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## Asian Forest Tortoise (*Manouria emys*)

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### **“Six Legged” Tortoises from Southeast Asia!**

Also known by several other common names, including the Asian Brown Tortoise, Burmese Mountain Tortoise, Asian Brown Tortoise, and Six Legged Tortoise, the Asian forest tortoise is a large, terrestrial and relatively primitive species of tortoise indigenous to the mainland of southern and southeastern Asia, including Myanmar, Malaysia, Thailand, and Sumatra. They are a large tortoise species, with noticeably depressed carapaces and strongly serrated rear marginal scutes. The forelimbs are large, with large, bony scutes and tubercles, and adults range in color from dark brownish to blackish, while juveniles can be more of a yellowish to yellowish-brown with darker brown markings. Known to be the fourth largest tortoise species in the world, and the largest tortoise species on the mainland of Asia, these tortoises are sometimes known as the “six legged tortoises” due to their several protuberant scales present on the hind limbs that give the initial appearance of them having more limbs than they truly do. Within the last decade, Burmese mountain tortoises have increased in popularity in the pet and reptile industries. While wild caught imported animals are still available, it is typically much more advisable to select captive bred and born animals from reputable sources, which acclimate better to captivity and make for better pets overall. The Burmese mountain tortoise is currently listed as a CITES Appendix II animal. This species is still fairly new to the pet industry, and captive longevity is yet to be fully known or attained; however, it can be safely assumed that they attain captive long captive longevity (as with most other turtles and tortoises) similar to other larger tortoise species of at least 50 to 80 years, or more. **Thus, please consider the long term responsibilities and housing requirements for these tortoises prior to obtaining one.**

### **Taxonomy**

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

**Domain:** Eukaryota

**Kingdom:** Animalia

**Phylum/Sub Phylum:** Chordata/Vertebrata

**Class:** Reptilia

**Order:** Testudines

**Suborder:** Cryptodira

**Superfamily:** Testudinoidea

**Family:** Testudinidae

**Genus:** Manouria

**Species:** *Manouria emys*\*

*\*Taxonomy subject to change and revision.*

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## **Lifespan and Longevity**

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## **Subspecies**

Two subspecies of Burmese mountain tortoises are currently recognized, the Burmese Brown Mountain Tortoise, *M. e. emys* and Burmese Black Mountain Tortoise, *M. e. phayrei*. They can be distinguished by their geographic range and distribution, pectoral plastron scute arrangement (separated in the Brown, connected in the Black), plastron and overall coloration, and size. The larger, darker “Burmese Black” subspecies is the northernmost subspecies, which has a darker plastron than the lighter yellowish colored more southern subspecies.

## **Distribution and Habitat**

Burmese mountain tortoises are indigenous to the mainland of southern to southeastern Asia, including Myanmar, Malaysia, Thailand, and Sumatra, where they are found in tropical to subtropical forests, woodlands, savannahs, to grasslands. The two subspecies are also distinguished by range, with the “Burmese Black” tortoise being found in more northern regions of its range as well.

## **Conservation Status**

IUCN Red List Endangered (EN).

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

Testudinidae spp. are CITES Appendix II as of October 2017 (Except the species included in Appendix I. A zero annual export quota has been established for *Centrochelys sulcata* for specimens removed from the wild and traded for primarily commercial purposes). Turtles and tortoises under 4 inches are regulated by the U.S. Food and Drug Administration (FDA). Also consult with your local, municipal, and state ordinances and regulations for any ownership restrictions.

## **Experience Level Required**

Advanced.

## **Size**

Hatchling Burmese mountain tortoises are typically baseball sized, at 2 ½ to 3 ½ inches in size, but have the potential to become very large. Growth rate depends on their environment and level of care, as well as the subspecies. In captivity, Burmese mountain tortoises can attain carapace lengths of 15 to 24 inches, and weigh 50 to 75 lbs. on average, although they do have the potential to become larger in captivity of upwards of 100 lbs. or more.

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

Burmese mountain tortoises are a popular and widely coveted species, but thorough consideration should be given to their housing requirements before acquiring one. This is a species that will eventually require customized enclosures and/or housing in order to be properly accommodated, and are perhaps best maintained in outdoor enclosures for all, or parts of the year depending on what one’s state or area’s climate/outdoor temperatures can allow or provide. Below are some basic setup guidelines for housing these tortoises both indoors and outdoors. We recommend that additional information and resources beyond only this care sheet be researched when considering a Burmese mountain tortoise or other large tortoise species, and the

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information below are by no means complete or thoroughly detailed accounts for maintaining these tortoises.

**If Housed Outdoors:** Outdoor housing for all, or parts of the year depending on what your area's climate will permit is perhaps the most ideal scenario for keeping and maintaining Burmese mountain tortoises. Once sub adults to adults, a custom designed backyard enclosure of appropriate size and specifications can be designed depending on the age and size of the tortoise(s). A perimeter fence should be at least 12 to 24 inches in height, and a minimum pen or enclosure size of 4 feet by 6 feet should be considered for housing a single tortoise, with increasingly larger enclosures per additional tortoise. Perimeter fencing can be as simple or as eloquent as one may like, but must be opaque, or non-transparent, and extremely sturdy & secure, and can include wooden walls, concrete, or masonry blocks or slabs. Additional substrate beyond the natural substrate already provided is typically not required, but should not have been treated or exposed to any chemicals or pesticides. As with other tortoises, Burmese mountain tortoises are also good burrowers, and must be provided an adequately size custom hide box to provide burrowing opportunities, as well as to seek refuge in. To prevent, or at least discourage possible escape through digging elsewhere in the enclosure, one can ensure that perimeter fencing extends at least 18 to 24 inches below the ground level, by providing an aforementioned shelter/hide, or filling in other burrows with solid material. Temperature wise, mountain tortoises that are housed outdoors are exposed to a wider range of temperatures, and must be provided with shaded, as well as heated refuges/hides when temperatures drop too drastically. Areas that maintain nighttime temperatures of a minimum of 55 to 60 degrees F should be considered. More ideal outdoor temperatures for these tortoises that should be considered would be from the 50's to the 80's. Artificial sources of heating and shading can also be created and maintained in a variety of ways, including through the construction and use of temperature controlled sheds, hides or outdoor tortoise "houses", and similar structures that allow tortoises to seek refuge whenever appropriate. In climates where nighttime temperatures begin to consistently fall above or below these ranges, moving the tortoise(s) into indoor or more temperature controlled accommodations may also become necessary. Lastly, a shallow water bowl that should be cleaned or monitored daily should be provided in an outdoor mountain tortoise enclosure.

**If Housed Indoors:** Hatchling and juvenile Burmese mountain tortoises can be maintained indoors throughout the year for at least the first few years of their lives in traditional 20 to 40 gallon long terrariums, enclosures, or similar sized turtle/tortoise tables, but will eventually outgrow these. One, or groups of hatchlings/juveniles can be maintained in appropriately sized, sturdy, escape proof enclosures including many of the traditional commercially available enclosure brands, or appropriately sized plastic totes, containers, or "tortoise tables". A tortoise table is a custom built open top form of indoor housing for turtles and tortoises that can have many different sizes, scopes, and specifications depending on the age and size of the turtle/tortoise, space available, or other factors. Because there is so much design variability in constructing a tortoise table, additional information and resources beyond the scope of this care sheet can also be provided, if desired, for maintain these tortoises. As adults, this is a species that, alternatively, requires customized enclosure or housing in order to be maintained indoors, which can include all or part of a heated spare room, basement, garage, or other structure or outbuilding. Acceptable substrates for indoor housing must be non-toxic and can include cypress mulch, fir, sphagnum, or peat moss, or various types of hays and straws to maintain some humidity and burrowing opportunities in a required indoor hide.

**Providing the proper and correct overhead UVA and UVB lighting and heating is also critical for maintaining the health and adequate growth of these tortoises in an indoor environment.** Additional radiant or ceramic heat emitters, and/or under-tank heating pads (UTHs) can also be used as supplemental forms of heating if/when needed. Calcium is an

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important requirement for these, as well as other tortoise species in order to be maintained at acceptable health. Without the proper lighting and temperatures, these tortoises can be very susceptible to MBD (Metabolic Bone Disease) and other shell and growth deficiencies or abnormalities. Ambient room temperature should be maintained at around 70 to 80 degrees F and also be provided with a basking area of within an 80 to 85 degree F range on a 10 to 14 hour day/night cycle, or whichever most closely replicates their natural light cycles. For indoor hydration, humidity levels of around 80% should be maintained including a shallow water bowl can be provided, but is often more prone to frequent soiling and cleaning. Alternatively, soaking in warm water for 15 to 20 minutes 2 to 3 times weekly, or more frequently for hatchlings, is also beneficial for these tortoises, as is regular misting, either manually or through a commercially available mister or fogging system.

Burmese mountain tortoises can also be a shy tortoise species, especially hatchlings, although they will become more inquisitive and accustomed as they become older. It is also important to be sure to provide adequate hides, or tortoise “houses” on each end of the enclosure for the animal’s comfort and security, allowing them to select a hide with the gradient. These tortoises are crepuscular by nature, and much of their activity will be seen during and around these times as well. Finally, spot clean any enclosure for urates, feces, or uneaten food at least twice per week. Be sure to periodically replace the substrate, clean, and disinfect the enclosure and its furnishings at minimum every 2 to 3 months as well. More specific lighting, heating, and humidity product suggestions and recommendations that can best suit one’s needs, as well as those of one’s animals can be given as well.

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

***Herbivorous to Omnivorous***; In the wild, Burmese mountain tortoises are generalists, feeding on a wide variety of plant and animal matter which they can locate and consume. They may graze on grasses, flowers, fungi, insects and other invertebrates, various fruit and vegetable matter, and even occasionally carrion may be consumed by these tortoises.

When maintained in captivity, providing the proper diet and nutrients, as well as a fresh variety is essential for ensuring and maintaining adequate health of these tortoises. **An improper diet can lead to many possible ailments that these tortoise are very susceptible to including bone and shell growth deficiencies and abnormalities, gout, renal failure, and other diseases or disorders seen in captive tortoises. Calcium and Vitamin D** are both important nutrients to be provided in their diet. Foods that should be provided should be pesticide and herbicide free, and the bulk of their diets should include leafy greens, including mustard, turnip, collard greens, kale, leaf lettuce, dandelions, and other such weeds that are chemical and pesticide free. Avoid iceberg lettuce, as this is not nutritionally balanced for most tortoises. Some fruits can also be given, such as berries, melon, and others, but citrus or otherwise acidic fruits should be avoided. Supplemental sources of calcium and protein can also be given in the form of mealworms, waxworms, earthworms, feeder crickets, and roaches, as well as some high quality dog foods, but in moderation. Calcium and vitamin D3 supplements are needed in most Burmese mountain tortoise diets. Some mid-sized to large tortoises can be pickier eaters than others, sometimes preferring certain foods over others, and require some trial and error to determine which foods may be preferred by your tortoise. Several books, websites, and other resources are also available that provide further in-depth detail as to proper Asian forest tortoise diets, and which foods are acceptable to use and which are not. 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 small to mid-sized turtle and tortoise species that are not aggressive or prone to biting can be picked up and handled either by placing both hands along both sides of the shell, or from the

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rear of the carapace with the thumb on the carapace and index through pinky fingers on the plastron to reduce the chances of being kicked, scratched, or nipped when they are threatened. Although most species of chelonians are not outwardly aggressive, defensive, or dangerous, they can become stressed as a result of over-handling, however, and some species, and even individual animals can be shyer than others. These are some considerations to keep in mind when handling any chelonian species. Very large species of tortoises, such as Asian forest tortoises, that become much too large, heavy, and impractical to pick up or handle by hand can be trained to move voluntarily and more quickly using operant conditioning and a variety of other voluntary methods utilized in zoological professions. Large tortoise species can be very intelligent animals that can respond well to food and other stimuli, and further information on these tactics and techniques beyond the scope of this initial care and information sheet can be provided upon request to anyone willing and able to accept the responsibility of keeping and housing these extremely large and long lived animals in captivity.

**\*\*Also 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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