# NOTES ON A FIELD TRIP TO GENOA IN NORTH-EAST VICTORIA (AUSTRALIA)

## With particular emphasis on the Green and Golden Bell Frog *(Litoria aurea)*

Part Two
Raymond T.Hoser

White-lipped snake
*Drysdalia coronoides.*

Green and golden bell frog *Litoria aurea* seem to be most common in areas such as disturbed grazing country and associated dams. Preferred dams have dense vegetation at the edges, even if this consists only of grasses. The area adjacent to Gypsy Point Road, where these frogs were most common was cleared grazing country (with few trees), and a large number of grazing dairy cows. The fact that the dams and adjacent swamps were full of cow droppings seemed of no consequence to the *L. aurea* and may in fact be a preferred habitat. This area was a heavily grazed, undulating river flood plain, of the Genoa River. Similar flood plains (with swamps and permenant dams) south-west of Genoa along the main Princes Highway towards Orbost also had huge numbers of *L. aurea*.

Similar, highly disturbed habitat has been noted as preferred habitat in areas south of Genoa, where a comparison of numbers of frogs between areas was made. On January 18th 1996, by day, I checked a number of swamps, creeks and other habitats for *L. aurea* between Genoa and Orbost (to the south-west) and noticed a consistent preference for heavily grazed river flat swamps, which were among the most disturbed of habitats. These areas while heavily grazed, retained a huge amount of riparian vegetation, rushes and other potential cover on the periphery of dams and swamps. As a rule, *L. aurea* did not occur around creeks and other fast flowing bodies of water or more pristine habitats. However specific pristine swamps inhabited by the species (because we have caught them there at night) were investigated and few were seen, but this was probably due in part to the difficulty in locating frogs due to the extremely dense

vegetation. The are sometimes only detected by the sound of them splashing into the water while disturbed basking on emergent vegetation or logs.

The tolerance and/or preference of *Litoria aurea* for disturbed and sometimes degraded habitat has been noted by a number of authors including; Greer and Byrne 1995, White 1995, Wright 1996 and is not contradicted by our own observations.

Numbers and size classes of *Litoria aurea* seen in the Genoa area undergo a strong seasonal shift in terms of both numbers physically present and those physically observed.

In late Spring, (October/November) adult frogs breed and spawn. In wet weather they migrate between water bodies and are routinely seen crossing roads at this time. Both sexes appear to wander widely in wet weather as indicated by what we caught crossing roads.

Tadpoles in 1995/6 seemed to take about 8-10 weeks to mature, based on observations of spawning by Logan and the myself in October/November 1995 and metamorphosing tadpoles observed by me in late 1995 and early 1996. Over 90% of tadpoles seemed to mature within a three week period at the end of December and early January in 1996.

Young frogs were seen in December 1995 and January 1996 immediately adjacent to known spawning sites amongst vegetation. These frogs were diurnally active, appearing to be constantly moving. Even when the observer was standing still, the young frogs seemed to be constantly moving. The weather at the time was overcast with some rain and air temp. averaging about 20° C.

On 27th December 1995, I noted large numbers of pre-metamorphosing *L. aurea* tadpoles in the swamps and dams near the Gypsy Point Road as well as other known breeding sites. Most of these tadpoles were fully mature and many had hind legs. About 10-20% were metamorphosed in that they had front and back legs and/or were even further developed, with an estimated 1% of the total number visible seen as small frogs in or adjacent to water.

Three weeks later, there were virtually no tadpoles to be seen in any swamps (although a small number could be found with intensive searching, with a net). The species of tadpoles was mainly *L. aurea* although about one in ten were of *L. peronii*. No doubt the species composition would vary from locality to locality. (A tanin stained dam on heavily wooded elevated ground some 20 km south-west of Genoa yielded large numbers of large *L. dumerilii* tadpoles on 27th December 1995. They were the only species in that dam and most were in the early stages of metamorphosis).

In late January 1996, the small frogs (*L. aurea*) seen adjacent to the swamps and dams were an estimated average of three times the weight they had been at time of metamorphosing. This was regarded by myself as a phenomenal growth rate, but not surprising when one considered the huge number of small insects in the area, which presumably formed the diet of these froglets.

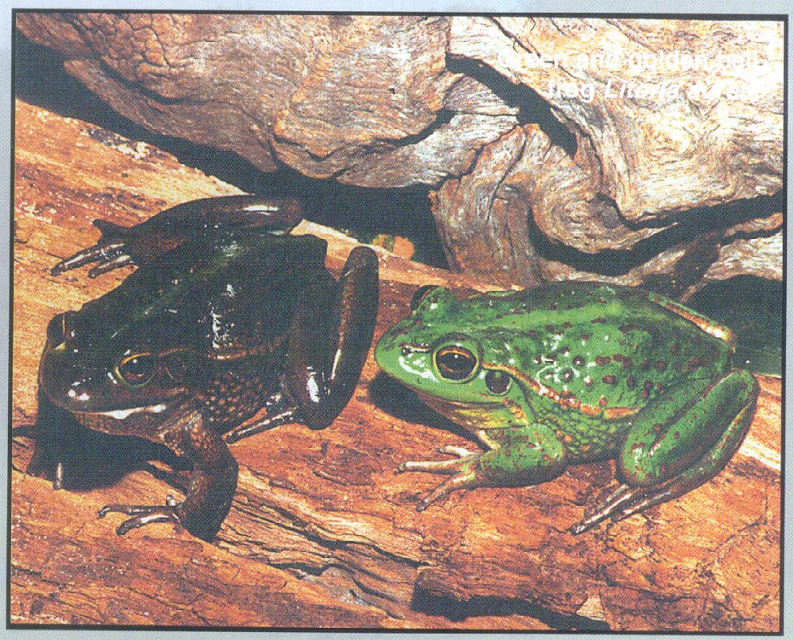
During the December 27th 1996 visit, I estimated the number of tadpoles in the dams near Gypsy Point road to be somewhere between 1-4 million per hectare. This figure could be multiplied substantially if other swamps and dams in the Genoa River valley and similar floodplains nearby were included, noting that this estimate was based on just three dams, linked by a small stream on the floodplain (within a few hundred metres of one another). Other dams linked by the same stream were noted for some kilometres along the river valley. These numbers are even more significant when it is realised that *L. aurea* is widely regarded by NSW authorities and some scientists as 'endangered' in that State.

The 1-4 million tadpole number may seem huge at an initial glance, but is if anything a conservative estimate. Pergolotti (1995) gave an estimate of 2,486 mature eggs

**Green and golden bell frog *Litoria aurea.***

from a single mature female of this species from Homebush Bay (Sydney). This means that to get to a one million figure, less than 1,000 adult frogs (of both sexes) would be needed to breed in the swamp assuming a 50-50 sex ratio. Judging by numbers seen in the vicinity of the swamp at peak times, the 1,000 frog number is very realistic, noting that the species dominates other sympatric frog species in numbers and visibility in the area in the period November/January. Pergolotti (1995) and Daly (1995) talk about a huge potential mortality of this species on roads near breeding grounds, based on the killing of gravid females. Judging by the number seen or killed on the Gypsy Point Road and Princes Highway, the potential losses of tadpoles may be in the hundreds of thousands, if not millions, (in the Genoa area only, other areas are not included!). In spite of this mortality, there is no discernable effect on frog populations, which remain substantial. It is thought by creation of artificial (man-made) dams and similar structures along otherwise narrow streams and swamps, that the frog population around Genoa has risen sharply since European settlement. Introduced fish such as *Gambusa affinis* appear to be absent from dams in the area.

The aquatic habitats in the area were noted to have had a huge amount of biological productivity. This was no doubt due in part to the high fertility of the alluvial silt-based soil, combined with artificial fertilizers and cow dung. Insects and aquatic larvae of many forms were in huge number.



Immediately following metamorphosis, young *L. aurea* appeared to be by far most numerous in small vegetated drainage ditches running from the main dams in clear paddocks. Three weeks later (on 18th January 1996), young *L. aurea* seemed less numerous and to have shifted further from their spawning sites, but were still in moist areas. Most were seen in damp vegetated depressions which resulted from cattle trampling in damp situations adjacent to the dams. Other damside areas, such as dam borders and grassy slopes nearby had far fewer frogs, though small numbers were present.

*Litoria raniformis.*

Potential predators of young *L. aurea* are many. However perhaps the most significant are wading and aquatic birds such as Cormorants (*Phalacrocorax* spp.), Egrets (*Egretta* spp.) and Herons (*Ardea* spp.) (Lindsey, 1992). I observed large flocks of water birds feeding in and around swamps and dams near Gypsy Point Road. It is presumed that young *L. aurea* would be taken in large numbers. By counting young frogs and tadpoles individually and adding totals, the visible number present just three weeks later was an estimated 5% of the original number. While it is fair to assume that some of these missing frogs may have been hidden from view, I formed the view that opportunistic predators had caused most of the decline in number.

While talking predators, Logan observed a dragonfly nymph consuming a metamorphosing *L. aurea* tadpole in the large dam on his property. Rawlinson (1971) stated tadpoles 'are subject to heavy predation, particularly by carnivorous aquatic insects (water beetle adults and larvae, water scorpions, damsel-fly larvae and dragon-fly larvae).' I observed numbers of these and small eels in the dams near Gypsy Point Road. On several occasions, Logan has observed adult Red-bellied Black Snakes preying on frogs in murky water. The snakes would completely submerge into muddy potholes, emerging only when they had grasped a frog in their mouth, which tended to be at regular intervals. From observation, the snakes seemed to have little trouble locating the frogs in the coffee coloured water, at a depth of about 600 mm (2 feet). Some snakes also fed on the frogs underwater. The species of frog being eaten were *Limnodynastes peronii*. However I have fed captive Red-bellied Black Snakes *L. aurea*, and the species is well known as an opportunistic feeder.

Long-necked Tortoises (*Chelodina longicollis*) have been found in the area by Logan. Captives held by myself for many years were routinely fed frogs. Rawlinson (1971) noted that fish and turtles are probably important predators of frogs in larger more permanent bodies of water.

On December 27th 1995, 13 adult *L. aurea* of both sexes were seen diurnally active in overcast weather adjacent to swamps near the Gypsy Point Road in reasonable numbers. These frogs were seen within a few hours of searching. This activity incorporated perching on vegetation adjacent to swamp or dams in overcast weather. However these frogs also were noted to move around due to the fact that an area visited at one time of day would have different frogs present at the same spots an hour or two later in the day, while others had moved away.

It was also noted that the relative condition of most adult frogs found in late December was markedly poor in spite of an apparent overabundance of potential food. The frogs were emaciated in general appearance and gave the impression of slow starvation. Otherwise the frogs were healthy with no outward signs of disease. These frogs may have represented part of a natural seasonal mortality of adults. However captives of this and related species have been known to live for several years (Neil Simpson pers. com. *for L. aurea*, Grant Turner, pers. com. for *L. raniformis*), so any adult mortality of frogs would not affect the entire population. This assertion is further corroborated by the field work of Michael Murphy at Nowra, NSW (Murphy, 1995), who observed individual adult *L. aurea* over more than one year, while also noting the apparent 'disappearance' of others, either through mortality or evading capture.

On 18th January 1996, inspection of the same sites by myself failed to yield any adult frogs.

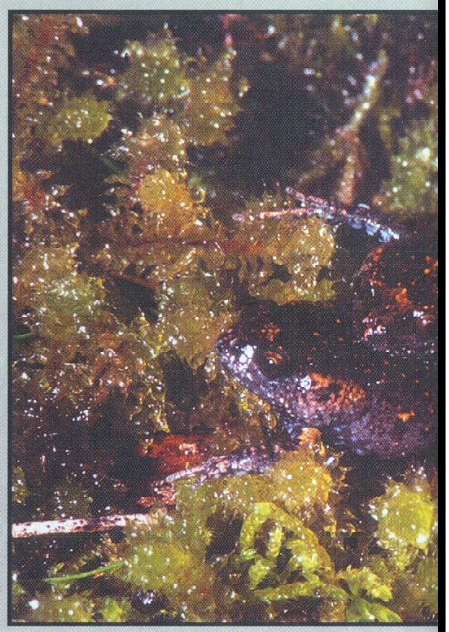
In Easter (April) 1996, Rob Valentic visited Logan's property. No *L. aurea* were seen, although they were looked for.

Based on the above observations it is presumed that *L. aurea* born in one season may be able to reproduce in the next. Further investigation of this possibility is required.

In terms of finding sheltering adult *L. aurea*, this has posed problems for many people. Richard Wells (pers. com.) states he has found *L. aurea* hiding over winter under roots of vegetation bordering swamps, some distance below the ground surface. He has also found them in similar situations in times of drought. White (1995b) noted that in midwinter at a Roseberry (Sydney, NSW) site, L. aurea can be found 'up to a metre below ground level, lying inactive in a tight-fitting, moist soil chamber.' In the early 1970's in winter I found an adult pair of *L. aurea* under a well-embedded rock next to a farm dam adjacent to McCarr's creek at Terry Hills, NSW. They appeared to be hibernating. Rob Valentic and others have found numerous adult *L. raniformis* hibernating under large basalt boulders along creek margins near Melbourne, Victoria (usually on the western side).

In the 1970's I found numbers of *L. aurea*

Tree Frog (*Litoria ewingi*) seen breeding in a man-made swamp near Genoa, Victoria. Although a numerous species elsewhere, around Genoa, this frog is seen less often than a number of other species.



around swamps in the Wyong/Wyee area about 100 km north of Sydney. In Easter 1987, I did a search of these same areas during a dry season and found no *L. aurea.* Based on observations detailed above for the Genoa area, this apparent absence of frogs in the Wyong/Wyee area may not have been true in that the frogs were still in the area...they just weren't found!

Also notable is that the best site found for *L. aurea* near Wyee (in terms of numbers) was a disused piggery foundation that had filled with water. The concrete structure was bordered with grasses and still filled with pig droppings, which permeated through the water.

At Genoa at several sites, including on Logan's property and near Gypsy Point Road, a number of *L. aurea* were found patterned with randomly distributed dorsal white spots (see photo). From our own observations, this appears to be a relatively unusual marking on the species. I noted the highest concentration of these specimens was adjacent to a permanent dam just north of the Gypsy Point Road, (3rd dam east of Genoa).

Richard Wells believes that wading birds may act as a dispersal mechanism for *L. aurea.* He speculates that feeding birds may have eggs adhere to their feet, which are then transported to other watercourses before hatching. He suggests this may be one reason why these frogs may appear to be absent from an area for some years and then suddenly seem to re-appear. This may include some inner Sydney swamps which have recently been found to have populations of the species.

Humans are perhaps the best dispersal mechanism for the species. *Litoria aurea* was released into New Zealand in 1867-68 and is now common there (Tyler, 1979). Tyler 1979 also notes more recent introductions to New Caledonia and the New Hebrides, with the species being common in suitable localities in these places.

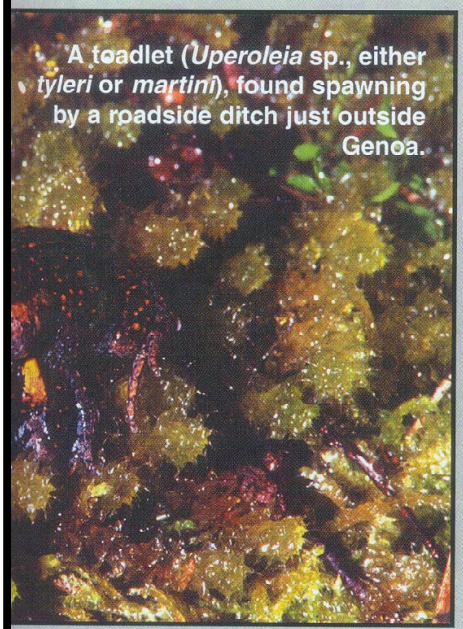
Murphy (1995) and other authors have noted widely varying populations of this species from year to year. Our own observations and those of other authors indicate that this variation may in part be due to climactic conditions as well as other (as yet unknown) factors. The large number of frogs observed by us in 1995-6 (and Logan in 1995-7) may be partly due to the favourable weather conditions in the period. However Logan noted breeding frogs around dams in dry weather. This observation also corroborates with observations by myself in the 1970's in this species and other tree frogs such as *Litoria phyllocroa, L. fallax* and *L. verrauxii,* which bred in dry weather by permanent water. Rob Valentic and myself have both seen *L. lesueurii* breeding in drought conditions along spring fed sub alpine streams. I have also seen this for *L. raniformis* and *L. verrauxii alpina.* Clearly female frogs develop eggs some time prior to anticipated breeding and in the absence of rain at the approximate breeding time, will breed regardless.

Clinton Logan has noted that *L. aurea* are most mobile in wet weather. Known specimens at dams on his property have been seen resting in a particular position/s during dry weather, but seem to 'disappear' in wet weather. In line with what was observed by us in November 1995, it is clear that any major overland movements by these frogs only occurs in wet weather.

**Conservation of *L. aurea.***

Due to the relatively recent listing of the species as 'Endangered'(Schedule 12), by the NSW National Parks and Wildlife Service (NPWS), areas known to support populations of this species that are likely to be developed, are usually required to be assessed by 'Fauna Impact Statement' (FIS), before any development takes place. Consequently a number of detailed studies of populations in and near Sydney have been done, including Cogger (1993) and Greer (1994). Arthur White did one in relation to a telecom site at Greenacre (NSW) (White 1993a) as well as a paper detailing recent (then 1993), sightings of *L. aurea* in the Sydney Metropolitan area (White 1993b). Pyke and Osborne (1996) were the editors of a special edition of *Australian Zoologist* entirely devoted to *L. aurea,* making it perhaps the most studied frog in Australia in recent times! With the possible exception of a paper by Ross Goldingay, no authors proposed any substantive long term conservation plan for the species. Goldingay's paper also had a number of fundamental flaws, including the failure to state the need for a captive population of the species, to safeguard against any uncontrolled extinction in wild populations.

From a conservation insurance point of view it is effectively essential that *L. aurea* be maintained in captivity in large and self-sustainable numbers. As a large hardy and attractive frog it is ideally suited for the 'pet' market and tadpoles can be raised in captivity by potential breeders (Robinson 1993). Greer (1996) argues



A toadlet (*Uperoleia* sp., either *tyleri* or *martini*), found spawning by a roadside ditch just outside Genoa.

Another small toadlet (*Pseudophryne dendeyi*) found under cover near a roadside soak near Genoa, Victoria.

against translocation of *L. aurea* stating that it is an option of last resort. His views are probably correct and totally supported by many people. I suspect that Greer's views are somewhat idealistic in the current real world where people have few physical impediments to trapping and moving frogs. If *L. aurea* are brought into captivity in larger numbers it is almost inevitable that more may be liberated into areas from where they did not originate. If the other long-term alternative is extinction in Australia, then I view this second best option and not being too bad.

Furthermore populations of *L. aurea* within the Sydney metropolitan area, including the celebrated Homebush population may consist in part or even fully of stock originally derived from elsewhere, noting the large numbers of these frogs that were sold in pet shops in former years. I have noted the presence of numbers of *L. aurea* in recent years in selected inner Sydney suburbs where they formerly appeared to be absent or less commonly seen. Some locations now hosting significant populations of *L. aurea* were formerly dominated by *L. peronii* in terms of numbers seen.

More worrying is attempts by NPWS/NSW to monopolise the species to such an extent that it cannot and will not be maintained in captivity in NSW (and perhaps elsewhere). At this stage the species remains available to private keepers in other states, including Victoria. If the planned national prohibition of captive animals takes place and the species expires in the wild like the Queensland frogs *Rheobatrachus silus* or *R. vittelineous*, then it would truly be a tragedy. Those two species were in huge numbers in the wild state and later disappeared as a result of causes yet unknown. Because Qld/NPWS had ensured that NONE were held in captivity, it is now thought that both species are now extinct. It would be a tragedy if the same were to happen to *L. aurea*.

The NPWS media unit has been pushing NPWS's virtues in terms of it's alleged conservation activities in relation to *L. aurea* in NSW. For example a report in the *Daily Telegraph-Mirror* of 11th December 1995 (English 1995) stated that NPWS were spending 400,000 to save the species at the Homebush Olympic Games Site. It was later revealed that much of this money was spent on self promoting propaganda and staff salaries, with the conservation status of the frog failing to show any tangible signs of improving. There were only minor steps taken to help ensure the survival of the local population, such as by building low fences in a bid to stop the frogs hopping across roads. Perhaps even more damning for NPWS is the hypocrisy surrounding their actions to save this single population of *L. aurea*, while at the same time allowing potentially adverse development over known habitat at several other sites for *L. aurea* in the Sydney area, including at Roseberry and Greenacre. However because these other sites were not needed to host the Olympic games, they probably had no media publicity value for NPWS and so the desire of NPWS to preserve these populations appeared to be somewhat lower. In one site at Roseberry development was allowed after an allegedly improper payment of about $40,000.

Another scandal involving NPWS was in the nature of approvals for development at *L. aurea* sites. I obtained a copy of the 'Decision Report' allowing a Warehouse development to proceed at Roberts Road, Greenacre. The document concluded with a typed signature of Dr. Neil Craig Shepherd, then Director-General of NPWS. However the penned in signature was that of David Papps, who occupies another position within the NPWS bureaucracy. Attempts to find out who actually authored the document failed and I was advised that neither man may have authored it or taken responsibility for it and that someone else in the NPWS bureaucracy had done so. The practice of bureaucrats rotating names and signatures on documents is a common ploy in bureaucracies in Australia (including Victorian Ombudsman's Office and Vicroads) when there is a worry or risk of a 'decision' coming under scrutiny at a later stage. It makes it considerably harder for an outsider to correctly apportion blame for any consequences of the 'decision' and for the guilty person to avoid punishment if it is sought.

**NPWS INACTION**

Although NPWS should not in theory be a part of this article, their conduct in relation to the preparation of this paper is worth noting. Several letters were posted and faxed to NPWS seeking copies of all FIS's relating to *Litoria aurea* as well as other relevant material. These letters were sent by myself stating that I would pay any copying or other costs. These were ignored.

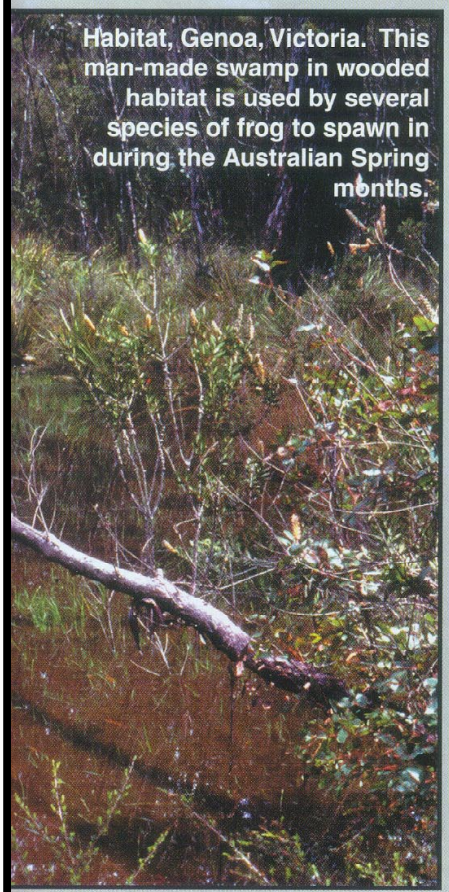
The first of these letters was sent in 1995. Following a further letter sent on May 1st 1996, I received on 11th May a photocopied 'Frog facts' sheet (which I already had). I sent a letter on 11th May 1996, specifically seeking three FIS's and a fourth survey document all of which were NPWS published documents and theoretically freely available to any

member of the public. FIS's are supposedly and specifically part of the process whereby members of the public can scrutinise development proposals.

I received a reply from the information section of NPWS (undated) that stated that NPWS did NOT have the sought documents. Such a statement was an obvious lie and I again sought the documents. Following another letter faxed and posted by myself on 18th May 1996, NPWS officer Fiona Mandelc sent me a letter dated 2nd July 1996 (note the routine delay time), stating AGAIN that they did NOT have the FIS's.

Perhaps I should mention that I had also sought the same FIS's from the authors and had received most by this stage, but continued to pursue the matter through NPWS, to see what other tricks they would play to withhold innocuous and supposedly publicly available documents and information.

A letter of complaint was faxed and posted to NSW Ombudsman Irene Moss. Incidentally, she was shown in the NSW Police Royal Commission to have actively aided and abetted systematic Police corruption. That was sent on 28th July 1996. The reply from Moss's assistant Ms. Jodie Wauchope, dated 5th September, said 'This office will take no further action with regard to your complaint'. In other words (as usual) the Ombudsman's office had rubber-stamped the actions of a wayward bureaucracy.



**Habitat, Genoa, Victoria. This man-made swamp in wooded habitat is used by several species of frog to spawn in during the Australian Spring months.**

I sent a letter to Moss dated 11th September 1996 seeking an immediate review of her offsider's letter and further seeking affirmative investigation and action in relation to the complaint (non-provision of FIS's and lying about not having them). A reply from Irene Moss herself dated dated 22nd October 1996 confirmed that NPWS maintains 'copies of those documents in their library' which proved the earlier letters from NPWS to be blatant lies. She went on to state that as far as she was concerned if NPWS chose not to provide any documents then it was their right. She ended her letter stating 'No further action will be taken on this matter by this office', even though I still had not received any FIS's from NPWS.

In other words attempting to correct a wayward bureaucracy by going to a State Ombudsman in Australia was a waste of time. Refer to Hoser (1995) for further examples of such actions.

The relevance of this to conservation of *L. aurea* is significant. If NPWS don't assist bona-fide researchers investigating this or other species of wildlife, then what hope do we have? The refusal of NPWS bureaucrats to assist researchers is effectively routine and results in further wastage of time and taxpayers funds. The effort spent by NPWS officials in with-holding FIS's on *L. aurea* would have been better spent disseminating it!

**STARVING FROGS**

In February 1997 I attended Sydney's Taronga Park Zoo as a guest of the reptile keepers. They showed me through their facility, including their holding pens where they held metamorphosed *Litoria aurea*. This was ostensibly part of the NPWS/Government backed breeding program. The keepers themselves were very nice people and I couldn't fault them in any way over the way they treated me, including their allowing me to see all parts of the zoo that I chose to, including 'off-display' areas. However the condition of the frogs was another matter. They appeared to be dead and dying. One of the keepers said that no one was feeding them, hence their condition.

I was told that zoo politics was preventing keepers who wanted to look after the frogs from doing so. Those designated the job of looking after them weren't interested and hence the general starvation. It was noted that there were plenty more *aurea* where that lot came from. Without being too harsh on all the keepers at Taronga, many of whom are dedicated to their job, what I saw was a good example of a failure of a government-owned zoo to actively help in the conservation effort. Private hobbyists on the other hand who themselves choose to keep such animals would as a rule be far less likely to deliberately allow their charges to starve to death. Particularly if they have to pay for the privilege of keeping them.

As part of the above story, it was reported earlier that keepers at the zoo had successfully raised a number of *aurea* and then been told that nobody wanted them (also translated as that they weren't allowed to give them to anyone outside the very narrow government sector). There was no habitat earmarked for the frogs and so they were simply let loose around the zoo instead. The survival rate of these frogs isn't known.

**Diamond Python *Morelia spilota spilota***

Clinton Logan found an adult under a rock ledge immediately adjacent to the Genoa falls near his property. This is one of relatively few rocky areas near Logan's house, with most others also being near major watercourses. Other Diamond Pythons have been seen in the vicinity of the Genoa river. They are also known from the Mallacouta area. This area (Genoa/Mallacouta) is about as far south as this subspecies of the Carpet Snake occurs. A specimen from the Genoa area photographed by the authors had stronger yellow markings than usual for the species.

Calder (1987) and Gillespie, et. al (1992) stated that populations of this species in the area are 'apparently diminished' and also attribute some of this to illegal collecting by reptile hobbyists. Not only is there NO evidence of this, all available evidence points to the contrary. Studies of the species by Shine and Slip (not cited here)(and pers. coms.) point to numbers of the species being far greater in an area than is readily observed. Furthermore a quick survey of collections in Victoria, reveal few Diamond Pythons captive, with most of this stock being derived from legally held captive-bred stock from NSW (breeders in Sydney and nearby areas, which are also where the species occurs in the wild).

We object to the myth perpetuated by those contracted to do work for wildlife departments to the effect that hobbyists are depleting Australian reptile stocks when there is no hard evidence. Such false assertions detract from papers and articles otherwise meant to be factual and scientific in nature.

Red-bellied snake
*Pseudechis porphyriacus.*

**White-lipped Snake *Drysdalia coronoides.***

On 18th January 1996, I was gathering rocks from a road cutting at the side of the road, a few hundred metres south of Genoa along the Princes Highway. Under a small piece of pink and blue (Devonian) granite, the size of a cigarette packet was found a sheltering White-lipped snake (*Drysdalia coronoides*). The snake was a gravid female. (It had ten young).

Logan reports seeing these snakes throughout the area, being most commonly found under tin. The species is usually diurnal in habit. It was dusk when I found the specimen under the rock.

**Red-bellied Black Snake *Pseudechis porphyriacus.***

White-lipped snake
*coronoides.*

This appears to be by far the most common snake in the area. Logan is of the view that these snakes prey on Blue-tongued Skinks *Tiliqua scincoides*, which perhaps as a consequence are rare in the area. I did at one time feed *T. scincoides* to adult Lace Monitors *Varanus varius*. These lizards are also very common in the area.

Logan noted that Red-bellied Black Snakes are commonly seen active in drizzle. I have observed the same in Copperheads (*Austrelaps ramsayi*) around Oberon and Lithgow, NSW. This activity pattern may reflect the desire to locate prey in the form of frogs.

**She-Oak Skink *Cyclodomorpus casuarine.***

We have found these lizards in the Genoa area in cleared areas under cover such as tin and fallen logs. I've caught the species in similar situations in NSW in the upper Blue Mountains areas of Wentworth Falls, Leura and Katoomba. In both Genoa and the Blue Mountains areas, the species appears to adapt well to disturbed habitat and readily shelters under man-made cover such as tin. Gillespie et. al (1992) allege that the species may be under threat by timber harvesting practices in the area. We believe that such activities probably present minimal threat to the species in the medium to long term and that if anything, populations of this species may actually increase as a result

of habitat alteration through timber harvesting. That is not to say that I necessarily endorse timber harvesting per se as other (unidentified here) wildlife types may suffer.

## ACKNOWLEDGMENTS

None of this article would have been possible without the assistances of Clinton and Debbie Logan and their family who represent the best that there is in herpetology. Rob Valentic also drove me to and from the Genoa area the first time I went there looking for reptiles and frogs. He also provided valuable input and comments when I wrote this paper. Dr. Allen E. Greer provided relevant fauna impact statements. Likewise several Sydney based corporations also provided their NPWS FIS's produced for NPWS in relation to various properties.

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