

NOTES ON SPECIES

Common Gecko (*Woodworthia maculata*)

These geckos are widespread throughout New Zealand and have traditionally been considered a good species for beginners to develop their keeping skills. This view needs revision in light of several factors. Firstly, the species is strictly nocturnal, and as a result there is little daytime activity for keepers to observe. This can be a disappointment to younger keepers, who can quickly lose interest in feeding and caring for animals that seem to consider hiding in dark corners their sole purpose in life. Secondly, recent research indicates that rather than being a single species, these geckos are in fact a species complex, a group of closely related but distinct species separated from each other geographically and genetically. This explains the difficulties some people have experienced in breeding *Woodworthia maculata*, when their founder stock has not all originated from the same locality. Formal description of the species within the complex is awaited.

Like most other species, the males can be intolerant of each other and some serious fights can occur if more than one is housed in a cage. But with Common Geckos it is more complicated than this, and some individual specimens, both males and females, can also develop an intolerance to geckos of other species if housed with them. Sometimes a particular animal will live in apparent harmony with other species for a considerable time, then launch an attack for no apparent reason. House this species separately from others if safety is of prime concern. If caging shortages require keeping these geckos with other species, consider it a short term measure, and check the other occupants' toes for damage at regular intervals.



Forest Gecko (*Mokopirirakau granulatus*)

Forest Geckos are probably the most commonly kept species. There are two main reasons for this; the species was unprotected until 1996 and was therefore able to be held without a permit, and it is also a very beautiful and interesting species in its own right. Forest Geckos are not strictly nocturnal, which means they are easily observed in captivity, and will often feed in the day time. They seem to be most active from late afternoon through the long summer evenings, and frequently take advantage of the morning sun for basking.

Both in behaviour and body structure, they appear closer to *Naultinus* than to some of the other genera. The closeness of this relationship is borne out by the fact that there is a documented instance of intergeneric hybrids being produced in captivity.



Such crossbreeding is however only likely in extreme circumstances, and the keeping of colonies of this species with Green Tree Geckos or Northland Green Geckos has been widely practiced by many keepers over the years without any hybridisation problems. Forest Geckos can be selectively bred for colour, with the most sought after specimens having an abundance of golden yellow markings.

Forest Geckos are very hardy in captivity and appear to suffer from few ailments. They will thrive on a diet of flies, but it's kinder to provide variety in the form of moths, mealworms (both larvae and adult beetles), small cicadas, spiders, and whatever else is available. An adult Forest Gecko can tackle quite large prey; I have seen full grown katydids taken and swallowed head-first with no difficulty whatsoever. Honey and water, and soft fruit such as banana is keenly sought. One can overfeed this species, resulting in their tails becoming very bulbous at the base due to stored fat deposits. Overfed animals may also develop fat deposits around the neck and along the sides of the body. With particularly obese specimens, breeding may become sporadic rather than a regular annual event.

This species mates either in autumn (April/May) or spring (September/October). The young are born over a fairly wide period from January to April. They compete quite well with the young of other species, and quite acceptable rearing rates can be achieved by keeping them in cages shared by the young of other species of similar size.

Pacific Gecko (*Dactylocnemis pacificus*)

The Pacific gecko is a fast-moving, lively species which is strictly nocturnal in habit, and therefore rarely seen during the day even in captivity. Care is needed in handling them because their somewhat nervous disposition makes them likely to shed their tails at the slightest provocation.

This species has rarely been seen basking in the wild, but in captivity appreciates a series of boards stacked with spacers in between, to act as secure hiding places. If such a stack is placed so that the sun shines into the gaps between the boards for a short distance, these geckos will often congregate in the sunny areas where they can withdraw rapidly if disturbed. This suggests that the use of protected basking sites may be important to the species in the wild. By increasing the amount of useable surface area, stacked boards can allow the keeper to maintain larger numbers of this species in a cage of a given size. If this method is employed, it is important to provide good ventilation, as rapid rises in temperature can occur in the narrow spaces between the boards when the sun is shining on them. Pacific geckos can die of heat stress if the boards are placed against a solid cage wall which prevents free movement of both air and geckos.

Pacific geckos are easily maintained in captivity, and appear to have no problem adapting to a diet consisting largely of flies, although moths are appreciated, as are a variety of small invertebrates such as spiders and caterpillars. Mealworms can be used to supplement the diet when other food items are hard to come by. Wild colonies of this species on the Poor Knights islands have been known to eat regurgitated fish spilled by seabirds feeding their young, but attempts to entice mine to eat fish-based cat food have to date failed. As my stock originally came from inland areas of Great Barrier Island remote from any seabird activity, this is probably the reason!



Although these geckos will climb in vegetation to forage, they spend a lot more time on the ground than the diurnal *Naultinus* species. It is therefore a little surprising that in captivity they will take sweetened liquids in some quantity if allowed to do so. At one stage I was supplying mine with blackcurrant juice, which they enjoyed to the extent that their chins were stained pink. This did not seem to have any harmful effect on their health but I

have now discontinued the practice, on the dual grounds of moderation and economy. Honey and water, or raw sugar and water, are reasonable substitutes.

Duvaucel's Gecko (*Hoplodactylus duvaucelii*)

Duvaucel's Geckos are sought after by herpetoculturists because of their impressive size, with a snout to vent length of up to 160 mm, and weighing up to 120 g. Care is much the same as for smaller species, but they do appreciate larger prey items. Large insects like wetas, katydids, crickets, locusts and cicadas are all readily taken. The geckos seem to react to sound or perhaps vibrations in captivity, as these large-bodied insects jumping or flying against the mesh of the cage will almost always bring the geckos out even in the daytime, unless they are just not hungry. In the absence of such stimulus, foraging occurs mainly at night. Small snails and earthworms may be taken if there is little else available. Moths, even the smaller varieties, seem more readily taken than flies, the larger wing area seemingly providing a greater visual cue to the feeding reflex. Duvaucel's Geckos will frequently bask in the sun during the day but do not seem to become accustomed to the keeper's approach to the extent some other species do, and will usually scuttle for cover.

For such a large species, the total quantity of food required is surprisingly small, with the geckos utilising their food intake very efficiently. I sometimes supply my geckos with commercially bred locusts when wild-caught food is difficult to come by, and a single feed, allowing about three large locusts per adult gecko, will bring about a distinctly visible increase in condition. Duvaucel's Geckos kept on minimal rations will still succeed in building up substantial fat deposits in the base of their tails, provided that some large prey items are available from time to time. These geckos will take small quantities of sweetened liquid such as honey and water, and will lick soft fruits like banana, kiwifruit or feijoa.

This species is best kept in pairs, or small groups of a male and up to three females. More than one male in a cage is asking for trouble, and established groups often resent the introduction of another female as well. The species can be reluctant to breed in less than ideal conditions, but once breeding is achieved, it is likely to become the normal routine for many years if the group is left alone, without major changes to cage location or furnishing.

The young are no problem to rear, and a very high survival rate can be expected. They should not be housed with the young of any other species, as they are so much larger. As a stopgap measure, newly born *H.duvaucelii* can safely be housed with adult *Naultinus* until such time as a separate, permanent cage can be provided.



Goldstripe Gecko (*Woodworthia chrysosiretica*)



The Goldstripe gecko is quite a small species, with a snout to vent length of up to 70 mm. Its range in the wild is restricted to the Taranaki coastal area from Waitara to Patea, and on Mana Island near Wellington. It is something of a mystery why this gecko has such a restricted range, as within this range it is found as commonly on farm land and in gardens as in its more natural habitat of forest, scrub and coastal vegetation. Flax and other plants which form dense clumps are often favoured. Climatic factors

do not seem to be a cause of range restriction, as captive breeding of these geckos in outdoor cages has been achieved in many areas around New Zealand.

These geckos are relatively fast moving, and have gained a reputation among breeders for being accomplished escape artists. They can jump considerable distances and will take full advantage of a carelessly opened cage door. The newborn young in particular are very small, fast, and able to squeeze through quite tiny gaps around cage doors or between the wooden frame and exterior cladding of some cages, especially if the frame warps on exposure to the weather. Aluminium framed cages are more suitable for this species. Be sure to allow plenty of mesh and airflow however, as this species seems particularly susceptible to heat stress.

The active and somewhat nervous disposition of goldstripe geckos means that clumsy handling often results in tail loss, which can also occur as a result of shock caused by fighting, or the cage being knocked over or struck. If newborn young are picked up with the fingers, the loss of a tail here and there is virtually inevitable. The only way to deal with this species is to keep handling to a minimum, and rejoice in any full-tailed specimens you may be able to maintain. Don't worry too much about the inevitable accidents, which invariably occur when you least expect them. With goldstripe geckos, tail loss is a frequent fact of life.

Despite these drawbacks the goldstripe gecko is a good candidate for captive breeding. In common with most New Zealand geckos, it is usual to keep only one male per cage to avoid fighting, although sometimes males raised together will be more tolerant of each other than is normal for most species. If it is decided to have more than one male in a cage, however, a close watch should be kept in case aggression occurs. The ease with which good numbers can be consistently bred should ensure the survival of the species in captivity despite its endangered status in the wild. It is feasible to maintain Goldstripe Geckos on a basic diet of flies, but they do prefer a mixed diet with a fair proportion of moths.

They appreciate the addition of fresh leaf litter to their cage at regular intervals, and will actively forage amongst it. The young grow more rapidly on a varied diet consisting of a high percentage of leaf litter invertebrates, than on the traditional fruit fly diet.

Green Tree Gecko (*Naultinus elegans*)

The green tree gecko (also known as the common green gecko), is a moderate sized species with a snout to vent length of up to 95 mm, although specimens from some areas may even when fully adult be considerably smaller.

This species is one of the most frequently kept geckos in New Zealand, second only to forest geckos. There are several reasons for this, among them its arboreal and diurnal lifestyle which renders it particularly visible and interesting to observe in captivity, and its variety of colour and markings. As well as ranging from plain green (in a number of different shades) to heavily marked with yellow, white, or pale green patches, spots, or lines, bright yellow specimens also occur. Pale cream or almost-white specimens have been bred in captivity. Interestingly, although almost devoid of colour externally, these animals retain the deep blue mouth and tongue which is a useful identifying feature of this species.

It is this variability which makes the green tree gecko an attractive subject for study and captive breeding. To date most herpetoculturists have satisfied themselves with perfecting husbandry techniques and producing quality offspring for newcomers to the hobby, but there is much room for experimentation with this species in breeding for specific colour varieties and patterns.

The young of green tree geckos are probably the most delicate of the diurnal geckos, but it is quite possible to rear a good percentage of offspring. To achieve this it is advisable to house the young on their own, as they do not compete well with the young of other diurnal species such as Northland or Nelson greens. Some keepers have reared an acceptable percentage of babies by leaving them with the adults provided no other species are present, the cages are heavily planted and live food of various sizes is constantly available. A small percentage of baby green tree geckos



seem not to thrive from the outset, but it is possible to ensure the survival of many of these by giving them special treatment such as the provision of small rearing cages to concentrate the food supply, the selection of special warm sites for the cages, and the provision of dietary supplements.

Specimens requiring this treatment however often never attain the size or vigour of their stronger siblings, and I now take the view that it is best to withhold special treatment and let nature take its course. This may seem unkind, but it does ensure a measure of "survival of the fittest". It can be argued that such a process selects animals suited to survival in captivity rather than in the wild, but as most captive stock is unlikely to be used for reintroduction to the wild, this does not seem to me to be of great importance. At least it ensures that sound stock is available to future generations of gecko keepers. It is possible to keep mixed colonies of this species

containing more than one male, particularly if the animals are raised from babies together, the cage is of sufficient size, and fairly heavily planted. The males will still fight during the spring, and some injuries can be expected, mainly limited to skin abrasion on the head, neck and limbs. With such a set-up, care needs to be taken to ensure that if serious or prolonged fighting does



occur, any animal being unduly harassed can be removed before it is too late. Attempts to put strange males together in the presence of females during the mating season will quite often lead to monumental fights, often to the death. Don't try it. Sometimes, spare males can be housed together over breeding season in a cage without females, preferably in a situation removed from the immediate proximity of your breeding colony. Try this with caution - some minor skirmishes will invariably happen, and serious fights *can* still occur.

The young normally take three years to reach breeding age. An adequate and continuous food supply is vital in ensuring that the young of this species, born in winter, can feed whenever temperatures are warm enough. It is likely that the babies, with a greater surface area/mass ratio than adults, can respond more quickly to rising temperatures than the larger adults. Babies can often be seen searching for food on sunny winter days, while the adults simply bask. Vinegar flies (*Drosophila*) are widely used for feeding the babies, and have proved quite adequate nutritionally. Don't wait until the babies appear before thinking about the food supply; get your vinegar fly colonies established at least a few weeks before babies are expected.

Northland Green Gecko (*Naultinus grayii*)

Northland green geckos are of similar length to green tree geckos, but are more heavily built. They may be plain green or marked with yellow or yellow/white blotches on the back and limbs. Despite being restricted in range in the wild to Northland north of Whangaroa, this species does well in captivity, having been successfully bred in most areas, including the South Island. The mouth lining is blue, but the tongue is orange-red, a useful identifying feature.

Captive care requirements are much the same as for green tree gGeckos, but the two species should not be housed together as the latter, being smaller and more delicate, may suffer as a consequence. Hybridisation may also occur. In my experience however, it is permissible for this species to be housed with various species of other genera if caging is at a premium. My Northland green geckos have at various times shared cages with forest geckos, common geckos, and Pacific geckos, with no noticeable harmful effects and without much observable interaction of any kind, apart from the obvious competition for food.

Mating occurs in late winter or spring (August/September) with the young being born over the period March/June. Most births of captive animals in the Auckland area occur in April or May. Being born earlier than Auckland Green Geckos seems to give the young of this species a head start, and enable them to become proficient at feeding before the cold weather sets in. For this reason keeping the young of the two species together is not a good idea, as the larger and more developed Northland babies tend to get the lion's share of the available food, and also monopolise the best basking spots. Over their natural range, Northland green geckos experience a mild winter, so food may well be available throughout.

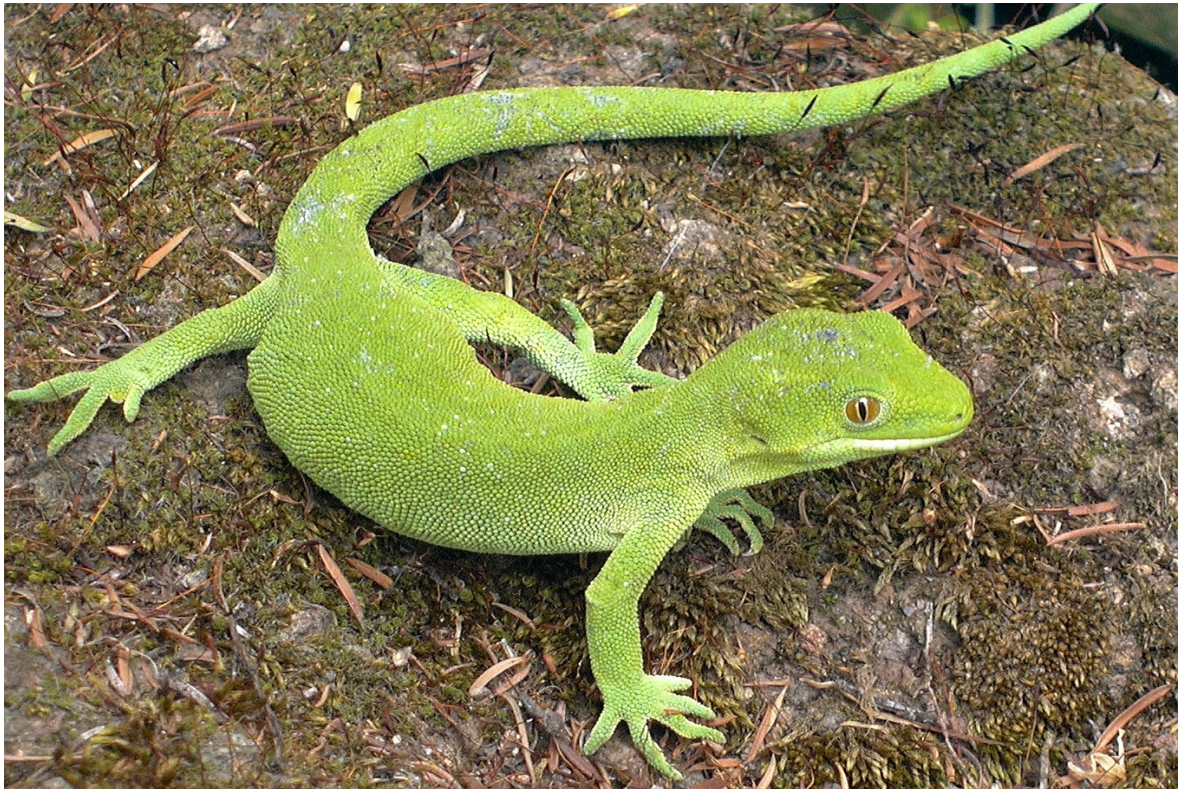
Because it does so well in captivity, this species has the potential to become the most commonly kept green gecko in the future. Although the range of colours and markings is not as extensive as that of *Naultinus elegans*, there is much that could be done here with careful selective breeding.



Wellington Green Gecko (*Naultinus punctatus*)

The Wellington green gecko (also known as the barking gecko) is very similar to the green tree gecko, and was until recent years classed as a subspecies of *Naultinus elegans*. It is very similar in overall appearance, but does not have such a wide variation of colour patterns as that species.

It is most easily distinguished from *Naultinus elegans* by its somewhat heavier build, and the underside of the feet are often yellowish rather than grey/green. The requirements for *Naultinus elegans* as outlined above can be applied equally to this species.



Nelson Green Gecko (*Naultinus stellatus*)

Most of the South Island gecko species have been poorly represented in captive collections, and many of them appear not to breed very well in areas where the winters are mild. One exception is the Nelson Green Gecko (also known as the Starred Gecko), which fares at least as well as the green tree gecko in captivity.

The colour and pattern is extremely variable in this species. Dorsal coloration is usually green with two broad stripes, or rows of green or yellowish markings running lengthwise along the edges. These markings may be green, yellowish or white and may be outlined in a darker shade. Some individuals are brown with dark green markings. The tongue is orange, turning red when licking. The young are mostly dark green with intense white markings, but assume adult coloration within the first two years.

Although the requirements of this species in captivity are virtually identical to the green tree Gecko, separate caging is recommended because these species hybridise easily. The young of these species should also be kept separate, as green tree gecko babies don't seem to compete well with any of the other green geckos.

