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THE LACERTID LIZARDS (PART TWO)

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Part one in this series of articles gave a general introduction to the Lacertid family with hints on their general requirements in captivity, housing, heating & lighting etc. Continuing with rather generalised comments which apply more or less to the entire family, part two will discuss feeding, hibernation and breeding. Variations to these general remarks will be elaborated on under the species headings.

FEEDING

The ideal way of feeding Lacertids would be to turn them out onto a stretch of rough ground each morning and recapture them again in the early evening when they have eaten their fill of the rich and varied pickings nature supplies. Coming back to reality the best one can hope to do (disregarding outdoor enclosures which will be covered later) is to offer as natural and varied a diet as one can. As most of us do not enjoy the luxury of having an inexhaustible supply of wild prey items on our doorsteps this usually means breeding or purchasing 'stock' prey items such as crickets, locusts and mealworms and organising food collecting sorties as often as possible.

Information on breeding the above mentioned food items is readily available (Vogt & Wermuth, 1972; Mattison, 1982) and I can offer little additional information to these sources. However, one or two tips may be useful: Angling supplies shops have regular stocks of maggots, go along with a suitable container and for a few pence you can purchase a greater number than you are likely to require. Divide these up among further containers (the containers used by fishermen to store maggots are ideal as they are aerated and easily cleaned), and sprinkle a little multi-vitamin preparation in each. Keep these at around room temperature and about two weeks later they will have transformed to adult flies, you will have to check daily to find out when the first flies emerge from their pupal cases. At this time you simply shake the containers vigorously thus giving the flies a light dusting of vitamin powder and also temporarily dazing them which makes them less likely to escape capture by the lizards. The rest is simple, just tip the containers into the lizards' feeding dishes. The lizards can capture the flies at their leisure and any debris is easily removed from the dishes later.

As for wild food, the use of a sweep-net in a suitable unsprayed area will yield a large and varied supplement to the stock food items. Additionally, grasshoppers can be hunted - this is more productive than one might think particularly in the right sort of location. My own favourite place is an old overgrown quarry where, on a good day, I can capture in excess of 300 'hoppers within a couple of hours. The trick is to thrash about until the grasshoppers are forced into the open then simply (or not so simply depending on your eyesight) keep your eyes on a single specimen ignoring all others, it is invariably found that after being forced to make 5 or 6 jumps to evade capture, the grasshopper is exhausted and easily picked up (assuming your eyes have done their job and you've not lost him!) For ecological reasons don't hunt exhaustively in one small area.

Many island-dwelling Lacertid species as well as some of the larger continental varieties will accept vegetable food, indeed many such species rely on this as their staple diet in the wild. Although they tend to 'lose their taste' for such food in captivity when given an abundance of animal matter, many of my lizards consume large amounts of banana, grape, pear, pineapple, tomato, lettuce and soft peas. I usually offer such foods to those that partake on a weekly basis, giving live-food at other times, usually 3 times per week. Some Lacertids are very obliging when it comes to easy feeding, the very large canary-island lacertid *Gallotia simonyi stehlini* for instance, will eat almost any organic matter presented to it; my large male eats mice and is also fond of fish, cooked meats and other lizards! Whether a lizard will accept non-living animal food such as dog meat seems to be an individualistic trait. Some individuals of a species taking it readily, others not in the least interested. Again it is usually the insular and larger continentals that will oblige but I suggest trying any lacertids on such a food as it seems to be a very useful diet item. I offer it alternatively with live food.

How much to feed exactly is impossible to say as it depends on so many variables (temperature, activity patterns etc.) but I always feed every other day and remove anything uneaten after 2 or 3 hours. This is because there is some indication that herptiles that are constantly surrounded by food items seem to lose the feeding 'trigger' and eventually go off their food altogether.

Water should always be available and on every other water change I add a couple of drops of ABIDEC multivitamin preparation. Don't give it ad-lib as some lizards may be put off their drinking water owing to the taste.

'Vionate' is quite a well known vitamin powder which contains all the usual vitamins and added calcium, I sprinkle it on live foods fortnightly and also add liberal amounts to my live-food cultures.

One final point, in nature the amount of energy a lizard expends on capturing its prey is directly related to the amount of available energy within the prey thus a balance is struck and a healthy lizard results. In the captive state some lizards have only to reach out and snap up their food and become overweight all too easily, so keep an eye on their general shape and cut down on food if they seem obese.

HIBERNATION

The best advice I can give on hibernation is to give two different methods both of which I have used with great success.

The first is suitable if your collection is housed in a room with background heating. As winter draws near cage lights are switched off progressively earlier until the 'day length' is shortened to around 6 hours. This can be done over about 5 weeks. Other cage lights in view of the lizards being conditioned can have an effect on them so use black cloths to isolate their vivaria at 'lights out time'.

After this period of pre-conditioning the lizards are removed from the warm room, either in their own vivaria or in a special hibernation tank. They should be given a few centimetres of lightly dampened sand covered by pieces of dry bark or flat rocks, this in turn is covered with a layer of dampened leaves. The tank is then placed in a cardboard box which is then packed with newspaper and removed to a loft or outbuilding which is not heated. The idea of packing the box well is to insulate against sudden excesses of temperature change rather than 'keeping them warm'. An ideal hibernation temperature for most Lacertids is within the range of 2 to 6°C (taken outside the box), if the temperature rises above 8°C the lizards begin to wander around semi-consciously thus wasting food reserves. In my experience this is the killer rather than low temperatures which are usually attributed to the deaths of hibernating herptiles. As for the low end of the scale my lacertids were being hibernated as above in a loft during the severe winter of 1981/82 when locally the lowest temperatures ever recorded registered at -29°C! The temperature in the loft was no more than 10°C above those outside and yet with their minimal insulation as described only 2 lizards from a total of more than 30 were lost, it is possible that their deaths were due to other causes: one of the lizards was 5 years old at least and the other was doubtfully fit for hibernation after recovering from an attack by another lizard.

The other method I have used, with lizards housed in an unheated room, is similar to the above but the heat and light sources of the vivaria are gradually changed throughout the year (I use local day-lengths rather than attempting a simulation of all the different photoperiods relative to the individual species natural ranges). Again the day lengths eventually decrease to 6 hours before being closed off altogether.

As for the length of hibernation, one can give a short period if the only aim is to facilitate breeding and one wants the lizards back in circulation as soon as possible, say 4 or 5 weeks. Otherwise if the aim is to get them out of the way while cage cleaning/alterations etc are done and there is no rush to start running up an expensive winter heating bill, try up to 14 weeks (as I do). Above and below these figures I have no experience but would say there's still some leeway.

When it is wished to bring the lizards out of hibernation my own method is simply to return them to their normal vivaria and immediately start with heat and light on an increasing cycle.

A few DONT'S about hibernation.

DON'T give food in the week prior to hibernating or it may remain in the digestive system and cause trouble.

DON'T attempt to hibernate those species which come from areas of warm winter temps. They are probably incapable of hibernating successfully. Keep them heated through the winter.

DON'T be tempted to keep disturbing the lizards to check them, once each 4 weeks should do.

DON'T hibernate sick, injured or underfed specimens, they will almost certainly die.

BREEDING

These comments are the most generalised of all those made because of the great variation of breeding behaviour in lacertid species.

First and foremost it is necessary to have healthy, well-fed specimens before any attempts are made at breeding. This means isolating any animals not meeting the above criteria, it is at best a waste of time spending a great deal of tender loving care on the incubation of reptile eggs, employing super-sterile microtemperature controlled techniques when the eggs are doomed from the outset owing to deficiencies in the adults. Its been said before and I'll repeat again, good healthy eggs from good healthy adults will hatch under an enormous range of conditions, its no use blaming every 'dead in shell' youngster on incubation techniques. This is particularly true of lacertid eggs, the only thing I always avoid is the rather high temperatures at which some hobbyists incubate such eggs.

Mating occurs in the early part of the year, generally JAN/FEB in the Canary Islands, Madeira and North African species which do not hibernate and one or two months later in the hibernating species depending to some extent on when you bring them out of hibernation. South African species would normally breed in our autumn and winter, I have no personal experience in breeding these but a colleague tells me it is possible to adjust to breeding in our spring over a period of about twelve months, though there is some doubt as to the long term success of such actions: a correspondent, Mr George

Webster of Benfleet once told me that a group of South African skinks having successfully bred for a number of generations seemed to lose the ability to do so, as if they had become biologically confused. (i.e. They were not in synchro with the seasons they were subjected to). Any information on breeding the Southern African lacertids would be greatly appreciated by the author for this reason. Breeding healthy lacertids is very straightforward, it's more a matter of letting them get on with it. It's not so much what you do as what you don't do, and what you don't do is to cause undue disturbance at mating time, try to leave cage cleaning/rearranging etc. to a more suitable time and it's not usually a good idea to introduce new animals into existing groups at this time, you could upset courtship rituals one way or another.

Within a few weeks of mating, successfully mated females will usually be obviously so, though some large species that lay just a couple of eggs may conceal the fact so well that the first you know of it is when you find the eggs! For this reason I suggest putting a couple of handfulls of damp sand in all vivaria at mating time and keeping it very slightly damp, something I now always do after my heartbreaking discovery of 3 dried up eggs in the vivarium of my favourite lacertid whom I had no idea was gravid.

Females that have just laid are unmistakable (in most species), the loose folds of skin down either side of the body make them look as if they've been half-starved. Other clues to look for are signs of digging in the sand and the fact that the female is constantly in hiding. Occasionally you will come across a female in the process of laying, it's advisable to stay well clear unless you are sure she is not aware of your presence. I have observed egg laying on two occasions, both females were particularly nervy so I resisted the temptation to grab a few photographs. The one thing I have noticed about recently laid eggs is that they are even more delicate than usual, I was so sure they would be damaged if I moved them that I left them for a few hours and returned to find they were much stronger and could then be transferred to a container for incubation. To do this I carefully scrape the sand from around the clutch and lift them individually with a tiny spoon (it is extremely difficult to pick up small lacertid eggs by hand without damaging them), any eggs that are stuck together are left as such.

Incubation, as I have said is purely a matter of choice. I used to use paper towels rung out in antiseptic solution, these were made into a 'nest' and the eggs having been carefully cleaned were placed on these in a plastic tub housed in an incubator set at X degrees. The eggs used to hatch successfully under such conditions. I now casually bury them under a couple of cms of sand (from the garden), in a margarine tub and place them in a vivarium containing a few small lacertids. They still hatch! The temperature variations my

lizards eggs are subjected to range from 10°C to 28°C approx. It is very difficult to give advice on the 'correct' humidity, for the sand method however I usually wet a few handfulls in a bucket then take a handfull at a time, squeeze as much water out as possible and then put it into the tub. A shallow depression is made in the centre of the levelled out sand and the eggs are placed in this then covered lightly with the surrounding sand. The lid of the tub is replaced (personally I don't make vents in the lid but the eggs are regularly inspected so air exchange does take place). Under these conditions it is not necessary to add extra water during incubation, if you use other methods of incubation then you will of course keep an eye on the eggs and add water to the substrate if necessary.

Incubation time is dependant on temperature and of course the species concerned, thus it can be anything from 4 to 14 weeks, so keep an eye on the eggs. Just prior to hatching (within hours) the eggs usually collapse, this may be a result of the young lizard perforating the shell with its egg tooth - I'm not sure. However, when this occurs the tubs are placed in a 'nursery vivarium' minus their lids. These nurseries are smaller scale versions of the adults' vivaria but with a higher humidity level as the young seem to become quickly dehydrated in very dry air. This extra humidity can be supplied by simply putting a tiny flowerpot driptray of water in the vivarium, but part fill it with small pebbles so if a youngster gets in he won't drown. Rearing will be discussed in part three along with minor ailments and the first of a few notes on individual species.

REFERENCES

- Mattison, C. (1982) The Care of Reptiles and Amphibians in Captivity. Blandford.
 Vogt, D. & Wermuth, H. (1972) The Complete Aquarium. Thomas and Hudson.

Additionally, numerous articles have appeared in the Herptile on incubation techniques.