

THE GIANT SOUTH AMERICAN SNAIL, MEGALOBULIMUS OBLONGUS (MULLER)

(GASTROPODA: MEGALOBULIMIDAE)¹

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INTRODUCTION: Based on data furnished by Torres (1950), Mead (1961) called attention to the giant South American snail as destined to become an important pest. Because tropical conditions of south Florida are similar to those where this snail has already been introduced, we should be aware of this plant feeder's existence and be ready to eradicate it before it gains a foothold in Florida. Like the giant African snail (Achatina fulica Bowdich), this species may be confused by non-malacologists with non-plant-feeding tree snails (Bulimulidae) since they have similar shell shapes. Adults (Fig. 1) are much larger than Florida's largest tree snails (Orthalicus spp.), and their thick, bright pink lip is distinctive from both tree snails and the giant African snail. Juveniles show a trace of pink at the base of the columella, and are thin-shelled, unlike native species of equivalent size. Other distinguishing characters include ribbed surface sculpture and solid coloration (Fig. 7), rather than microscopic striations and vertical stripes. Although this South American species is unrelated to the giant African snail, it appears to occupy a similar ecological niche (Bequaert 1948). Data on host preferences are scant, but the giant South American snail is believed to be, like the giant African snail, a serious plant pest requiring quarantine measures. This snail has been introduced into a few Caribbean islands as a food source (Bequaert 1948). Formerly, it was placed in the genus Strophocheilus (family Strophocheilidae), but Leme (1973) placed it along with several other species in the monogeneric family Megalobulimidae based on important anatomical differences. These include possession of a buccal fringe, a pulmonary septum, and a pre-rectal valve in the intestine. Based on the orientation and structure of the kidney, Leme postulates that this group is the most primitive of the order Stylommatophora.

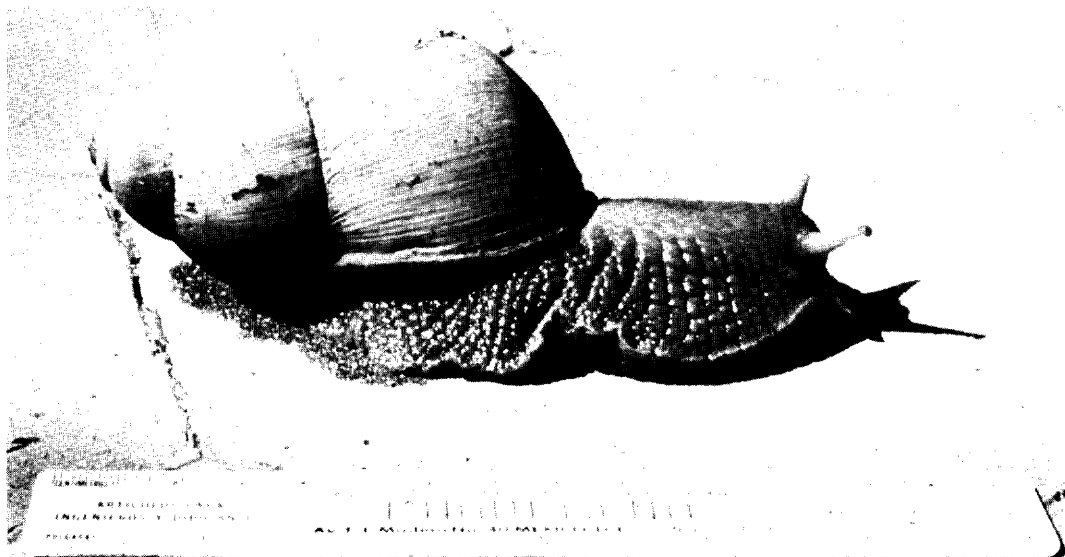


Fig. 1. Adult giant South American snail. (photo taken at Tucuman, Argentina) (DPI #702472-A-2)

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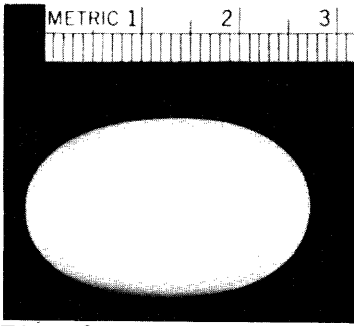


Fig. 3. Egg
(DPI #702472-14)

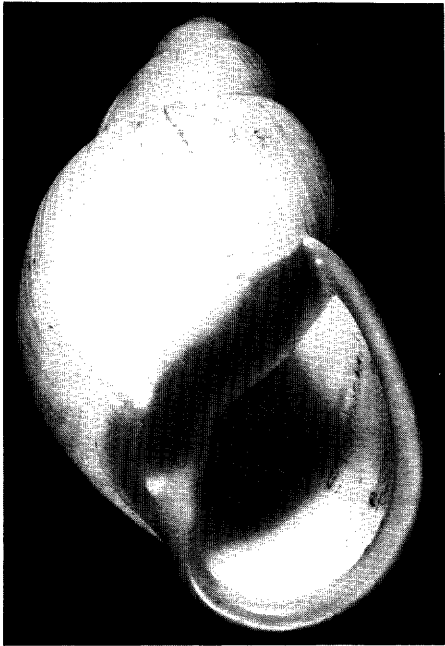


Fig. 6. Adult shell (natural size)
(DPI #702472-10)

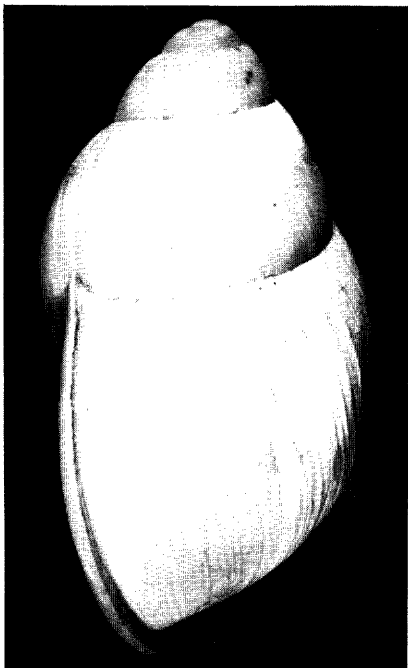


Fig. 7. Adult shell (natural size)
(DPI #702472-22)



Fig. 4. Juvenile shell
(front view 1.5X)
(DPI #702472-5)



Fig. 5. Juvenile shell
(side view 1.5X)
(DPI #702472-4)

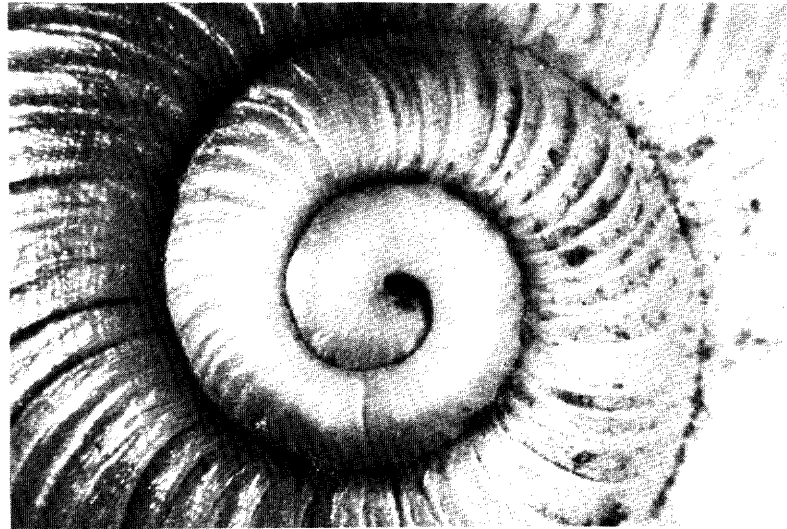


Fig. 8. Microsculpture of shell (11X)
(DPI #702472-B-21)

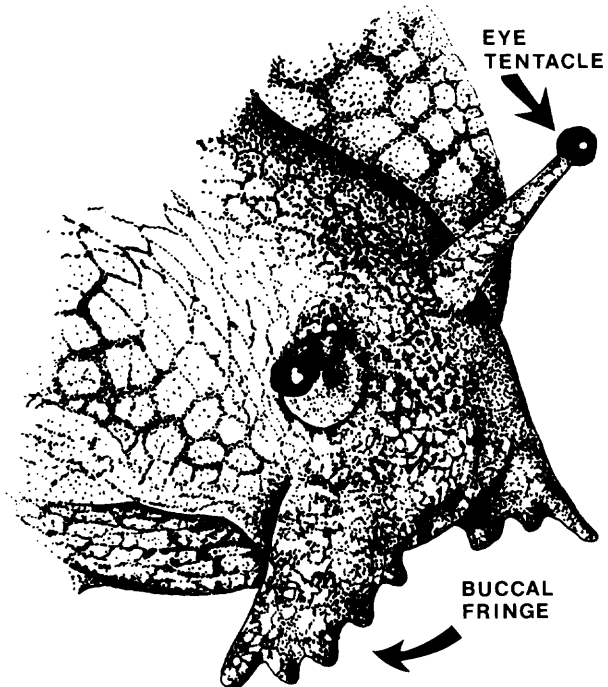


Fig. 9. Head of snail *Megalobulimus yporanganus* (after Leme, 1973)

IDENTIFICATION: Average length is about 100 mm; average width 57 mm (considerable variation occurs) with the smallest recorded adult (Bequaert 1948) being 70 mm by 39 mm. The large, hard, calcareous, white egg (Fig. 3) is 25-28 mm long and 16-17 mm wide and hatches into a large juvenile snail of similar size. It is thus not easily confused with the vast majority of smaller native snails. Shell color is yellowish-brown with vertical streaks of darker brown in the juveniles, and pale, dull-brownish to dirty-white, sometimes with an indefinite pale band below the suture, in the adults. Aperture whitish within, the lip, columella, and parietal callus in nearly all races being bright pink or rose-red. The shell (Fig. 6) is bulimuloid, with 6.5 whorls, and is normally broadly ovate with a blunted pointed spire. The first 1.5 whorls are smooth, and the next whorl has slightly slanting vertical riblets that are continuous between the sutures. Rib intervals are about twice the height of riblet (ca. 1 mm); later whorls have riblets farther apart and coarser. Microsculpture (Fig. 8) is quite distinctive and not as variable as many other characters, but may wear off in older specimens. The rim of the shell is reflected and quite thick (thickness increases with age). The umbilicus is narrow and partially hidden by the columella, especially in older adults. The living snail is easily identified by the conspicuous buccal fringe (Fig. 9) which is characteristic of the family.

BIOLOGY: This strictly terrestrial snail is nocturnal, burrowing under loose soil in protected areas with only the apex of the shell protruding during the day. In dry weather it aestivates much deeper and in response to the first rains it emerges to mate and oviposit. The snail is hermaphroditic but apparently does not self-fertilize (Wiswell and Browning 1967a,b). Sixteen to eighteen days after reciprocal copulation, the snail lays from one to 12 unusually large eggs over a period of several hours. Estimates of time required for hatching vary from 3-4 weeks (Bequaert 1948) to 5.5-7 weeks (Wiswell and Browning 1967a,b).

The young snails require 32 months to become adults with a fully formed shell lip. Precise longevity data are lacking, but estimates based on shell growth lines suggest a life-span of at least 14 years. Recorded plant hosts are coffee (Mead 1961) and garden and truck crops (Schade 1973.) Small (4-5 mm) scarab beetles (Fig. 2) (*Zonocopris bucki* Arrow) are found living in the shell feeding on the mucus (Arrow 1932). The larvae apparently feed on the feces (Bequaert 1935). As many as 12 of the beetles have been found within a single shell. This snail has been recorded as a major prey item, if not the sole food source, of the hook-billed kite, (*Chondrohierax uncinatus* (Temminck)) of Surinam (Haverschmidt 1962; Jutting 1964). An excellent laboratory subject, the snail has been the object of a number of biochemical and physiological studies.

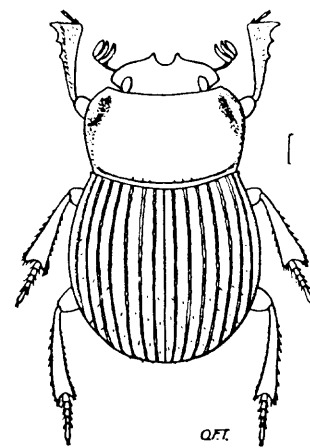


Fig. 2. Adult *Z. bucki*

SURVEY AND DETECTION: The large size (length 70 to 137 mm) should make detection relatively easy. The snails are active only at night and during rainy weather so diurnal search must be directed toward soil or humus piles in protected areas, such as dense vegetation. They may also be found in caves and among roots of trees. The apex of the shell may be visible when buried, but during drier weather suspected areas should be raked for detection; they burrow more deeply when moisture is scarce. Baits also may be used in suspect areas. The thick shells persist a long time; old shells are usually white since the brown periostracal covering is often lost. The inch-long eggs are at least twice the size of the largest native snail eggs. Juveniles must be carefully distinguished from our beneficial snails, especially *Orthalicus reses* (Say), which is on the

federal list of threatened species. The giant South American snail appears to thrive in gardens, cultivated land, second-growth woods, and other man-made surroundings.

DISTRIBUTION: The snail is widely distributed in South America, east of the Andes, from Colombia to northern Argentina, but is absent on the Pacific Coast. It is also found naturally in Trinidad and Tobago. Apparently it was introduced as a food source in the Caribbean islands. Bequaert (1948) cited the snail from Jamaica, Antigua, St. Kitts, St. Thomas, Barbados, Grenada, St. Lucia, and St. Vincent. It is not known in North America, but a laboratory colony was maintained in Houston, Texas (Wiswell and Browning 1967a,b; 1968), and Dundee (1974) questioned whether individuals had escaped to the natural environment.

CONTROL: Areas found to be infested with the snail should be treated with a bait containing metaldehyde. Precautions should be taken to avoid contaminating swimming pools, bird baths, or food and water for pets.

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