

Keeping and breeding the Marginated Tortoise *Testudo marginata* in the UK.

The Marginated Tortoise has never been a particularly commonly kept tortoise in the UK. This has mainly been due to the lack of availability. Marginateds were never commonly imported in the past and have only recently become more available.

DESCRIPTION

The Marginated Tortoise is one of the largest of the Mediterranean tortoises only matched in weight and size by some of the larger sub species of Spur Thigh Tortoise *Testudo graeca whitei* found throughout Algeria. Marginated tortoises are very distinctive animals and are easily distinguished from other Mediterranean species. Adult Marginateds have a rather elongated carapace with extremely flared posterior marginal scutes. An extremely simple way to identify a marginated tortoise however is to turn one upside down and check out the plastron, as this species posses, three to four pairs of chocolate brown coloured triangular markings on each of the large scutes. The only other species this is seen in is the Egyptian tortoise *Testudo kienmanni*. Adult marginated tortoises are more often than not a uniform black to dark grey across the plastron, they have a cream coloured skin which becomes darker towards the head and legs, they typically weigh in at around 2-3kg's although larger individuals are regularly encountered.

Males and females are very similar in size although females generally weigh more, this is primarily due to the fact that males have a more pinched in sides, giving them a kind of peanut shape when viewed from above. Males also have a very concave plastron aiding them when mounting the female during mating. Females therefore have a rather flat plastron and an overall oval shape when viewed from above. Male marginated tortoises also have a much longer tail than the females.

Hatchlings and juveniles are very attractively marked sporting a cream to beige background colour with chocolate to black triangular markings across the carapace. They generally have little or no markings on the marginal scutes creating a pale cream coloured skirt around the tortoise. The skin of juveniles is very soft and again cream coloured although the head and front legs are somewhat darker.

DISTRIBUTION

The nominate species *Testudo marginata marginata* naturally occurs throughout Southern Greece, from the Peloponnese to Mount Olympus. They are also found in fragmented populations in Italy and Sardinia, however these populations are believed to have been introduced by ancient people. There is currently one recognised sub species *Testudo marginata weissingeri*, which is a smaller paler coloured tortoise found around the south western coast of the Peloponnese and the Sardinian race which is referred to as *Testudo marginata sarda* and is said to have a smoother edge to the marginal scutes.

ACCOMODATION

The marginated tortoise is a particularly hardy tortoise and with the correct care can live a very long time in captivity. This species will do well with access to a spacious outdoor pen throughout the summer months. They are extremely tolerant of our climate.

A colony of marginateds can be maintained in a large enclosure with access to an indoor green house approx 2m x 3m. this should be positioned in full sun with access to mercury vapour heat lamps for cooler days. The greenhouse should be well furnished to create an interesting environment. Provide several upturned logs for hiding and shade and place some hardy plants around to create areas of interest. There should be at least two areas created out of soft sand and soil positioned in full sun as nesting sites for the female inhabitants. Nest mounds should be regularly watered and should be at least as deep as the largest female is long. The indoor greenhouse enclosure should be open to a large paddock area at least 6 to 10 metres square. This paddock area again should be in full sun, although shade should always be provided. Try to create as variable a habitat as possible providing both rocky areas to climb and sunbath on and areas to graze. Each year the habitat should be seeded with edible native weeds and grasses which the inhabitants can graze on at will. It is vitally important to provide as interesting an environment as possible to keep these animals happy. Small shrubs which produce edible flowers such as hardy hibiscus and lavateria can be grown around the enclosure to provide shade and additional edible flowers throughout the summer.

Large chunks of raw chalk lumps should be placed throughout the enclosure to provide additional calcium when the tortoises need it..

Hatchlings and juveniles should be kept in indoor tortoise table type set up's. Use a large plastic open topped container 1m x 0.5m x 0.5m high, this should have a 6 – 8cm deep substrate comprised of one part soft sand to one part loam based compost. This container can be heated with a 100w mercury vapour lamp

creating a basking temp of around 30 – 35c, this will also provide uvb light to aid in healthy bone and shell development in the hatchlings. Air temps should remain around 18 – 24c, humidity should remain around the 40-50% mark for the developing juveniles and it is very important to provide damp areas within the habitat for the youngsters to burrow into, creating a protective micro climate which prevents dehydration. Create an interesting environment with up turned logs and flat surfaces to feed off and always provide a shallow water bowl for soaking and drinking, this should be refreshed at least daily. Youngsters should be allowed as much access as possible to out doors weather permitting, there is no real substitute for natural sunlight and natural grazing opportunities. However make sure they are well protected from predators, such as rats, dogs and large birds.

FEEDING

Margined tortoises are strictly herbivorous and require a high fibre, high calcium, low protein, low sugar diet to remain in good health. Predominantly their diet should be made up of native edible weeds and flowers with access to grasses for fibre. These tortoises require lots of fibre in their diet and are the most likely of the Testudo species to regularly graze on fresh grass within a lawn. Dandelion, plantain, clover, buttercup, mallow, hawkbits, goose grass, dead nettle and borage can make up the bulk of their diet. This should be collected from pesticide free areas, washed and mixed with a good quality calcium D3 supplement such as vet ark nutrobal. I would recommend feeding adults three to four times per week allowing them to graze their own food on the other days. Some salad greens such as lettuce and watercress can also be offered, but this should remain in moderation. Flowers can be offered during their seasons which will be relished by these tortoises. Calcium should be in regular supply as these animals require a lot to remain healthy. Water should always be available in large shallow trays to allow soaking, marginateds are great drinkers and love to soak in warm water during hot days. Refresh water bowls at least daily.

Fruit should never be fed to this species as it causes digestive upset and may contribute intestinal worms and flagellates. Never feed cat or dog food to this species, excessive protein diets will severely damage the kidney's and will cause an over growth of the shell which will be fatal.

Juveniles should be fed a similar diet to the adults only feed as much as can be eaten within one hour per day. Always provide a good calcium vit D3 supplement with each meal. Dry leaves and chopped hay should always be available to provide extra fibre.

BREEDING

Margined tortoises are remarkably simple to breed in captivity and given the right conditions they can also be very productive.

Male marginates are quite sexually aggressive animals and often have to be removed from the females from time to time to give the females a break. Mating behaviour is therefore regularly seen throughout the year, although especially so directly after hibernation. Mating usually begins with the male following the female around before he begins to ram the back of her carapace with his gular scutes. He may also bite at her back legs in an attempt to slow her down. If she accepts his advances and stands still he will mount her. During mating he will rock her from side to side and emit a high pitched squeaking sound.

Females usually start laying eggs from late April through to late June, these are quite productive tortoises and females regularly lay three clutches per year. Average clutches are around eight to ten, although larger females can lay up to fifteen in a clutch. Females lay their eggs in the usual testudo manor digging out a jug shaped nest with their back legs to deposit the eggs into. They can be particularly fussy about where they lay their eggs and also can be very secretive nesters, covering their tracks very well. Keepers should watch their charges very closely during the egg laying season, to prevent missing nests and losing eggs. Margined eggs are pretty small in size compared to other Testudo species and typically measure between 28-30mm long.

The eggs should be placed in an incubator at 30c with a humidity of around 40-50%, incubation usually takes between 65 and 70 days. Hatching can be a slow process and may take over twenty four hours or so from when the egg starts to pip, do not attempt to help the youngsters out simply raise the humidity a touch if you are concerned. Hatchlings are small measuring around 25-30mm, they should be placed in clean containers on a deep layer of damp tissue paper kept within the incubator for 24hrs or so to absorb their yolk sac and straighten out, after which they can be placed within the juvenile quarters.

HIBERNATION