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Mountain Horned Lizard

Natural History and Basic Facts

Mountain horned lizards are arboreal (tree-living) lizards generally found in Southeast Asia. As their name implies, they prefer the higher elevations with dense forest and vegetation. They also have a common name of "pricklenape" due to the spines that run down the back of their neck.

This species is common in the pet trade, and is considered one of the easier reptiles to keep. They are commonly wild caught and shipped, but breeding programs are becoming more available for captive bred animals.

Their life span varies due to their wild caught nature. However, captive bred animals have an average life span of 5 to 8 years. The size of an adult mountain horned lizard is approximately 12" from snout to vent (not including tail), and they are generally grey in color with some minimal markings of orange or red.

Mountain Horned Lizards as Pets

Due to their incredibly docile nature, they can make great pets; however, they require constant handling from hatchlings to make them tolerant of humans. They will enjoyably lay in their enclosure for hours unmoving, but with work, they can happily also perch on a human.

Since they are popular, they can be readily found in pet stores, online, or from local reptile breeders. You will want to get a reputable source, and try to purchase a captive bred lizard to increase the likelihood of having a docile pet.

Housing and Enrichment

Cage size for an adult horned lizard should be at least 3 feet long x 1 f00t deep x 4-6 feet high. If you have more than one animal you will want a much larger space (multiple males can become territorial and aggressive). One male does do well with multiple females.

As for decorating the space, you will want multiple perches as they love to be up "in the trees" so to speak. Bedding can be difficult as, in general, reptile carpet is recommended for most other reptiles, but due to the humidity requirements for these guys, coconut mulch is recommended. This maintains humidity with appropriate misting.

Live plants can be used in the enclosure, along with moss to help with humidity requirements. However, research appropriate vivarium plants before purchasing. Not every plant does well in these enclosures. Fake plants work well too.

Feeding

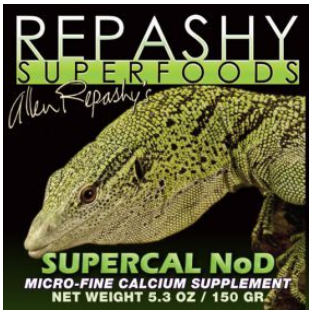
Mountain Horned Lizards are insectivores. Juveniles should be feed daily and adults can be fed every other day. Since these lizards consume a wide variety of prey in the wild, a variety of protein sources must be offered in captivity. Commercially available insects include crickets, dubia roaches, mealworms, superworms, hornworms, silkworms, bean beetles, fruit flies, springtails, wood lice (aka sow bugs, pill bugs or roly-polies), and wax worms. You can also catch your own insects to feed to your lizard - just make sure they are not from an area that has been treated with insecticides or herbicides and insects you are feeding are not poisonous. Examples of acceptable wild caught prey to feed include: moths, cicadas, flies, crickets, small grasshoppers, spiders (non-venomous), cockroaches, wood lice (aka sow bugs, pill bugs or roly-polies), earthworms, slugs, and aphids. It is generally better to feed more adult insects than larval forms overall.

DO NOT FEED fireflies, venomous spiders, large (lubber) grasshoppers, stinging insects, monarch and other toxic caterpillars, fire ants, stink bugs, or scorpions.

Gut-Loading

Gut loading refers to feeding your insects a high-calcium, high-vitamin diet 12 to 24 hours prior to feeding them to your pet. Most insects are nutritionally deficient with the exception of their stomach contents so gut-loading improves their nutritional content. We recommend and sell Mazuri High Calcium Gut Loading Diet for crickets, mealworms, superworms, Dubia roaches. In addition to providing essential vitamins, this diet is formulated to contain a high level of calcium for crickets and other feeder insects which are intended to be used in the diets of other animals. It helps balance the calcium to phosphorus ratio of the crickets and other feeder insects when they are consumed by other animals. Provide water with a damp paper towel or cotton ball. Do not use cricket cubes or vegetables as a water source because the insects will preferentially eat these items and will not be as nutritious when fed to your pet.

Supplements



Sprinkle or dust prey with a calcium supplement just before each feeding. We recommend and carry Repashy SuperCal. An easy way to coat your insects with the powder is to us a small tupperware container with a layer of the calcium powder on the bottom. Drop your insect in the container, cover, and shake gently until the insect is coated with powder.

We recommend Repashy SuperVit for multivitamin supplementation. Insects should be dusted with the multi-vitamin supplement twice monthly as long as the Mazuri Gut Loading Diet is being fed to the insects.

Mountain Horned Lizards will also eat fish, so small feeder fish can be used to stimulate appetite and increase variety. They are daytime feeders, so feed them while their light is on.

Lighting

Ultraviolet light is important for most lizards. The UVB light that comes from the sun allows lizards (and many other animals) to produce Vitamin D in their skin. Vitamin D then travels to the lizard's intestinal tract and makes it possible to absorb calcium from the diet. Without

Vitamin D, no calcium can be absorbed. Unfiltered sunlight (i.e. not through glass) is the best source of ultraviolet light and lizards should be exposed to sun whenever it is safely possible. Be careful when taking your lizard outdoors to prevent overheating and escape. Reptiles can become overheated very quickly if left in direct sunlight. Never leave your pet in an aquarium in the sun. Your pet should never be allowed outdoors unsupervised at any time.

There are many UV (sometimes referred to as full spectrum light) bulbs on the market. Most claim that they duplicate the sun's light spectrum, however there is no bulb that can achieve the intensity of ultraviolet light emitted by the sun. Some bulbs provide so little UV light that they are completely useless, and some are so powerful that can burn the reptile. As mentioned in the heating section, good quality mercury vapor UVB bulbs make the best basking lights because they provide both heat and UVB spectrum of light. Lizards instinctively bask in areas that are both bright and hot. Fluorescent type UV bulbs provide brightness without the heat so often the lizard will bask in the wrong area of the cage unless a heating element is paired with the UV bulb. If you are using a UV bulb that does not produce heat it should be placed as close as possible to your basking bulb and on the warm side of the cage.

There are two brands of bulbs we currently recommend for our basking reptile patients: the MegaRay, available at reptileuv.com, and Zoo Med's Power Sun, available at most pet stores.

Your UV lights must be changed at least every 6 months in order to provide adequate levels of UVB spectrum lighting. Humans can't see the UVB wavelength so there is no way of knowing when that spectrum of the light has died off. We can test your bulb's UVB output for you to help you decide if it is time to replace the bulb. We recommend testing your bulb when you first purchase it to make sure the bulb is good and then every 2-3 months thereafter. Many bulbs are found to be defective right out of the box, thus the importance of testing when you first purchase. The lighting cycle should be 12 hours of light and 12 hours of darkness. Using an automatic timer to turn your lights off and on is very helpful in regulating your light cycles. Just like humans, reptiles need complete darkness at night. If you need to provide supplemental heat at night, use an under-tank heating pad, a ceramic heating element, or a nocturnal reptile bulb. Never use a white light of any sort at night, for lighting or for heat. This will stress your animal, eventually affecting its ability to thrive through the resultant lack of sleep, loss of appetite, and other stress-related symptoms.

Temperature and Humidity

Hot Spot – 90ºF **Cool Spot – 75ºF** **Night-time – 70-72ºF**

The average temperature in a tank should be around 80 degrees F during the day. The cool end of the tank can be 75 degrees F while the basking spot (under the UV and heat bulb) should be 90 degrees F. At night the temperatures can drop down to the 70's. Heating can be achieved with a mercury vapor bulb (which also produces UV light, as described above) or you can use a 2-bulb system consisting of a heat bulb alongside a fluorescent UVB bulb. Heat rocks are NOT recommended as they can lead to serious burns.

In addition to heat, Mountain Horned lizards require a high humidity (60-80%), so you will want a hygrometer (humidity gauge) along with your thermometer. High humidity can be achieved easier in an aquarium (ones with a sliding top or front opening doors work well) with a water bowl large enough for soaking.

What to Expect at a Veterinary Visit?
Mountain Horned Lizards, when frightened, will freeze up and stay like that until the danger passes. If that doesn't occur, they are also known to scurry away. Given this, bringing them in an enclosure (travel enclosure) is recommended to avoid allowing them free-roam in the room.

A yearly physical is recommended, along with a fecal examination. Intestinal parasites are common, especially in wild caught specimens. UV bulb output testing is generally performed at the time of the physical exam so bBloodwork can also be performed to monitor your lizard's internal organ function, though this may require sedation depending on the animal.

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Cleaning, Disinfecting and Sterilizing

How they are different and why you need to know

A Brief History of Antisepsis

The two perhaps most important contributions to antiseptic procedures in the medical arts both happened during the last 150 years. The French chemist and microbiologist Louis Pasteur set the stage for the later appearance of British surgeon John Lister (1827-1912) who pioneered antiseptic operating room procedures (and after whom Missouri physician Joseph Lawrence named his antibacterial mouth wash). In a time when surgeons operated in their street clothes, surrounded by similarly clothed (and septic) onlookers, and just after surgical instruments were finally being washed in soapy water between operations, Lister campaigned for heat or chemical sterilization (and for surgeons to use something other than sawdust swept up from the floors of the mills, used in surgical dressings). William Stewart Halsted (1852-1922) furthered the cause of antiseptic technique with his introduction of surgical gloves. [The word sepsis is a noun that relates to the presence of organic pathogens (disease-causing organisms) in the blood or tissue; "septic" is the adjective. "Antisepsis" is the noun meaning destruction of such organisms; "antiseptic" is the adjective.]

To many people, these three terms--cleaning, disinfecting and sterilizing--are synonymous but the fact is that they stand for three discrete processes. What you know--or don't know--can at best be a waste of time and money for you; at worst, it can make you ill and be deadly to your animals.

Cleaning

Cleaning is the general removal of debris (food, feces, urates, blood, saliva and other body secretions) that helps reduce the amount of organic matter that contributes to the proliferation of bacteria and diseases. The more debris that is removed at the cleaning stage, the better able your disinfectant will be able to do its job. Most disinfectants cannot work their way under chunks of debris or smears of blood on the tank or utensils; if any bits remain stuck on, use a little elbow grease--or a putty knife dedicated to cage cleaning--to work it off. Before really getting into it with a scouring sponge or pad, test a small area of the tank to see if it is going to abrade the surface of the tank. Repeated scratching may be unsightly, but worse is the fact that it provides lots of nooks and crannies in which bacteria and other beasties can hide.

Cleaning is best done with hot, soapy water. The hot water and surfactants in soap work to loosen debris stuck to surfaces. Clean rinse water flushes it away. When you are cleaning enclosures that cannot be taken to a tub, sink or outdoor hose to be thoroughly rinsed out, it must be done with sponges, rags or paper towels. In any case, you must completely rinse out or wipe off all soap residues as some ingredients may interfere with the work of the disinfectant.

A simple cleaning may involve the removal of animal waste and the substrate surrounding it. If the substrate is paper, the entire substrate should be changed. If the enclosure is lined with outdoor carpeting or artificial turf, it should be removed and a clean piece placed in the enclosure. (Rotating pieces allows enough time to thoroughly clean, disinfect and dry the soiled piece.) If the animal waste, food, or fluids from prey have come into contact with the floor or walls of the enclosure, then they should be disinfected after the areas have been cleaned.

Almost any good liquid soap can be used for cleaning. Simple Green™ and regular dishwashing soap both work well; be sure to dilute products such as Simple Green according to

manufacturer's directions. There is no need to bother with soaps advertised as "antibacterial" - all soaps are antibacterial in that they, in conjunction with hot water, help remove bacteria from surfaces. Antibacterial soaps are not disinfectants and should not be used in place of a proper disinfectant. Do not use soaps or cleansers that are abrasive, contain pine scents or phenols.

Disinfecting and Chemical Sterilization
Disinfecting means pretty much what it says - it removes most of the organisms present on the surface that can cause infection or disease. Disinfecting is not suitable for eradicating mites but is useful against a number of bacterial and viral microorganisms. Sterilization, on the other hand, is the killing or removal of all disease causing organisms. Often the same products may be used to disinfect and sterilize; the difference is in the strength of the solution and/or the amount of time the solution is left in contact with the surface.

There are many products on the market that may safely be used (when directions for use are carefully followed) to disinfect reptile and amphibian tanks. Two may be found on your grocer's shelves - chlorine (household) bleach and ammonia. Both are highly toxic to you and your animals and must be used with extreme care. Other disinfectants may be purchased through animal supply catalogues, industrial supply houses and feed stores: Roccal-D™, a quaternary ammonia compound, and Nolvasan™ (chlorhexidine diacetate). The latter is useful to have in the herper's collection of supplies because in its dilute form it may be used to flush wounds, treat stomatitis (mouth rot) and soak syringes and feeding tubes. These products are expensive, ranging from $35-55 but, when diluted according to manufacturer's directions (Nolvasan, for example, is used at the rate of 3 ounces per gallon of water) they will last a long time (depending upon the number of enclosures, furnishings and utensils). Bleach should be used at the rate of 4 ounces per gallon of water, ammonia at 3.5 ounces per gallon. Note that weaker solutions should be used on amphibian enclosures and furnishings.)

To disinfect surfaces, generously apply the solution to the surface with a saturated cloth, sponge or spray bottle, or let the object soak in a container of the solution. Let the solution sit for at least 10 minutes; 15-20 minutes is better. To sterilize, let the solution sit for at least one-half hour (be sure to check the manufacturer's directions to see if a stronger solution is necessary for sterilization). Rinse out thoroughly, especially when using bleach or ammonia. If there is any doubt about your ability to thoroughly rinse out an enclosure, or the enclosure is made of wood, you may wish to think twice about using bleach or ammonia. Any residual of these substances left in the tank can cause severe, if not fatal, problems for your animals. Both substances produce strong fumes that can cause internal and external irritations. (Simple Green's aroma is artificial sarsaparilla and is not toxic to reptiles; no information has been found in reference to its use in amphibian enclosures.)

Now Comes the Fun Part
It doesn't make any sense to use disinfectants if you spread organic matter from one animal's enclosure to another on your sponge, rag, gloves or utensils. While your risk of cross-contamination is reduced in a long-established closed group of animals, any group that is subject to change, with new animals coming into the group (not necessarily into the same enclosures as established animals) then the risk of cross-infection is high.

Cleaning Equipment and Supplies
A set of equipment and supplies should be dedicated to new animals. In large groups of established animals, the threat of cross-contamination can be reduced still further by dedicating a

separate set of equipment and supplies to each type of animal: snakes, lizards, turtles and tortoises, amphibians.

The cleaning equipment and supplies required include:

- disposable gloves
- sponges
- scrapers (such as a putty knife)
- glass or metal bowls or buckets for hot soapy water and for the rinse water
- paper towels, sterilized cloth towels or rags, or disinfected sponges
- disposable trash receptacle such as a paper or plastic bag.

Items such as feeding and water bowls, rocks and ceramic, plastic or rock caves and hide boxes should be removed, cleaned and disinfected (as described below) and set aside; they can be placed back into the enclosure once the substrate and tank have been taken care of. Water bowls should be disinfected weekly in a bleach solution.
The disinfection and sterilization equipment and supplies required include:

- disposable gloves
- a spray bottle or bucket of prepared disinfectant solution
- a metal or glass or bucket of fresh rinse water and two for disinfectants.
- large receptacle for soaking and disinfecting furnishings (bowls, rocks, caves).

Utensils such as scrapers, rags, sponges, snake tongs or hooks, and reusable rubber gloves should be washed in soapy water, then soaked in one disinfectant (such as a chlorine solution) for at least five minutes. The utensils are then rinsed thoroughly before being used again. The second container of solution (such as Nolvasan) is used to disinfect the enclosures.

The Process
Begin working with your established, healthy, animals. Once you have finished their enclosures, clean and disinfect your utensils. Move on to any established animals that are ill. Clean and disinfect the utensils before starting to work on the quarantined animals last. (The idea of having separate sets of utensils and spare rags and sponges begins to not sound so crazy, after all...)
Clean and sterilize the utensils, sponges and rags after you are finished.
Needless to say, this can make cleaning a frustratingly time-consuming task if only one set of utensils is used. So splurge and buy a couple of inexpensive putty knives. Hit your local thrift shops for old towels and sheets to (rip into rags) and old mixing bowls. Sponges can be bought in packages of 8-10 to a pack. Save shampoo and similar bottles to store smaller quantities of your disinfectants so that you are not always working with the heavy gallon bottles. With all the waste and trash that gets dumped into our landfills, it is nice to know that there are ways that we can reuse and recycle.
Rags, towels, cloth bags and sponges may be sterilized by soaking in ammonia for 30 minutes in a well ventilated place away from the animals, then washing thoroughly in hot soapy water and allowed to dry. Bleach may also be used for this purpose, but after a time it begins to destroy the integrity of the fabric. This isn't a major problem if you buy your towels and rags at thrift shops.
If at all possible, establish a routine. Check enclosures daily for messes that can be quickly cleaned. Schedule one day a week to do a complete cleaning of all enclosures. This is a good time for animals that are otherwise enclosure-bound to get some fresh air and sun, or a nice long soak in the tub while you slave away in their tanks. Crank up the music, plop a drop cloth on the floor if you tend to be a klutz like me, and go to it...it's a dirty job, but somebody's gotta do it.

Recipe for Glass And Window Cleaner:

Into a clean, empty gallon bottle, pour:

- 1 quart rubbing alcohol
- 1/4 cup vinegar
- Just a few drops of liquid soap

Fill up the rest of the bottle with clean water; distilled water is preferred but not essential. Shake well. The mixed cleaner can be poured into spray bottles, or directly (I would advise using a funnel) into your windshield wiper cleaning fluid container. Just spray it on and wipe as usual. For stubborn spots, spray some on the spots, let sit for a minute or so while you work