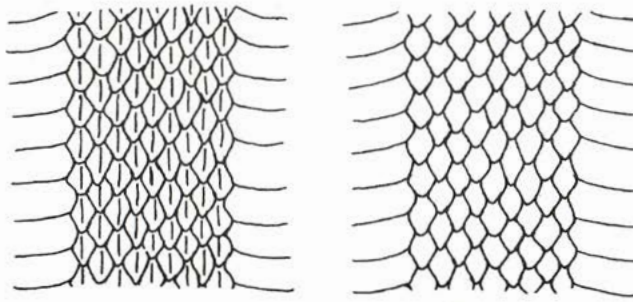
THE ROUGH GREEN SNAKE (*OPHEODRYS AESTIVUS*) IN NATURE AND IN CAPTIVITY..

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INTRODUCTION

The genus *Opheodrys* includes several species, two of which occur in the United States: *Opheodrys aestivus* (the rough green snake) and *Opheodrys vernalis* (the smooth green snake). In Japan three other species occur, viz. *Opheodrys semicarinatus*, *Opheodrys herminae* and *Opheodrys kikuzatoi*. The rough green snake (in this paper further described as green snake) is slender, light green above and white, yellow or pale greenish below. It measures 56 to 81 cm in length, the record being 115.9 cm. The genus is oviparous. The green snake differs from the smooth green snake in having keeled scale scales. The figures below show the difference in scale-type, for those who did not know it yet:



The green snake is an excellent climber, living in trees and shrubs, while the smooth green snake is largely terrestrial living in meadows and swamps.

RANGE AND HABITAT

The green snake occurs in the southern part of the United States, from southern New Jersey to Florida, Kansas, Texas and Mexico.
Its habitat is mainly dense vegetation, on the edges of woods along water with overhanging vegetation. It occurs also in fringes of woods and along roads without nearby water. Although data exist of populations which are almost semi-aquatic, it is incorrect to state that green snakes are always living near water. Plummer (1981) investigated the habitat and the behaviour of a population of green snakes along the shores of a lake. I will summarize his findings below.
The snakes were only active by day. Soon after sunrise they began their activities, which lasted during the day until about half an hour before sunset. They were active hunters by sight. The snakes often clung to a branch by means of their tail, while slowly investigating the surrounding tree-branches and leaves. When approached they kept still, moving away rapidly only when touched. Their sleeping posture was mostly a horizontal loose loop, the head resting on a branch or on top of the loop. Sometimes individuals were found on the ground, there was no preference towards certain plants, but there was for dense vegetation. Most individuals (85%) were found within 3 m of water, and between 1 to 3 m high on branches. The thickness of a branch and the snake's posture on it, seemed to be selected very carefully. At night the preference for dense vegetation was less, which could have something to do with their way of hunting. In general the snakes moved about within

a restricted area. They did not need much space, considering their feeding behaviour: they frequently fed upon small prey instead of once and a while a bigger prey, like most snakes do. The diet of the individuals investigated by Plummer consisted of more than 85% of caterpillars, spiders, grasshoppers and crickets. Obviously there was a clear food-preference: the quantities of food items eaten did not correspond with the amounts of prey living in the habitat. In the literature snails and small frogs are mentioned as food.

BEHAVIOUR IN CAPTIVITY

The green snake partly looses its shyness after a time, but remains altogether a shy and easily frightened animal, which with the slightest provocation may rush wildly around the terrarium. One has to approach them with the most care and in silence.
Here and there one may read that the green snake may show blue spots when excited, but terrarium keepers never seem to observe this. The blue colour of the skin between the scales can be seen very easily when a snake swallows a somewhat large prey. Paulduro supposed to have seen territorial behaviour. After he had put three newly bought individuals into a small quarantaine-terrarium, the largest snake showed aggression towards the other two. Later on, this aggression was expressed in a stronger way when the male tried to mate and meanwhile chased away other individuals. I have never heard of any aggressive behaviour other than the ones described above. I myself kept a green snake together with geckos, anoles and a *Storeria dekayi* (Brown snake or DeKay's snake) without observing any quarrels other than between the geckos.

TERRARIUM CONDITIONS

To me it seems clear that the best way to set up a terrarium is, to adapt its interior to the above described natural conditions, taking into consideration practicality, hygiene and one's own personal ideas. Minimum requirements must be an adequate amount of climbing possibilities, i.e. many tree-branches.
Paulduro mentioned the fact that some of his animals liked to take a bath in a big water-basin (contents 10 litres). Also he kept the relative humidity at 65 to 75% sprinkling his terrarium daily with water. I have noticed that my green snake seldom drank from the water-basin, prefering to rub against the water-sprinkled walls drinking the waterdrops on it.
I suppose that differences in preference of what to drink from and need of water are linked up with the origin of the animals (see also the described habitats).
Close observations of the behaviour of your animals together with exchange of experiences with other terrarium keepers could be very useful in this aspect.

FOOD

As mentioned above, the green snake feeds mainly upon insects, but spiders (hunting and webmaking), snails and frogs are also eaten. Paulduro gives a long list of insect-species which were, at least once, eaten by his green snakes. His list includes for instance butterflies, moths, slugs, hairless caterpillars, spiders, grasshoppers, crickets, wax-moths and their larvae. Others have listed mosquitos, hover-flies and flies bred out of their larvae. Thus giving us enough information to compose a justified diet.
A hunting green snake seems to react almost ex-

clusively to movements. Still prey stays unnoticed. In this connection, the swinging movements of the snake's head, which can often be observed, are interesting. The Surinam snake called "Swipi" does it in a very similar way, by which it scares off still sitting prey. If the latter then jumps away, it will be noticed and seized. The swinging head movements of the green snake could have the same kind of function. Furthermore, smell plays an important part too.

FORCE-FEEDING

Force-feeding green snakes, especially the smaller individuals, is a problem. Still, it sometimes may be necessary. The following method worked fine with my green snake, and may be successful for other individuals. An earth-worm, not too big, whether covered or not with a calcium- (Gistocal) or calcium-vitamin preparation (Nekton-Rep), must be placed diagonally and as far as possible into the snake's mouth (like a horse-rein). It may be useful to carefully push the snake's jaws into the earth-worm. After leaving the snake like this, in 7 times out of 10 it will swallow the prey on its own, taking a pause once and a while. This method is the least tiresome for the green snake. Moreover the earth-worms are very nutritive and contain much calcium. The only one who does not think this method is successful, is the earth-worm itself.

BREEDING

Paulduro described a successful breeding in 1981. He allows his snakes to take a resting period from November to February, when the snakes do not leave their hiding place. During this time the temperature is lowered to a maximum of 20°C by day and

to 14-16^{0}C during the night. It is not known whether this has been of any influence.
He observed attempts to mate in the beginning of June 1980, which obviously led to the desired result. On 20 July 1980 the female produced several eggs, probably four, which were buried in the soil material. The gestation had taken 42 days. Paulduro left the eggs in their position, the temperature being 23-24^{0}C in the day-time and 20-21^{0}C by night. In literature the number of eggs mentioned for this species varies from 3 to 12. The eggs are sticky, smooth and cream-coloured, with a length and width of 25-30 and 10-12 mm respectively. After 51 days of incubation, Paulduro discovered the first new-born snake, having a length of 17 cm. This young was put into a small terrarium with a 25 Watt bulb for heating. In the following days more young hatched and were also removed.
The young were shy and stayed under cover in the soil material, only showing their heads, looking around curiously. Until the first shed they were grey-green coloured, after that olive-green, and only after several sheds did they become the bright green colour of the adults.
The juveniles ate all food items offered, but only if it moved. While hunting they made no bones about stealing prey from each other, so that sometimes wild scenes took place. Paulduro offered them crickets, grasshoppers, caterpillars and moths.

DISEASES

I do not know whether green snakes are sensitive to any certain diseases. Paulduro has the impression that they are rather sensitive to Neguvon (a treatment against external parasites like bloodmite). Has anybody had any experiences with this?
I have the impression that green snakes are rather

delicate, and sometimes just die in a most mysterious way. On the other hand, they could be kept for years without any problem. My own individuals died after a long period of refusing to eat by themselves and without showing any outward visible symptoms of illness, in spite of several treatments with antibiotics and remedies against internal parasites.
I do believe, especially where the green snake is concerned, that terrarium keepers must exchange their experiences.

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