as early as six months of age (Smith and Fowler, 2003). Mating is a nocturnal, non-random, highly selective process where snails decide their mates based on age and size (Animal Diversity, 2016). There is no specific mating season, larval phase (Fig. 4) or parental care; 100-500 eggs are discharged in nests or among leaves or dirt annually. Egg-hatching varies between several hours to a two week period depending on temperature (Raut and Barker, 2002). Maturity is achieved within 5-15 months as snails begin producing ova and spermatozoa (Animal Diversity, 2016).

BEHAVIOUR. Interaction and courtship are vital features within the lifecycle of a snail as they rarely self-fertilize. If a size difference exists between mating snails the smaller assumes the male role. Movement, via slime secretion, facilitates smooth and frictionless travelling and protection across rough and sharp surfaces (Fig. 5). They communicate through giving off scents and through the vibrations that they pick up using their tentacles (Fig. 1) (Egonmwan, 2007). Snails have tendencies to burrow into the soil, in an attempt to maintain ambient temperature and for avoiding predators. Extreme heat or cold causes the snails to become inactive, or slow and sluggish, until adequate conditions return.

APPLIED ECOLOGY. *Achatina fulica* is a serious agricultural pest, and they also host parasitic organisms like the rat lungworm and can cause severe illness and diseases in humans if they are consumed. Dehydrating chemicals such as metaldehyde and sodium chloride are widely

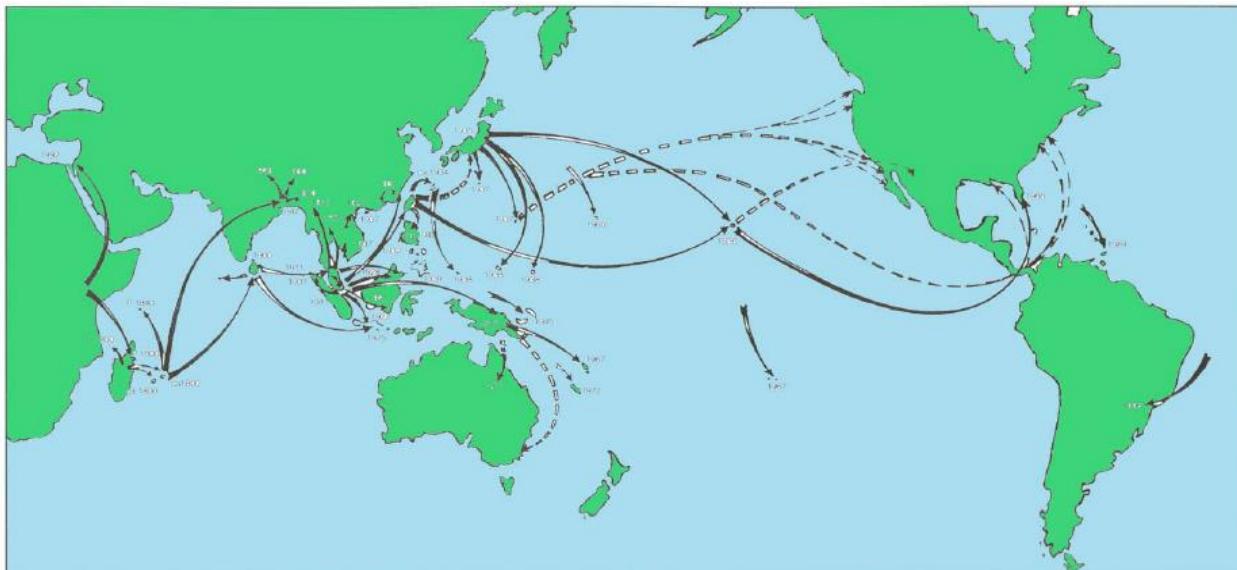
used mechanisms for pest control (Prasad et al., 2004). According to the IUCN, the giant African snail is not at risk of extinction (Issg Database, 2016).

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Dispersal of *Achatina fulica* Bowdich (Achatinidae) out of Africa.

Fig. 2. Introductions of *Achatina fulica*.

[http://freshfromflorida.s3.amazonaws.com/The-Giant-African-Snail-Lissachatina-fulica-History-and-Reported-Biology_Robinson.pdf downloaded 4 March 2016]



Fig. 3. Size of the eggs from *Achatina fulica* snail.

[http://www.stevegreaves.com/Giant_African_Land_Snail_Eggs.htm downloaded 7 March 2016]



Fig. 4. Morphology of growth in the giant African snail from egg to adult.

[<https://fldpi.wordpress.com/category/homeowners-and-gardeners/page/3/> downloaded March 8 2016]



Fig. 5. Slime produced by *Achatina fulica*.

[<http://www.torontosun.com/2014/07/14/giant-african-snails-seized-at-los-angeles-airport> downloaded 8 March 2016]

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