

THE CARE AND BREEDING OF *THAMNOPHIS* SPECIES

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Contents: Introduction - Distribution - Food - Housing - Breeding - The young - Conclusion - References.

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INTRODUCTION

In general little is written about *Thamnophis* species. One of the reasons may possibly be that Garter snakes are regarded as snakes for beginners. That does not do any justice to these animals, and fortunately the number of people that keep Garter snakes in The Netherlands is slowly but steadily on the increase.

Many people find Garter snakes are not as spectacular as mouse-eating species, and another reason for their low popularity may be that their faeces, which are smellier than those of rodent feeders. In my opinion the smell is not so bad, I think a cat's toilet tray is much worse.

It would be a pity if these were the reasons not to buy these animals, because they are one of the nicer and certainly one of the most active snake species I know. I think that their active behaviour may have something to do with the fact that due to their lightweight food they are actively hunting for food the whole of the day. *Thamnophis* are also very inquisitive and gentle snakes. Within reasonable limits you can do almost what you like with them without them becoming aggressive.

At the moment some fifty different species and subspecies recognized and described but I will limit myself to the species I have now in my possession and those I kept in the past. Below, a list is given of the species and subspecies I keep at the moment:

- *Thamnophis sirtalis semifaciata*
- *Thamnophis sirtalis* (a natural black morph)
- *Thamnophis sirtalis parietalis*
- *Thamnophis sirtalis tetrataenia*
- *Thamnophis marcianus*

I have kept the following species in the past:

- *Thamnophis radix haydeni*
- *Thamnophis radix brachystoma*
- *Thamnophis radix butleri*
- *Thamnophis sauritus proximus*

DISTRIBUTION

Thamnophis species occur on the American continent, from central Canada and throughout the U.S.A. and Mexico, as far as the Panama Canal, deep in Central America.

Some species or subspecies have very small areas of distribution area, for example *Thamnophis brachystoma*, which is only found in the border area between the states of Pennsylvania and New York; or *Thamnophis sirtalis tetrataenia* which occurs in a small isolated area near San Francisco. Other species have much wider distribution areas, such as *Thamnophis sauritus* which can be found in all eastern states of North America, or the much kept *Thamnophis sirtalis* which occurs all the way from Canada to the Mexican border. The wide distribution of these species seems to be related especially to the number of subspecies which are being distinguished within a species, because each of these subspecies seems to have their own distribution area and occur isolated from each other.

DESCRIPTION

Thamnophis species are not exceptionally large animals. Their length varies from 40 cm for the smaller species such as *Thamnophis butleri* and *Thamnophis brachystoma*, to about 130 cm for larger species such as *Thamnophis sirtalis parietalis*. Often, there is a big difference in length between the sexes, females tending to be generally larger and more robust in build.

Most *Thamnophis* species have three longitudinal stripes, one on each side of the body and one along the mid dorsum. There are species however, which have a vague or even no 'side' stripes at all. The colour and the occurrence of stripes vary enormously, even within a single subspecies, therefore a general colour description is not always possible. Even with officially recognized subspecies I sometimes have my doubts whether or not it is not just a colour variety. For precise identification, especially of a species that is seldom seen or kept, an identification table like the one published in Sweeney (1992) may offer a solution. I just take it that Ph.D's know what they are talking about.

Garter snakes are water-loving snakes. This implies that they are found near or in water bodies. This of course has something to do with their diet, so they are not true water snakes as people sometimes claim.

FOOD

In the wild their food consists mainly of fish, frogs, salamanders, and snails. This food is generally eaten alive because Garter snakes do not possess any poison and constricting their favoured prey is not easy. Any prey that is taken is slowly devoured with the help of sharp, backward pointing teeth.

I feed my animals mainly Smelt, which is sprinkled with a vitamin preparation (Carmix). Once in a while the larger females are offered a small mouse or pinky for a change. In this instance the mouse has to be rubbed with fish. I feed the young on finely chopped Smelt and worms that also have Carmix added to them. I used to use Gistocal instead of Carmix, but changed because the latter preparation is more suitable for reptiles. Gistocal has a large calcium content more suited for animals with larger bone structures. Obviously, snakes also need calcium but not in such large quantities.

The Smelt I give them is from fresh waters and it is important to feed the snakes on freshwater fishes otherwise there is a high risk that a shortage of vitamin B₁ will occur.

1981). This may result in a vitamin B₁ deficiency which may result in uncoordinated movements. The harmful effects of thiaminase can easily be corrected because this enzyme is rendered inactive by heat. It is sufficient to heat the fish for at least five minutes at a temperature of 80°C. Zwart (1981) gives a short list of fish species in which no thiaminase has been found; cod, herring, mackerel, haddock, whiting, stockfish, pike and trout. It is not necessary to cook these types of fish. I have been feeding my *Thamnophis* freshwater Smelt for years and I have never noticed any ill effects.

HOUSING

My animals have always been housed in a terrarium of 265x185x60 cm (lxwxh) overall, made of plasticised chipboard (sold in the UK as Contiboard or Contiplas - a formica-coated chipboard). The terrarium was once divided into several compartments varying in length 90 to 110 cm long and 40 to 50 cm high but since early 1995 I have adapted this and now the separate cages are between 70 and 110 cm long and about 30 cm high and 60 cm wide. After the reconstruction the terraria had to be moved to a smaller room, therefore I was forced to make the terraria lower in height to be able to provide the animals with as much floor space as possible. A lower height is not too bad at all, for over the years it had become clear that Garter snakes are no real climbers.



Foto 3: *Thamnophis sirtalis tetrataenia*. Vrouw, nakweek. Female, captive-bred.
Foto: Jan van het Meer.



Foto 1: *Thamnophis sirtalis similis*. Links een man, midden en rechts vrouwen.
Man on the left, females in the middle and on the right.
Foto: Jan van het Meer.



Foto 2: *Thamnophis sirtalis parientalis*. Twee vrouwen. Two females.
Foto: Jan van het Meer.

Lighting mainly consists of SL-lamps, the so-called 'energy saving lamps', while during the summer extra heat is provided by a spotlight of 15 or 35 Watt for a maximum of four hours per day. During 1994 I experimented with halogen lamps, which was mainly intended as additional heating to provide a 'hot-spot' of over 40°C. Only a few animals actually made use of this. The period of lighting varies from 12 hours in the summertime to only 6 hours in the winter. At night the temperatures fall to room level.

For years now I have used sawdust as a bottom substrate. Over the years I have tried several different substrate types, ranging from floorcloth to gravel and from sand to peat. Sawdust does not give rise to dust and it is very absorbent, which is a big advantage because Garter snakes have rather moist faeces due to their 'light' food. The terraria can be cleaned very easily in this way.

The rest of the furnishings consists of branches and stones and the entire set-up has been made more attractive with the help of artificial plants. Some good hiding places for the animals are also very important. A reasonably sized water bowl of about 15x30 cm should also be included.

BREEDING

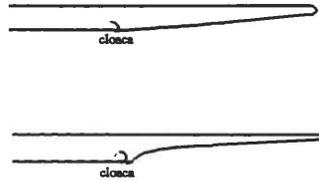
In the past I did nothing to stimulate breeding from *Thamnophis*. In particular, from the beginning I kept males and females together during both summer and winter, whereby the amount of heating and lighting remained the same throughout the year. A lamp then served for both heating and lighting. Afterwards I experimented for several years with the photoperiod, varying this from about 12 hours in the summer to only 4 hours in the winter. I then began to notice that the males became more sexually active from the moment the length of the photoperiod was increased. In more recent years I have been experimenting with the heating and lighting in a different way. During the summer I keep the males and females together with lighting for 12 hours, with extra heating by means of a light bulb for a maximum of 4 hours. From the beginning of winter the lighting was reduced to zero hours and the temperature to room temperature within a period of one month. In the spring this was reversed so that lighting and heating gradually returned to normal levels. I have to remark that during all those years the animals were kept in the living room for the entire period. In all of the methods described above I bred these snakes successfully almost every year and in my opinion this means that *Thamnophis* are not very sensitive to breeding stimuli.

With a few exceptions, all of the animals have been bred by me and are kept together in groups. These vary from four (2.2) to seven (2.5) animals. In most cases the animals within a group also differ in age - the number depends upon the species and on the size of the terrarium. There is no immediate reason for my keeping such numbers together in one terrarium, although I do want to minimise the risk of not having an adult specimen in reserve in case an animal suddenly dies.

Sexual dimorphism in Garter snakes is not easy to detect. The tail base directly behind the cloaca is usually thicker in males than in females (see sketch) and in most species the females are generally larger than the males. After a successful breeding attempt the young are born three to four months later. *Thamnophis* are ovoviviparous, which means the young are fully developed at birth. They are born within a membrane from which they emerge almost immediately. The great advantage of this, in my opinion, is that one does not have to incubate the eggs. The number of young in one litter can vary from 10 to 50, but this depends on the species and age of the parents.

THE YOUNG

Young Garter snakes are between 10 and 20 cm at birth. I feed all of my young on a mixture of fish, smelt and worms immediately after they are born. The food is cut into fine pieces and sprinkled with Carmix. Before cutting the worms into small pieces they are placed in a bowl of hot water, which has the advantage of killing most bacteria. Obviously the food is cut into small enough pieces for the young to eat easily. It is important to cut up food into pieces as small as possible to prevent the risk of fighting and unwanted 'cannibalism'. Cases of the young devouring one another - I am reluctant to call it cannibalism - happens accidentally when two animals begin to consume the same item of food, and when allowed to continue the larger specimen will devour the smaller specimen. This happens only now and again, and often one of the animals will break off in time. Unfortunately it has happened among my snakes and an animal has disappeared in this way, but in all those years I can count the incidents on one hand.



Sex differences in Thamnophis ssp.; upper: male, under: female.

CONCLUSION

Many people often regard *Thamnophis* as a snake for beginners, a definition with a negative sound to it, and which in my opinion is not justified. It is true that these animals are not difficult to keep, many species are even easy. Their lively and inquisitive behaviour, the great variety between the several different species and subspecies combined with the fact that they are easily induced to breed makes them a very interesting and attractive terrarium in my view.

If there are people who have any questions after reading this article please feel free to contact me.

REFERENCES

- Sweeney, R., 1992. Garter snakes. Their natural history and care in captivity. Blanford Publishers, London.
- Zwart, P., 1981. Thiaminase (anti-vitamine B₁) in de slangenvoeding. *Litteratura Serpentina*, Vol. 1 (5): 177-180.