Dealing with giant African land snails

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Michelle O’Brien provides insights into the veterinary issues, husbandry and physiology of a species that’s more active than its stereotype would suggest

Introduction

• **Common name.** Giant African land snail (GALS).

• **Scientific name.** They are most commonly *Achatina fulica* and *Achatina achatina*, although many other species exist.

• **Origin and geographical distribution.** *Achatina achatina* is from west Africa and *Achatina fulica* from east Africa, although giant land snails exist throughout Africa – with different species exhibiting different ranges.

• **Environment in the wild.** They live in dense forest floors and moist areas with large amounts of vegetation.

• **Diet in the wild.** This includes a variety of plants, together with fallen fruit and vegetable matter.

• **Captive enclosure.** Aquariums or plastic tanks can be used to house GALS in captivity. Sufficient areas must be provided for individuals to move around freely. For two *Achatina fulica* of 10cm shell length, a tank 45x30x30cm in length is sufficient. Larger tanks are needed for more or larger snails.
Substrate should consist of 5cm to 10cm of compost, soil or peat. Garden soil can be used, but should be carefully baked in the oven first to remove any unwanted organisms, such as mites or nematodes. The temperature should be kept between 20°C and 28°C, so a heat mat (preferably thermostatically controlled) is needed during the winter months. Tanks should be sprayed daily with water, and a shallow water dish should be provided as snails will sometimes drink from and bathe in this. It is important that tanks do not become too wet or too dry, as this will be detrimental to the snail. All tanks should have holes in their lids to allow ventilation, but the size of these holes must be carefully considered if very young snails are housed, to prevent escape.

- **Captive diet.** A diet should consist of fresh vegetables and fruit, with as much variety as possible. Snails should be encouraged to eat foods that are higher in calcium, such as cabbages and dark leafy greens, although often snails will only eat foods such as lettuces and apples. Cuttlefish bone should always be available for the snail to rasp, to take in extra calcium.

For young snails, calcium supplementation should also be provided in powder form to help the growth of strong shells. All food should be carefully washed to ensure the removal of any pesticides, and lettuces should always be carefully checked for slug pellets. Food should be changed regularly, as it will start to grow mould quickly due to the warm and humid environment.

**Physiology**

- **Longevity.** Most GALS will live for seven to eight years, although they can live up to 10 years.

- **Reproductive information.** *Achatina fulica* reach sexual maturity at about 80mm in length. Snails are hermaphrodites and, therefore, any two snails can reproduce. Each snail has an erectile intromittent organ in the head region that is inserted into the genital opening of its mate. Each parent can lay a batch of eggs (usually 100 to 200 in each batch, and about 5mm in length). Gestation time is variable, though *Achatina* species’ eggs can take up to three weeks to hatch.

If the aim is to hatch the eggs, then they should either be removed to a separate container or the adults moved to a different tank. The eggs must be kept warm, and in moist vermiculite or soil. If the aim is not to hatch the eggs, then the tank must be regularly checked for eggs buried in the substrate. These should be removed, and either crushed or placed in the freezer for a few hours, before being discarded. If the eggs are allowed to hatch, it is important to remember that GALS are not always simple to rehome, and it is easy to become overwhelmed with snails.

- **Behaviour.** Snails are quite active (especially after being sprayed), and do not seem to mind being handled, though this should always be done with care to avoid injury. Special care should be taken when coming into contact with the shell directly around the opening, as this is newly laid down and often very fragile. If snails are too dry (or sometimes too cold), they will create a hardened mucous barrier across the shell aperture in a form of hibernation (Figure 1) – this is called aestivation. It is important to ensure that if this happens, humidity or warmth (as appropriate) is
increased in the tank. It is possible to stimulate the snail by gently spraying the barrier across the aperture with water, and often the snail will re-emerge. The mucous barrier should not be forcefully removed, as this may cause damage.

**Veterinary care**

Snails should be held gently by the shell, with the body supported. It is rare that they will require chemical restraint, but if this should be necessary, it is possible to use anaesthetic agents in an aqueous solution via immersion of only the foot of the individual.

Agents such as MS-222, clove oil and alcohol-based anaesthetics are some of the agents that have been successfully used to anaesthetise gastropods. Aquatic gastropods have also been reversibly anaesthetised using halothane, enflurane and isoflurane gases (Girdlestone et al, 1989). It is possible to monitor a snail under anaesthesia. This is done by using its response to pricking of the foot to assess depth of anaesthesia, or by using an 8MHz Doppler ultrasound probe to monitor the heart rate (Figure 2).

Little preventive medicine is needed other than adequate calcium supplementation in the diet, care on handling and washing food, as previously stated.

**Veterinary problems**

- **Trauma.** This usually involves damage to the shell. If a shell is broken, the two sides of the break must be stabilised using either masking tape, tissue glue or epoxy resin. Roughening of the edges may help with adhesion.

  Wounds should be flushed with sterile saline. Damage to the lip of the shell, unless severe, will often heal with no intervention.

- **Mantle.** In older snails, the mantle will sometimes separate from the rest of the body. This will often repair if the snail is placed in a shallow tank, so that it cannot climb far. Sometimes, however, the snail will die soon after the injury and this, therefore, may be a sign of other internal disease processes occurring in an elderly snail.

- **Poisoning.** This can occur from a variety of sources, including unwashed food or contaminated soil. It is very important that no flea sprays or insecticides are used in a room housing snails.

- **Mites.** These can often be present on snails, and their pathogenicity varies with their species. Most commonly, they appear to do little harm (other than in large numbers), but can be removed by gently spraying them with water.

  Changing the substrate to sterile soil can also help to reduce their numbers.
• **Calcium deficiency.** This will lead to brittle shells and a greater chance of fractures. Snails will often be seen to rasp each others’ shells in this situation. Shells can also grow noticeably slowly or irregularly. Treatment consists of dietary calcium supplementation.

**Websites**

• The World of Snails – [www.freewebs.com/worldofsnails/giantafricansnails.htm](http://www.freewebs.com/worldofsnails/giantafricansnails.htm)

• [http://giantlandsnails.mysite.wanadoo-members.co.uk](http://giantlandsnails.mysite.wanadoo-members.co.uk)

**References and further reading**

Figure 1. A hardened mucous barrier in a snail undergoing aestivation, which can be avoided by increasing heat.
Figure 2. Use of an 8MHz Doppler ultrasound probe to measure heart rate in a snail.

Photo: LONGLEY L (2008).
<table>
<thead>
<tr>
<th>Species</th>
<th>Agent</th>
<th>Route/dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastropod</td>
<td>MS-222¹</td>
<td>Immersion: 0.3 per cent solution</td>
<td>Reversibly anaesthetised</td>
</tr>
<tr>
<td>Gastropod: pulmonates</td>
<td>Clove oil (eugenol)²</td>
<td>Immersion: 0.6 per cent in water</td>
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</tbody>
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**Table 1.** Dose rates for some anaesthetic agents previously used in gastropods