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## Feeder Snails, Terrestrial and Aquatic (Order Gastropoda)

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### Introduction

Snails belong to a very large and diverse order of gastropod mollusks most generally found in nearly all habitats and micro-habitats throughout much of the world from tropical to sub-tropical, arid, to temperate climates. There are over an estimated 80,000 living species of snails found worldwide, with approximately 35,000 to 40,000 of these species being terrestrial, most often being found in moist and humid micro-habitats. Other species can be aquatic to semi-aquatic, or amphibious, being found in fresh, bracken, or marine environments from the Earth's seas and oceans, bracken tidal pools, lakes, rivers, streams, ponds, swamps, marshes, and other temporary to permanent bodies of water and wetlands. Most snails are perhaps most well known for their hardened, calcareous spiral to conical shaped shells that house most of the snail's internal organs including the lung, kidneys, heart, and intestines, and which most snails can withdraw their external organs into when threatened. When extended, other familiar features of snails typically include a head and "foot" consisting of one or more pairs of eyes and tentacles, as well as a mouth with a raspy tongue-like projection known as the radula. These external features are used for the snail's sensory, locomotive, and/or feeding habits. Several of the aquatic to semi-aquatic species, such as apple snails, also possess both gills and a lung allowing them to survive in these aquatic environments. Most snails are also hermaphroditic, meaning they possess both male and female sexual organs, although a few can also have separate sexes.

Snails have a tremendous range of human uses and impacts, both positive and negative. Several species, such as the common, or garden snails (*Helix* sp.) are widely used as escargot and other human delicacies in many areas of the world, and include such species as the Common or Brown Garden Snail (*H. aspersa*) and the Edible, or Roman Snail (*H. pomatia*), as well as other related species. Apple snails, sometimes known as the mystery snails (genera *Asolene*, *Felipponea*, *Marisa*, and *Pomacea* in the New World including the southern United States, South and Central America, and the West Indies) are also widely familiar aquarium and pet snail species, and are also occasionally eaten as well. Old World genera of apple snails found in Africa and Asia also include the *Afropomus*, *Lanistes*, *Pila*, and *Saulea* as well. Other European and North American species commonly available in aquaculture can include the genera *Lymnea*, *Stagnicola*, and *Goniobasis*. Snails can also often be garden and agricultural pests in many areas of the world as well, where many forms of control may be used to control them. Several orders and species are also frequently kept as pets as well where their importation and possession is legal per USDA (United States Department of Agriculture) or similar federal agency regulations.

When it comes to herpetoculture, several genera of both terrestrial and aquatic snails can be offered to, and may be relished by species such as blue tongued skinks (*Tiliqua* sp.), as well as other mid-sized to large species of skinks, some species of geckos, monitors, tegus, crocodilians,

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and other lizards, as well as many turtles and even tortoises, as well as other animals with strong enough jaws or beaks to consume them. A few considerations should always be kept in mind when offering your pets any snails, however. Firstly, wild collected snails should be avoided whenever possible, as they can often serve as primary or intermediate vectors for many different diseases and internal parasites. However, most captive born or hatched snails are usually safe for consumption by one's animals. The other consideration is to always make sure the snails you purchase or acquire are done so legally and in accordance to any USDA or other federal permits necessary, particularly if purchasing them from across state lines, as many are regarded as agricultural or ecological pest species. With these considerations in mind, however, snails can make for delicious and often nutritious treats for your pets, or even as pets themselves in some cases. More detailed information pertaining to apple snails (Ampullaridae) in particular can also be accessed through [www.applesnail.net](http://www.applesnail.net) as well.

### **Taxonomy:**

**Life:** All living, physical, and animate entities

**Domain:** Eukaryota

**Kingdom:** Animalia

**Phylum:** Mollusca

**Class:** Gastropoda

*\*Taxonomy subject to change and revision.*

### **Experience Level Required**

Novice/Beginner to Moderate/Intermediate.

### **Legal and Regulatory Status (\*Subject to Change)**

Consult your nearest United States Department of Agriculture (USDA) branch for any further, current federal regulatory or legal status. Also consult with your local, municipal, and state ordinances and regulations for any ownership restrictions.

### **Size**

Snails can be extremely diverse in their sizes and lengths depending on the species, order, and genera. The smallest snails may only be a few millimeters in length, while the very largest, such as the African giant land snails (*Achatina* sp.) may reach upwards of 7 to 9 inches or even more in size. Generally, most species of feeder snail species are intermittent between these sizes, varying in size from 2 to 3 millimeters to 2 ½ to 6 inches in size, depending on the species being used.

### **Housing and Enclosure Plus Temperature, Lighting, and Humidity**

Most snails are quite simple and inexpensive to maintain as far as their housing and setup, and can be maintained in numbers in accordingly larger enclosures. For most small to mid-sized terrestrial snails, a minimum of a 2 ½ to 5 gallon plastic or glass terrarium or larger is recommended depending upon the number and species of snails being maintained. A securely fitting cover or top should also be provided to prevent escape, and be able to provide adequate ventilation and humidity in the enclosure. A substrate is not required when maintaining terrestrial snails, although if it is used, ensure that it remains damp and moist, retains humidity well, and is chemical and pesticide free. Provide roughly 2 to 3 inches of substrate, which can include potting soil, peat moss, sphagnum moss, or cypress mulch, and ensure that it can be easily cleaned and disposed of when fouled.

Additional furnishings that can be provided for snails to climb and hide within can include driftwood, cork bark, and other artificial woods or plants. Most snails can be maintained at

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around 75 to 80 degrees F, although some species may be able to tolerate higher or lower temperatures. Generally, no supplemental lighting or heating is required in most cases, although a low wattage under tank heater or other heating/lighting device can be used if needed. Care should be taken to prevent them from drying out, or desiccating as a result of too dry and/or warm of conditions. It is best to further research the temperature and humidity requirements of the specific species one plans to maintain.

For aquatic snails, housing and enclosures can also be quite simple given the correct aquatic setup is provided and maintained. A minimum of 2 ½ gallons per snail is recommended, and most aquatic snails can be housed in multiples as well provided increasingly larger aquariums, although water quality and other conditions must be more closely monitored. A securely fitting lid or cover should also be provided to prevent aquatic snails from escaping as well as some will leave the water. Water quality, PH, filtration capacity, and temperatures can vary depending on the species being maintained. Some require clear, well oxygenated water, while others can be more tolerant of a wider range of conditions or more stagnant, poorly oxygenated water. Avoid using water containing copper or other amounts of heavy metals, as this can be detrimental and even toxic to most aquatic snails and ensure any water used is calcium rich. Water levels for aquatic snails can be variable, with at least 2 or more times the snail's shell length, although providing at least several inches of air space in the aquarium is also beneficial, particularly for their reproduction and egg laying. Substrate is not required for aquatic snail setups, although if it is provided, it should consist of at least 2 to 3 inches of aquarium gravel or similar substrate to enable burrowing. Additional furnishings can also include submersible rocks, logs, artificial plants, and other décor. Most aquatic snails are crepuscular to nocturnal, and do not require additional lighting or heating, although an under tank heater (UTH), submersible heater, or other low wattage lighting or heating device can be used if needed. Optimal water temperature can vary depending on the species, but for apple snails, and most others, a range of 65 to 82 degrees F is acceptable, although temperatures above or below this should be avoided.

### **Feeding, Diet, and Nutrition**

Snails can have a wide range of dietary and feeding habits depending on the genera and order. Many are primarily herbivorous, using their raspy tongue or "radula" to scrape plant, algae, fruit, vegetable, and other fungi/fungal matter, while others are detritivorous, feeding on dead and decaying plant, animal, soil, and other organic material. Others yet can be omnivorous or even carnivorous to predatory, feeding on other invertebrates and even small vertebrates they can capture using venomous spears or harpoons, as ambush predators, or other means of capturing and subduing them in some cases.

In captivity, snails can also have a widely varying diet depending on the species being maintained, their feeding habits, and other factors. Most of the commonly kept pet, feeder, and aquarium snail species are herbivorous to detritivorous. Many terrestrial and aquatic snails will both consume a variety of fruit, vegetable, fungi, and other plant material including lettuce, cucumber, chopped up pieces of carrots, green beans, celery, mushrooms, or other fruits and vegetables offered. Many species will also feed on algae, pesticide and chemical free weeds, and other live plants as well. Many snails will also consume many of the commercially available pelleted or tablet fish and/or reptile foods, as well as even some frozen/pre-packaged commercially available foods such as brine shrimp, pre-killed fish, or other crustaceans and mollusks that make up these diets. Soiled and/or uneaten food should be cleaned and removed daily. Feeding frequency can be influenced by seasonal, reproductive, as well as temperature changes. More specific dietary and supplementary product suggestions and recommendations that can best suit one's needs, as well as those of one's animals can be given as well.

### **Handling**

Most species of snails can be handled with care and deliberation, although care should be taken

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not to drop them, as this may cause damage to their shells and/or internal organs. A few species can be more fragile and/or soft bodied, and therefore handling in these cases should be minimized or avoided whenever possible or only when necessary. An aquarium or dip net can also be used as an alternative to scoop up aquatic species as well.

**\*\*Also remember to be sure to practice basic cleanliness and hygiene associated with proper husbandry after touching or handling any animals or animal enclosures to prevent the possibility of contracting salmonellosis or any other zoonotic pathogens\*\***

### **Contact**

Authored by Eric Roscoe. For any additional questions, comments, and/or concerns regarding this animal, group of animals, or this care sheet, please email and contact the Madison Area Herpetological Society at [info@madisonherps.org](mailto:info@madisonherps.org)

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