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The GREEN TREE MONITOR: A Herpetological Gem

Vibrant and beautiful,
Varanus prasinus requires
an experienced keeper.

By Robert W. Mendyk

When most people think of monitor lizards, they picture large and powerful lizards, much like the Komodo dragon (*Varanus komodoensis*). Very few associate vivid coloration with varanids, as most of the well-known monitor species, such as *V. salvator* and *V. exanthematicus*, are rather dull in color. Members belonging to the tree monitor group (the *Varanus prasinus* complex) exhibit some of the most stunning coloration seen in varanids, with the most well-known and studied species being the green tree monitor (*V. prasinus*).

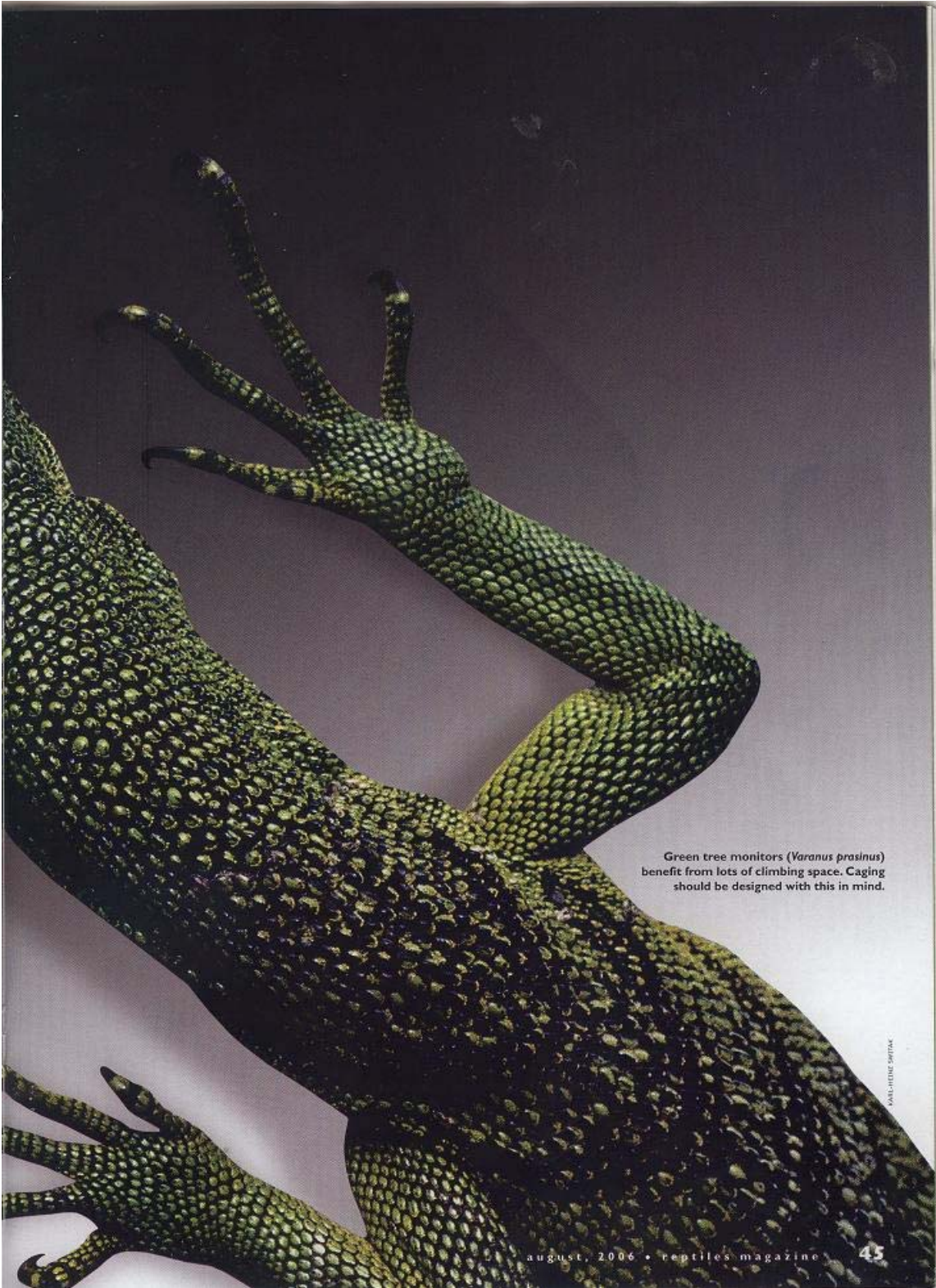
Natural History

The green tree (or emerald tree) monitor is a medium-sized varanid belonging to the Indo-Australian subgenus *Euprepisaurus*, which includes the mangrove monitor and tree monitor species groups. Just as the name suggests, green tree monitors possess several different specialized adaptations that facilitate an arboreal lifestyle.

Varanus prasinus is endemic to New Guinea and several adjacent islands, as well as a few islands within the Torres Strait, a body of water separating Papua New Guinea and northern Queensland, Aus-



Male green tree monitors usually possess larger and broader heads than females.



Green tree monitors (*Varanus prasinus*) benefit from lots of climbing space. Caging should be designed with this in mind.

KARL-HEINZ SMITAK

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GREEN TREE MONITOR
(*Varanus prasinus*)

By Dick Bartlett © AUGUST 2006





Copulations typically take place while the monitors are hanging vertically from the walls of the enclosure.

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The blue tree monitor (*V. macrodon*) is another exquisitely colored member of the tree monitor species group.



ROBERT HENSON

Green tree monitors require high-humidity environments.



JOHN HENNING GRIFFIN

tralia. The green tree monitor is reported to occur in a variety of different lowland environments throughout its range, including tropical evergreen forests, palm swamps and cocoa plantations.

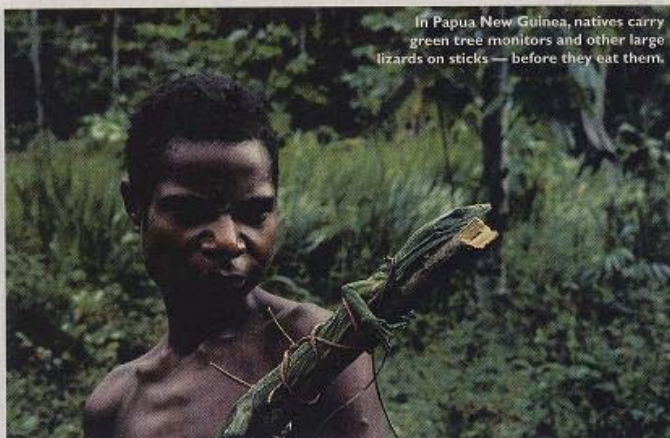
From the Wild to Captivity

Green tree monitors are one of the most strikingly colored monitor species, exhibiting various shades of green to turquoise, topped with dark, transverse dorsal banding. Their size and brilliant coloration has made them one of the most coveted monitor lizards in captivity today.

It is important to understand that tree monitors are one of the most fragile and sensitive monitors in captivity. They are intolerant of keeper error and do not react well to stress or handling. Handling should be avoided at all costs. It cannot be stressed enough that *V. prasinus* is not a beginner monitor species, and can be extremely difficult to keep alive and well in captivity. Unfortunately, its sensitive nature has rarely been addressed in the herpetocultural literature of the past and has led to many failed attempts at keeping them in captivity.

The most common cause for failure in keeping them can be attributed to impulse purchases by unprepared hobbyists who lack knowledge of the species or its captive care. One of the best ways to prepare oneself for keeping a potentially difficult monitor lizard such as *V. prasinus* is to start out with a less-sensitive monitor species, such as the ridge-tailed monitor (*V. acanthurus*). The experience gained through keeping a more tolerant species teaches the keeper how to interpret certain varanid behaviors and how to identify potential problems before they become disastrous.

The information outlined within this article is a general guideline of some of the



In Papua New Guinea, natives carry green tree monitors and other large lizards on sticks — before they eat them.

most important aspects involved in successfully keeping green tree monitors in captivity. Many hobbyists tend to rely exclusively on caresheets to model their husbandry of a particular species. Following such strict instructions on how to keep a particular species often hinders the ability to learn from one's individual captives.

Without ever manipulating or testing any of the conditions offered to the captives, it is nearly impossible to gain an understanding of what is best for the animals. The best caresheet one can follow when keeping reptiles is observation of the behaviors and actions of the animals themselves and how well they respond to different situations and conditions. Proper husbandry for any reptile requires constant adjustment and manipulation of the conditions being offered, in order to keep up with the changing needs of one's captives as they grow, mature and age.

Hydration and Acclimation

Unfortunately, due to a lack of reproduc-

tive success in captivity, virtually all of the green tree monitors encountered in captivity are wild caught. Wild-caught tree monitors are often stressed and arrive in terrible physical condition. Dehydration is the most common ailment seen in freshly imported *V. prasinus* and is the number one cause of death in this species.

Hydration is the most crucial ingredient in successfully keeping green tree monitors and should be the first priority upon acquisition. *Varanus prasinus* originate from areas of high humidity; they are generally unable to tolerate humidity levels below 70 percent. While housing a dehydrated tree monitor in an enclosure with adequate humidity levels can prevent further desiccation, rehydration only occurs through the regular consumption of water. In most cases, the easiest way to encourage drinking is through frequent daily mistings, as tree monitors are usually eager to drink water droplets from their surroundings. It is usually best to rehydrate an individual before attempting to feed it.



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Green tree monitors require sturdy branches to rest on. The diameter of these perches should be at least 4 inches.



Upon arrival, each monitor should be quarantined separately, so that each individual can be closely observed through its acclimation. Monitors should be kept separate until the animals are rehydrated and the feeding behaviors, patterns and preferences of each animal are well understood. Dumping a pair of tree monitors upon receipt into an enclosure together almost always results in failure, with the female usually being the first to decline. Without a firm understanding of their behaviors, it may be difficult to determine the health and condition of an individual until it is too late. Be sure to take the necessary time to understand each individual before introductions. Patience is crucial, and rushing introductions only results in problems.

Housing

There are many different acceptable ways to house green tree monitors. Successful keeping and breeding have occurred in many different setups. Custom enclosures specifically designed and built for tree monitors are a necessity. Some of the most important enclosure elements include the total amount of usable surface area for climbing, the ability to retain high humidity levels and to hold a temperature gradient.

Green tree monitors are highly active lizards and spend a considerable amount of

time in trees. When designing an enclosure, it is important to place the emphasis of its design on height. These monitors use every square inch of space provided to them; space management is extremely important. The easiest way of maximizing usable surface area is to render the walls climbable by affixing a climbable material, such as cork tiles, cork flats, garden lattice or vinyl hardware cloth. By doing so, the total amount of usable surface area within the enclosure can be increased at least threefold. Provided that interior space is maximized, a pair of *V. prasinus* can live successfully in an enclosure measuring 4 feet wide by 6 feet tall by 2 feet deep, although larger is usually better. It is also a good idea to keep a separate enclosure on hand in the event that animals need to be separated.

Humidity retention is another extremely important element. When dealing with tropical species that dehydrate easily, ventilation can become a serious problem. The use of screening or large vents only encourages the loss of humidity from within the enclosure. Sufficient air exchange occurs within the enclosure through daily maintenance and feedings. There is no need for air vents within the enclosure. It is important to keep relative humidity levels in excess of 70 percent, in order to prevent dehydration.

Caging Elements

Leaf litter works extremely well as a substrate, as it retains moisture and facilitates naturally occurring behaviors such as foraging, sifting and digging.

Due to the extremely nervous disposition of *V. prasinus*, it is important that captives have access to different areas of retreat throughout the enclosure to provide a sense of security. Hides may be constructed of various materials; however, variation in environmental conditions within each shelter is what's crucial.

Some hides should offer warmer temperatures than others, some should be more humid, and some should be darker. Variation allows the monitors to fulfill various physiological needs while remaining safe and secure within their hide. It is also important to understand if a hide is too spacious, it does not provide the necessary safety and security. A monitor must be able to tightly wedge itself into the space and feel its surroundings pressed against its body in order to feel secure.

Branches are an integral element of the functionality of an enclosure. Keepers often use climbing branches that are too narrow for their intended use. Green tree monitors have an elongated body, with long limbs for utilizing large, thick trunks and tree limbs, not skinny branches and

twigs. Branches that measure greater than 4 inches in diameter are better suited for the body type of *V. prasinus*.

As with all monitors, green tree monitors require access to a fairly broad temperature gradient in order to maintain a healthy metabolism. Access to temperatures ranging from a basking site of 120 to 130 degrees Fahrenheit, down to cooler areas in the low 80s allow the monitor to properly regulate its metabolism. Basking temperatures can be achieved through a number of different heating devices, although halogen outdoor floodlamps offer many benefits over other conventional heating elements. A 12/12-hour photoperiod works well for *V. prasinus*, although supplemental heating may be provided at night, in order to maintain ambient temperatures in the low 80s.

There is a long, heated debate over the need for supplemental UV lighting for varanids. Halogen floodlamps do produce UVA and UVB. Lighting can be placed in the enclosure or mounted to the enclosure through a hole in the ceiling. Place the bulb a safe distance away from any access point. Do not use bulb guards.

Monitor Diet

Green tree monitors may accept various prey items, and many diets have resulted in long-term success with this species. Some of the most common prey items fed to *V. prasinus* include crickets, cockroach-



Novice keepers should avoid green tree monitors. They are delicate, easily stressed animals that are intolerant of handling and keeper error.

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es, mealworms, mice and quail. Unconventional prey items such as stick insects and katydids have also been incorporated into some diets.

Due to their energy requirements, it is important that *V. prasinus* are fed regularly. Frequent offerings allow for the maintenance of an active metabolism. They cannot withstand extended periods without food and should not go more than a day or two without feeding. Small meals fed daily are ideal for green tree monitors, and infrequent but large feedings may often result in obese and lethargic captives.

Copulation

There have been numerous accounts of successful reproduction in *V. prasinus* during the past two decades. However, most successful breedings have been sporadic and inconsistent, with the greatest success occurring in zoological institutions. Many keepers believe that alteration of a rain or misting cycle is necessary for inducing reproductive behavior, but reproduction may be more likely the result of increased food intake and availability. An increase in food consumption allows for female monitors to allocate more energy toward reproduction.

Breeding success is ultimately limited by the female. Males may repeatedly attempt to mate with females throughout the year; however, a successful mating only ensues if the female is reproductively cycling and receptive. Female monitors only cycle if they are in the best of health and physical condition. It is important that fe-

Young green tree monitors require careful monitoring because they can dehydrate rather quickly.



males are provided with all of the necessary resources to achieve optimal health.

Many hobbyists erroneously believe that housing multiple females with a single male increases their chances for reproductive success. In such a situation, however, having multiple females together only complicates the social structure of the group. This is why housing *V. prasinus* in pairs has proven to be the most successful scenario for keeping and breeding this species in captivity.

Copulation normally occurs while the monitors cling to the enclosure walls. It is usually initiated by the female positioning herself in a way so that the male can mount her from behind. A single mating may last for up to an hour, with several copulations usually occurring throughout the day. Green tree monitors may copulate

continuously for up to nine days.

Approximately 30 days after the first mating, females lay between two and six eggs. Eggs are usually deposited at a temperature of 85 to 86 degrees, in a deep and narrow nesting box, which may be filled with various acceptable dampened media, such as sphagnum moss, shredded coconut fiber, sand, sawdust or potting soil. Female tree monitors have been known to lay between one and five clutches of eggs in a single year, which appears dependent on their food intake throughout the year.

Incubation and Hatchlings

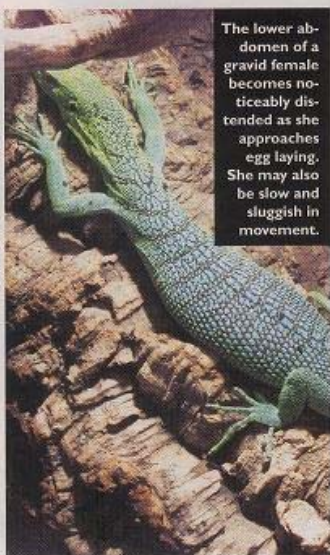
Incubation is the most difficult step in reproducing *V. prasinus*. While many hobbyists receive eggs each year from *V. prasinus*, very few succeed in hatching the eggs. A common occurrence seen during incubation is the death of fully developed hatchlings within the egg prior to hatching. Some possible explanations for these failures during incubation may include excessive moisture toward the end of incubation or a buildup of carbon dioxide within the incubation container as the metabolism of the developing embryo increases. Both situations can be devastating to a developing embryo and may account for problems commonly seen during the final days or weeks of incubation.

Green tree monitor eggs have been hatched using various incubation techniques in the past. The most widespread approach that has proven to be most successful is either a 1-1 mixture of perlite to water or a 1-1 mixture of vermiculite to water by weight.

Some keepers have decreased moisture within the egg box toward the end of in-



A partially excavated nest reveals *V. prasinus* eggs buried in damp organic substrate.




The lower abdomen of a gravid female becomes noticeably distended as she approaches egg laying. She may also be slow and sluggish in movement.

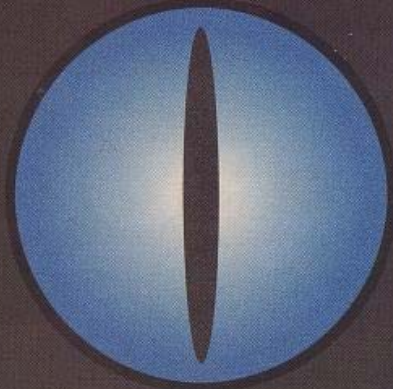
cubation depending on the turgidity of the eggs. Eggs can be incubated at temperatures ranging from 82 to 87 degrees. They hatch after 148 to 215 days, with warmer incubation temperatures resulting in shorter incubation periods and cooler temperatures resulting in longer incubation periods.

Hatchling tree monitors can be finicky eaters and may sometimes take several weeks to start feeding. Hatchlings are often intimidated by live insects, in which case they can be started off on mouse parts, diced waxworms or ground turkey. Once feeding, hatchlings may then be switched over to other prey items.

Hatchlings and juveniles are typically set up and raised in a similar fashion as adults, although smaller enclosures may be more manageable for keeping a watchful eye on their development. It is important to closely monitor humidity levels and fluid consumption, as juvenile tree monitors can dehydrate very quickly, much more rapidly than adults.

Conclusion

Green tree monitors are extremely active lizards, and once acclimated to life in captivity, *V. prasinus* can make very entertaining and rewarding captives. It is important to understand the frail nature of this species before considering it as a captive. Patience and preparation are the keys to succeeding with this amazing species in captivity. 



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