

Caring for your Jackson's Chameleon

Photographs and text by Michael Fry



Chamaeleo jacksonii

When you select a chameleon, it is equally important to choose the right species as it is to choose a healthy individual. There are many species of chameleons available. Some are much easier to keep than others. Some species are better left only to the experienced, while others are better suited to the beginner.

Jackson's chameleons were probably the first chameleons to be kept successfully in captivity. They are a small - to medium-sized lizard. Males are equipped with three horns, one on their nose (referred to as the rostral horn) and one which extends from each of the orbital ridges around the eyes (these

horns are called preocular horns). Females may have no horns, only the rostral horn, or all three horns.

C. jacksonii are native to Mt. Meru and Mt. Kenya in Africa. However, in 1972, thirty-six animals were imported to Hawaii to be sold in pet shops. When they arrived, they were released into the back yard of a pet shop owner to recover from the stress of importation. These 36 animals have since established a sizable (although inbred) population of wild *C. jacksonii* in Hawaii. This Hawaiian population is the source of nearly all of the animals for sale in the United States.

There have been three distinct subspecies of *C. jacksonii* identified, *C. j. jacksonii*, *C. j. merumontana*, and *C. j. xantholophus*, the later being by far the most common of the animals available in the US pet trade.

C. jacksonii are easily identified. Adults are green and reach maximum length of approximately 10 inches (total length). Both males and females have a distinctive dorsal ridge that displays a very rough pattern of saw-tooth-shaped scales. All forms of *C. jacksonii* have no gular crest. This can also help identify this species and differentiate them from other three-horned species of chameleons.

The natural habitat of *C. jacksonii* receives as much as 50 inches of rain annually. So humidity and water availability is critical for this species. As a true montane chameleon, *C. jacksonii* require cooler temperatures and one might expect from an equatorial reptile. Average daytime temperatures in their natural habitat is about 75 degrees F. Evening temperatures frequently drop to 60 degrees F or lower. Therefore, it is best in captivity that temperatures not exceed 80 degrees F. Young animals should not be exposed to temperatures in excess of 78 degrees.

Despite their preference for cooler temperatures, these animals are avid baskers. However, care needs to be taken so that animals do not overheat as a result of basking lights which are too warm. Signs of heat stress in *C. jacksonii* include a lightening of the skin and open-mouth breathing.

C. jacksonii is not an aggressive chameleon. Territorial battles between males are largely ritualistic. For successful long-term housing of this species, however, it is best to house animals individually.

When purchasing a *C. jacksonii* make sure you are purchasing a captive bred animal from a known and respected breeder in the continental US. Many animals are collected from the wild in Hawaii and sold in the United States under the label 'captive bred'. Animals collected in the wild of Hawaii suffer from the same parasite problems that are observed in their African counterparts. They have just as much difficulty making the adjustment to captive life and any other wild caught chameleon. So Hawaiian wild caught animals should not be considered as pets.



Providing an appropriate evening temperature drop can prove to be one of the more difficult aspects of housing C. jacksonii. Temperatures down to approximately 60 degrees F are ideal. Above, a sleeping female C. jacksonii xantholophus displays calm sleep colors.

HOUSING

A properly designed, built and furnished cage is one of the most important aspects of chameleon husbandry. The ideal cage should provide for the animals physical as well as their behavioral requirements.

The essentials for a true chameleon cage are: 1) A large enough space so the animal may conduct all of its natural behaviors including, basking, hunting and feeding. It should also provide a variety of perching surfaces at different temperatures so the animal can regulate its body temperature by moving to an appropriate spot in the enclosure. 2) Good ventilation. Poor ventilation, like that found in a typical glass aquarium, will allow the air to become stagnant and provide an opportunity for fungus and bacteria to grow. These things can cause great problems for your chameleon. 3) Good lighting sources, including at least one incandescent basking light, one fluorescent full-spectrum light, and exposure to natural sunlight.

Although chameleons are slow-moving animals, they require a lot of space. They need this for their physical and emotional well-being. At least 2 sides and the top should be constructed of coated screen. Standard aluminum screen should be avoided, as should fiberglass screen. There have been reports of foot injuries in chameleons from these materials.

The cage should be furnished with branches of different diameters so that the lizard can easily navigate the entire cage. Live plants will provide good hiding places and add to the beauty of the enclosure. Because many chameleons are known for eating vegetable matter, only nontoxic plants should be planted in their enclosures.

Hibiscus are ideal plants for true chameleon cages. They are beautiful, nontoxic plants which the lizards will love, for food and navigation. Pathos plants are also a good addition. Although they are considered mildly toxic, many reptiles, including some chameleons love them and have no negative side effects from eating them. One commonly recommended plant which should be avoided is the ficus tree. This plant is mildly toxic and excretes a white milky latex. This secretion has been connected to a number of eye infections in captive chameleons, so this plant should be avoided.

The arrangements of lights, plants and branches should be such to allow for at least one basking site where the temperature will reach the upper limits of the animal's comfortable temperature range. Other basking sites with slightly cooler temperatures may also be built into the cage. The temperature in the rest of the enclosure should be still lower allowing the animal to thermoregulate by moving around the cage. Most chameleons do best with a 10 degree F to 15 degree F night time temperature drop .

WATER

Few chameleons will ever learn to drink water from a standing water dish. In the wild, chameleons lick dew and rain droplets off of leaves, or are attracted to moving water. This means that in captivity, special watering techniques need to be used to keep chameleons healthy and hydrated.

Chameleons are naturally attracted to droplets of water which are reflecting light, and pendulous drops of water hanging from leaves of plants. Keepers of these lizards can take advantage of this by designing

water systems which take this natural behavior into account.

Drip systems are the most common form of chameleon watering system. They generally consist of a container of water which sits above the animals enclosure. A plastic tube runs from the water container and into the chameleon cage. Water slowly drips out of the end of the plastic tube. Pre-made drip systems are available at many reptile-oriented pet shops and generally include some sort of adjustment to control the rate at which water drips from the tube.

Other, simpler drip systems are also used. Some as simple as placing ice cubes inside a container on top of the chameleons cage. When the ice melts, it drips through a hole in the bottom of the container and into the cage.

If a drip system is used in a chameleon cage, care needs to be taken to prevent the cage from becoming too wet. This is easily accomplished by placing a container inside the cage which catches the dripping water. Make sure the chameleon can not get into, or get trapped in, this container of water. The water can then be emptied every day.

Another method of watering your chameleon is to simply mist the inside of the enclosure once or twice per day. Chameleons will eagerly lick water off plants, as well as the sides of the enclosure.

FEEDING

Many true chameleons that will eat a bit of vegetable matter, along with their diet of live insects. With every feeding, your chameleon should be offered a variety of nutritious fresh fruits and vegetables, including: collard greens, mustard greens, turnip greens, sugar snap pea pods, bean sprouts, slices

apples along with others. Vegetables to avoid include spinach, lettuce and cabbage.

Feed your chameleon(s) daily by placing live insects and with fresh vegetables into a glass jar which is large enough to prevent the insects from escaping. Vitamin & mineral supplementation can then be sprinkled on the insects and vegetables. Shake the jar to evenly coat the vegetables and insects with the supplement. On a favorite perch, but below the chameleon suspend the jar. Do this in such a way that it is easy for the lizard to reach the food in the bottom of the jar. The insects will eat some of the vegetables. The chameleons will benefit even if they do not directly eat much of the vegetable matter themselves.

For very young hatchlings, a baby food jar makes a nice food dish. Insert a small stick into the jar for small youngsters. The stick should extend far enough into the food container to give the hatchling the ability to reach the food, but the stick should not reach the bottom of the jar. If the stick reaches the bottom of the jar, insects will easily climb the stick and escape.

The same vegetable mixture that is fed to your chameleons should also be fed to the insects you will feed to your chameleons. This will ensure the insects are healthy and full of nutrition by the time your chameleons eat them. Following is a list of the different insects you can use to feed your chameleon:

Adult Crickets - Crickets are readily available at most pet shops. When fed a proper, vegetable-based diet, they are nutritious and can comprise up to 80% of your chameleons total diet. Crickets, however have a low calcium/phosphorus ratio. Additional calcium supplementation should be included with every meal of crickets.

2 - 3 Week Old Crickets- Like adult crickets, but are small enough to be fed to juvenile chameleons.

Pinhead Crickets- Very small crickets which can be used to feed neonate chameleons.

Fruit flies - These make an ideal food source for very young Jackson's Chameleons. They are nutritious, easy to raise, and small enough for neonate chameleons. They can be cultured in wine or beer bottles.

Mealworms - Mealworms are inexpensive and, like crickets, easy to load with valuable nutrition by feeding them a quality diet of fruits and vegetables. They should, however, make up only a very small part of a chameleon's diet. Mealworms should not be fed to Jackson's chameleons until the animals are old enough to digest them.

Superworms- Superworms (*Zoophobus*) look very much like mealworms, but much bigger and are a slightly different color. These should only be fed to chameleons when they are large enough to eat them. Like crickets and mealworms they should be fed a diet of fresh fruits and vegetables prior to feeding them to your lizards. These are large insects. In their largest form are probably too large for most Jackson's Chameleons. However, young *zoophobus* can be purchased and are a great addition to a chameleon diet.

Waxworms- Waxworms are sometime called grubs. They are nutritious, full of moisture, and easy to store. Chameleons LOVE them. Unfortunately, there are some negatives. They are difficult to nutrient-load prior to feeding them to your chameleons. They are also high in fat, so some people speculate they should only be a small part of your chameleon's diet. Without knowing the breakdown of the 'ideal' chameleon diet, however, this may or may not be accurate.

Wax Moths- Waxworms turn into moths, which your chameleons will love to eat. You will enjoy watching your pets 'zap' them out of the air with their tongue.

Roaches- Roaches can be ordered from some suppliers. They are VERY good for your chameleons! Young roaches are loved by Jackson's Chameleons!

Wild-caught Insects- Many chameleon owners set up insect traps during the summer to catch their own insects. Grasshoppers, flies, crickets, centipedes, and spiders will all be devoured by your chameleons. This also helps offer a diverse diet necessary for the health of your lizard. It is important, however, that the insects be collected from areas where insecticides are not used.

Silkworms- Silkworms are, in some ways, an ideal food source for chameleons. When they hatch, silkworms are very small, so they can be fed to even the smallest young



When C. jacksonii xantholophus are born, they are approximately 1.5 inches long. They feed eagerly on pinhead crickets and fruit flies. They require coolish temperatures and high humidity to thrive.

chameleons. Yet silkworms grow to impressive sizes. They are also high in calcium, an important factor in any chameleon diet.

Calcium and Vitamin Supplementation

All captive chameleons require calcium and vitamin supplementation. The specific reason for this is beyond the scope of this document. But in short, chameleons need vitamin D3 in order to metabolize calcium for growth. Many 'basking' reptiles naturally produce vitamin D3 in their skin when they bask in the sun and are exposed to UV radiation. Since the UV output of most human-made, full-spectrum lights do not provide the same UV exposure as the sun, additional supplementation is ESSENTIAL.

The following supplement schedule is recommended for your adult chameleons:

Calcium: Every feeding should include a calcium supplement which has little or no phosphorus and no additional vitamins. Ground oyster shell works well. Additionally, 2-3 times per week a calcium source containing vitamin D3 should be used. One popular brand is called Rep-cal™.

Multivitamins: Add a good dose of a safe reptile multivitamin 2 - 3 times per week. Herptivite™ is highly recommended. It contains no vitamin A. This is important, because hypervitaminosis A (an overdose of vitamin A) has been linked to edema (excessive fluid buildup) in many species of chameleons. Instead of vitamin A, Herptivite™ uses beta carotene, which your chameleon's body can convert to vitamin A, if it is in need of vitamin A. Many herpetologists speculate this will dramatically reduce the number of cases of

edema reported in captive chameleons every year.

Bee Pollen: The author of this paper has been supplementing his chameleons with bee pollen every day. This can be done by purchasing bee pollen tablets from a health food store. The tablets can be ground to a fine powder in a blender and added with equal portions of the daily calcium supplement. Many wild insects are covered with pollen when they are eaten by chameleons. Bee pollen is a good, safe source of vitamin B, protein, amino acids and enzymes. Vitamin B is often used as an appetite stimulant with anorexic animals. By supplementing with bee pollen, it is possible that some chameleon 'hunger strikes' could be avoided. For more information, see Hunger Strikes in the trouble shooting section.

Troubleshooting

Parasites: Chameleons, especially wild caught chameleons are very susceptible to internal parasites. It is wise, therefore, to have your chameleon's stool sample checked for worms periodically. Parasite eggs are present in captive as well as wild-caught insects. They can easily be passed on to your chameleon, especially if your chameleons is experiencing stress. Since it is impossible to prevent exposure to parasite eggs, reduction of stress is an important factor in maintaining your pets health. See stress.

Stress: All captive chameleons experience some level of stress related to their captivity. Stress can be fatal to chameleons. Chronic stress can suppress their immune systems, making them more susceptible to parasite infestation and other illnesses. The successful keeper of chameleons will do

everything in their power to minimize stress.

1) Keep their cage in a low (or better yet a NO) traffic area of your home. 2) If weather permits, build a sturdy outdoor enclosure for use when temperatures are appropriate. 3) Put up visual barriers between your chameleons and human activity. 4) Chameleons think people are their predators. Every time your chameleon sees you, they will be stressed. 5) When you want to spend time observing your chameleon, remove the visual barrier, and sit still. The less you move, the more calm your chameleon will be. 6) Only handle your chameleons when ABSOLUTELY NECESSARY.

Hunger Strikes: There are many reports of chameleons refusing food. This is, in fact, a common cause of death in captive chameleons. They starve themselves to



There are many common problems associated with wild-caught Jackson's Chameleons. This female was rescued from a pet shop by Animal Ark. The chameleon had been housed in a glass aquarium with other chameleons and was suffering from a severe respiratory infection. After proper treatment with antibiotics, she made a full recovery.

death. The lack of eating is likely a symptom of some other problem. Stress can cause an animal not to eat. Internal parasites can cause a loss of appetite. Lack of an essential vitamin or mineral could be at work. Sometimes chameleons will refuse one food item, but gobble up others. Therefore, it is important to have multiple food sources available all of the time.

Sun Light: In many climates it is impractical to house chameleons outdoors (where they are the most happy!) And normal glass filters out about 100% of the sun's UV light. However, natural sunlight can still be made available indoors by placing the chameleon cage near an east, south, or west facing window. During nice weather, the window can be opened to allow your lizards to bask in unfiltered sunlight. Full-spectrum glass (often referred to as low iron glass) is also available. By replacing the panes in the windows with low iron glass, you can provide your chameleon with a wonderful, energy-efficient source of natural UV light. They will be happier and healthier!

Eye infections: These are a common problem with captive chameleons. And often eye problems can be fatal. Any chameleon showing signs of eye trouble should be taken to a qualified reptile veterinarian as soon as possible.

Respiratory Infections: Respiratory infections are common in imported animals and animals housed in aquariums or other cages that provide little air flow. These can be very serious and need to be treated by a qualified reptile veterinarian.



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Other Sources of Information

The Chameleon Information Network (CIN)
13419 Appalachian Way San Diego, CA
92129 E-Mail: CHAMNET1@aol.com or
CHAMNET2@aol.com

Internet Newsgroup rec.pets.herp

CompuServe Information Services Pets
Forum 'Go PETSTWO'

Genus & Species: *Chamaeleo jacksonii*
Common name: Jackson's Chameleon

Description:

A small to medium-sized chameleon of the three-horned variety. Both males and females display a dorsal crest with a distinct "saw tooth" pattern. Generally, animals are green. Males have some yellow and blue. Females may be green, brown or tan.

Habitat:

Mt. Meru and Mt. Kenya in Africa. A forest chameleon, they are often found living in coffee plantations.

Temperatures:

Day - Temperature gradient from 73 - 80 degrees f.
Night - 60 - 65 degrees f.

Humidity:

60-80%

Water:

Via continual drip system

Feed:

Feed daily with small to medium sized insects (a variety). Also offer some fruits and vegetables from time to time.