

## **New frogs of the genus *Mixophyes* Günther, 1864 from Eastern Queensland, and New South Wales, Australia (Anura:Myobatrachidae).**

**RAYMOND T. HOSER**

**488 Park Road, Park Orchards, Victoria, 3134, Australia.**

**Phone: +61 3 9812 3322 Fax: 9812 3355 E-mail: snakeman (at) snakeman.com.au**

**Received 1 February 2016, Accepted 22 March 2016, Published 1 August 2016.**

### **ABSTRACT**

The genus *Mixophyes* Günther, 1864 as currently recognized consists of 7 East Australian and one southern New Guinea species of frog. There are no currently recognized subspecies.

Frogs currently treated as being of the species *M. fasciolatus* have long been known to consist of a number of geographically isolated populations.

Inspections of relevant frogs has shown that there are consistent morphological differences between adult frogs in each population and due to their obvious reproductive isolation, it makes sense that they should be treated as full species.

This paper herein formally describes two new species within the *M. fasciolatus* species group. These are *M. shireenae* sp. nov. from near Mackay in Queensland and *M. couperi* sp. nov. from Kroombit Tops in Queensland.

The divergent member within the genus as currently recognized, namely *M. iteratus* Straughan, 1968, is herein placed in a new subgenus *Paramixophyes* subgen. nov..

The species *M. iteratus* appears to be found in three separate zones, each separated by intervening dry areas. Each population is morphologically distinct. Therefore the unnamed (at subspecies level) populations isolated south of the Hunter Valley in New South Wales and that from the Sunshine Coast, Queensland are herein assigned to the subspecies *M. iteratus piersoni* subsp. nov. and *M. iteratus yeomansi* subsp. nov. respectively.

**Keywords:** Taxonomy; frogs; *Mixophyes*; *fasciolatus*; *iteratus*; Queensland; New South Wales; Australia; new subgenus; *Paramixophyes*; new species; *couperi*; *shireenae*; new subspecies; *piersoni*; *yeomansi*; geographical barrier; Myobatrachidae; morphological differences.

### **INTRODUCTION**

The genus *Mixophyes* Günther, 1864 as currently recognized consists of 7 East Australian and one southern New Guinea species of frog.

These large species have been the subject of renewed taxonomic interest in recent years, with two species described as recently as 2006 (Cogger 2014).

Frogs currently treated as being of the species *M. fasciolatus* have long been known to consist of a number of geographically isolated populations, although Cogger *et al.* (1983) show no available synonyms for these populations, were they to be given taxonomic recognition.

Inspections of relevant frogs has shown that there are consistent morphological differences between adult frogs in each population and due to their obvious reproductive isolation, it makes sense that they should be treated as full species.

In the absence of available names, two are assigned (one for each species) in accordance with all the rules of the current *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

The geographical barriers that separate the relevant populations are well known and have been defined in the literature many times. In essence they are expansive dry zones that have isolated rainforest remnants, which is where these frogs persist. They tend to be found in wet forest areas in the vicinity of larger permanent creeks and rivers in hilly areas or immediately proximal to them.

This paper herein formally describes two new species within the *M. fasciolatus* species group. These are *M. shireenae* sp. nov. from near Mackay in Queensland and *M. couperi* sp. nov. from Kroombit

Tops in Queensland, a series of large forested hills, south-west of the industrial city of Gladstone.

They are formally described below.

The divergent member within the genus *Mixophyes* as currently recognized, namely *M. iteratus* Straughan, 1968, is readily separated from all other species, which form a well-defined clade. *M. iteratus* is separated from all other species in the genus by the fact that the length of the inner metatarsal tubercle is only about half the length of the first toe (versus being nearly of equal length), and that only two joints of the fourth toe are free of web (versus three joints of the toe being free of web in the other species).

Physically *M. iteratus* presents as being of different shape to the other species by being more triangular in shape and with proportionately larger hind limbs.

*M. iteratus* is also of a different size class to the other members of the genus, it attaining up to 115 mm in body length, versus no more than 100 mm (usually 80 mm) in the other species.

As a result of these significant differences and sympatry between *M. iteratus* and the other species complex, *M. iteratus* is herein placed in a new subgenus, namely *Paramixophyes* subgen. nov..

The species *M. iteratus* appears to be found in three separate zones, each separated by intervening dry zones. Each are morphologically distinct. Therefore the unnamed (at subspecies level) isolated Sunshine Coast, Queensland population and that from south of the Hunter Valley dry zone in New South Wales are herein assigned to the subspecies *M. iteratus yeomansi* subsp. nov. (Qld) and *M. iteratus piersoni* subsp. nov. (NSW).

Publications relevant to the taxonomic decisions within this paper

include Barker *et al.* (1995), Cogger (2004), Cogger *et al.* (1983), Corben and Ingram (1987), Donnellan *et al.* (1990), Gillispe and Hines (1999), Günther (1864), Keogh *et al.* (2003), Mahony *et al.* (2006), McDonald (1992), Strachan (1968), Wells and Wellington (1985), and sources cited therein.

**MIXOPHYES SHIREENAE SP. NOV.**

**Holotype:** A preserved specimen in the Queensland Museum, Brisbane, Queensland, specimen number: J53605, collected from Mount Blackwood National Park, near Mackay, Queensland.

The specimen had another catalogue number, namely 1977722.

The Queensland Museum, Brisbane, Queensland is a government-owned facility that allows public access to its specimen holdings.

**Diagnosis:** Until now this species had been treated as a variant of *M. fasciolatus* Günther, 1864.

*Mixophyes shireenae* sp. nov. is separated from *M. couperi* sp. nov. and *M. fasciolatus* Günther, 1864 by the presence of thick dark bars circling the dorsal surfaces of the hind limbs, versus narrow dark bands in the other two species, which may or may not fully encircle the dorsal surface of the limb.

Both *Mixophyes shireenae* sp. nov. and *M. fasciolatus* Günther, 1864 have a series of conspicuous black spots or blotches on the sides (listed as diagnostic for *M. fasciolatus* by Cogger 2014). These are absent, inconspicuous or very small in *M. couperi* sp. nov..

In *M. fasciolatus* Günther, 1864 there is a large darker blotch in the middle of the back that extends unbroken across the sides to the flanks. In *M. shireenae* sp. nov. and *M. couperi* sp. nov. the main mid dorsal blotch is narrower, not extending to the flanks and is also irregular in shape.

*M. fleayi* Corben and Ingram, 1987 is separated from others in the genus by the fact that the upper lip is brownish, when viewed at the level of the nostril, with one or more dark purplish brown blotches (in adults), faded complete bands across the upper surface of the lower hind limbs and a straight edge at the anterior margin of the dark linear dorsal blotch running from the level of the eyes (mid level) to the lower back.

*M. coggeri* Mahony *et al.* 2006, is readily separated from the other species in the genus by the dorsal patterning which consists of a very distinctive discontinuous series of irregularly shaped, dark vertebral blotches between the eyes and rump.

*M. carbinensis* Mahony *et al.* 2006 is readily separated from the other species in the genus by the colouration of the hind side of the thighs, which are darkish brown and with numerous scattered small pale whitish spots.

*M. schevilli* Loveridge, 1933 is separated from the others in the genus by the presence of a continuous or near continuous irregular dark blotch on the dorsal surface, faded bands on the lower hind feet and yellowish underside.

The species *Mixophyes hihiorlo* Donnellan, Mahony and Davies, 1990 from New Guinea, known only from the type locality Namosado, in Southern Highlands Province, Papua New Guinea, at 930m asl. is separated from all others in the genus by a relatively smaller eye and karyotype differences as outlined in the original description of the taxon.

The divergent member within the genus *Mixophyes* as currently recognized, namely *M. iteratus* Straughan, 1968, is readily separated from all other species, which form a well-defined clade.

*M. iteratus* is separated from all other species in the genus by the fact that the length of the inner metatarsal tubercle is only about half the length of the first toe (versus being nearly of equal length), and that only two joints of the fourth toe are free of web (versus three joints of the toe being free of web in the other species).

Physically *M. iteratus* presents as being of different shape to the other species by being more triangular in shape and with proportionately larger hind limbs.

*M. iteratus* is also of a different size class to the other members of the genus, it attaining up to 115 mm in body length, versus no more than 100 mm (usually 80 mm) in the other species.

A key to separate of the seven previously recognized species of *Mixophyes* from Australia is provided by Cogger (2014) and good colour photos of the nominate forms of the relevant species are

provided in proximity in that text (pages 94-98), although some of the distribution maps provided are in error and at variance to the text in the book.

In turn Cogger (2014) has a key that separates *Mixophyes* from all other Australian frogs.

**Distribution:** Known only from wetter ranges and immediately adjacent locations near Mackay, coastal Queensland.

**Etymology:** Named in honour of my wife, Shireen Hoser, in recognition for her monumental contributions to herpetology spanning some decades.

**MIXOPHYES COUPERI SP. NOV.**

**Holotype:** A preserved specimen in the Queensland Museum, Brisbane, Queensland, specimen number: J40112, collected from Kroombit Tops National Park, south-west of Gladstone, Queensland.

The specimen had another catalogue number, namely 1969747.

The Queensland Museum, Brisbane, Queensland is a government-owned facility that allows public access to its specimen holdings.

**Diagnosis:** Until now this species had been treated as a variant of *M. fasciolatus* Günther, 1864. *Mixophyes shireenae* sp. nov. described above is separated from *M. couperi* sp. nov. and *M. fasciolatus* Günther, 1864 by the presence of thick dark bars circling the dorsal surfaces of the hind limbs, versus narrow dark bands in the other two species, which may or may not fully encircle the dorsal surface of the limb.

Both *Mixophyes shireenae* sp. nov. and *M. fasciolatus* Günther, 1864 have a series of conspicuous black spots or blotches on the sides (listed as diagnostic for *M. fasciolatus* by Cogger 2014). These are absent, inconspicuous or very small in *M. couperi* sp. nov., which readily separates this taxon from the other two.

In *M. fasciolatus* Günther, 1864 there is a large darker blotch in the middle of the back that extends unbroken across the sides to the flanks. In *M. shireenae* sp. nov. and *M. couperi* sp. nov. the main mid dorsal blotch is narrower, and not extending to the flanks and is also irregular in shape.

*M. fleayi* Corben and Ingram, 1987 is separated from others in the genus by the fact that the upper lip is brownish, when viewed at the level of the nostril, with one or more dark purplish brown blotches (in adults), faded complete bands across the upper surface of the lower hind limbs and a straight edge at the anterior margin of the dark linear dorsal blotch running from the level of the eyes (mid level) to the lower back.

*M. coggeri* Mahony *et al.* 2006, is readily separated from the other species in the genus by the dorsal patterning which consists of a very distinctive discontinuous series of irregularly shaped, dark vertebral blotches between the eyes and rump.

*M. carbinensis* Mahony *et al.* 2006 is readily separated from the other species in the genus by the colouration of the hind side of the thighs, which are darkish brown and with numerous scattered small pale whitish spots.

*M. schevilli* Loveridge, 1933 is separated from the others in the genus by the presence of a continuous or near continuous irregular dark blotch on the dorsal surface, faded bands on the lower hind feet and yellowish underside.

The species *Mixophyes hihiorlo* Donnellan, Mahony and Davies, 1990 from New Guinea, known only from the type locality Namosado, in Southern Highlands Province, Papua New Guinea, at 930m asl. is separated from all others in the genus by a relatively smaller eye and karyotype differences as outlined in the original description of the taxon.

The divergent member within the genus *Mixophyes* as currently recognized, namely *M. iteratus* Straughan, 1968, is readily separated from all other species, which form a well-defined clade.

*M. iteratus* is separated from all other species in the genus by the fact that the length of the inner metatarsal tubercle is only about half the length of the first toe (versus being nearly of equal length), and that only two joints of the fourth toe are free of web (versus three joints of the toe being free of web in the other species).

Physically *M. iteratus* presents as being of different shape to the other species by being more triangular in shape and with proportionately larger hind limbs.

*M. iteratus* is also of a different size class to the other members of the genus, it attaining up to 115 mm in body length, versus no more than 100 mm (usually 80 mm) in the other species.

A dichotomous key to separate of the seven previously recognized species of *Mixophyes* from Australia is provided by Cogger (2014) and good colour photos of the nominate forms of the relevant species are provided in proximity in that text (pages 94-98), although some of the distribution maps provided are in error and at variance to the text in the book.

In turn Cogger (2014) has a key that separates *Mixophyes* from all other Australian frogs.

**Distribution:** Known only from wetter ranges and immediately adjacent locations near Kroombit Tops, Queensland.

**Etymology:** Named in honour of Patrick Couper, long-term curator of reptiles at the Queensland Museum for his many services to herpetology and taxonomy.

**PARAMIXOPHYES SUBGEN. NOV.**

**Type species:** *Mixophyes iteratus* Straughan, 1968.

**Diagnosis:** The divergent member within the genus *Mixophyes* as currently recognized, namely *M. iteratus* Straughan, 1968, is monotypic for this subgenus as recognized herein.

This paper does divide it into three subspecies (the two new ones named below), based on clear morphological and geographical divergences and these may ultimately be elevated to full species status if molecular evidence supports this.

This paper does however provide proper taxonomic recognition to these populations in accordance with the rules of the relevant edition of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

*M. iteratus* Straughan, 1968 is readily separated from all other species of *Mixophyes* which form a well-defined clade.

*M. iteratus* is separated from all other species in the genus by the fact that the length of the inner metatarsal tubercle is only about half the length of the first toe (versus being nearly of equal length in the other species), and that only two joints of the fourth toe are free of web (versus three joints of the toe being free of web in the other species).

Physically *M. iteratus* presents as being of different shape to the other species by being more triangular in overall shape and with proportionately larger hind limbs.

*M. iteratus* is also of a different size class to the other members of the genus, it attaining up to 115 mm in body length, versus no more than 100 mm (usually 80 mm) in the other species.

Straughan (1968) provides detail of other differences between *M. iteratus* and others in the genus.

**Distribution:** Blue Mountains west of Sydney, NSW, north of the Great Western Highway in the Grose River Valley and nearby large streams and environs, as well as the coastal ranges and nearby wet forests north of the Hawkesbury River System, to the Hunter Valley in NSW (*M. iteratus piersoni* subsp. nov.), the ranges north-west of Newcastle, NSW and various coastal and near coastal locations to the wetter areas west and south-west of the Gold Coast Queensland (nominate *M. iteratus iteratus*) and ranges and nearby areas, north and west of Brisbane, including the Sunshine Coast hinterland (*M. iteratus yeomansi* subsp. nov.).

**Etymology:** *Para*, meaning as in "not quite" is linked with the nominate genus name *Mixophyes* Günther, 1864.

**Content:** *Mixophyes iteratus* Straughan, 1968 (including a total of three subspecies).

**MIXOPHYES (PARAMIXOPHYES) ITERATUS PIERSONI SUBSP. NOV.**

**Holotype:** A specimen at the Australian Museum, Sydney, NSW, Australia, specimen number: R70147 collected at near Wyong, NSW, by Cliff Ross Wellington.

The Australian Museum, Sydney, NSW, Australia is a government-owned facility that allows public access to its specimen holdings.

**Paratype:** A specimen at the Australian Museum, Sydney, NSW, Australia, specimen number: R78774 collected at near Wyong, NSW.

**Diagnosis:** *M. iteratus piersoni* subsp. nov. is readily separated from the other two species by the presence of small dark spots on

the dorsal surface, versus a smaller number of larger (medium sized) spots on the dorsal surface in the other two subspecies. These spots as described are in addition to the single large mid dorsal stripe or blotch which may or not be absent in all three subspecies.

*M. iteratus piersoni* subsp. nov. is characterised by 9-10 crossbands on the upper thigh, versus 7-8 in the other two subspecies.

*M. iteratus piersoni* subsp. nov. is further separated from the other two subspecies by the presence of a distinct dark line running from the lower front of the eye to the upper lip. In other other subspecies this marking forms an ill defined blotch or blob (as opposed to a line) which may or may not merge with lighter posterior pigment.

*M. iteratus piersoni* subsp. nov. and *M. iteratus iteratus* are separated from *M. iteratus yeomansi* subsp. nov. by the presence of a thin black line bordering the upper tympanum, versus a moderately thick line in *M. iteratus yeomansi* subsp. nov..

*M. iteratus yeomansi* subsp. nov. is readily separated from the other two subspecies by a distinctive salmon coloured sheen across the extremities of the limbs and the upper lips and snout.

Straughan (1968) and Cogger (2014), provide a key to separate *M. iteratus* from all other s in the genus.

**Distribution:** Blue Mountains west of Sydney, NSW, north of the Great Western Highway in the Grose River Valley and nearby large streams and environs, as well as the coastal ranges and nearby wet forests north of the Hawkesbury River System, to the south side of the Hunter Valley in NSW

**Etymology:** Named in honour of Charles Pierson of Bowral, NSW, for his monumental contributions to wildlife conservation in Australia, including as publisher of Hoser (1989, 1991 and 1993). Australians, Americans and others allege to claim to cherish the freedom of the individual. Included here is the freedom of individuals to keep and study snakes and other wildlife. In years postdating the late 1960's this right has come under threat from a raft of ridiculous bureaucratic impediments.

In Australia in the early 1970's these rights were removed from most Australians. It was only as a result of the publication of two different books, *Smuggled* and *Smuggled-2* (Hoser 1993 and 1996) that led to these rights being restored to most Australians.

The success in Australia in terms of these books and their legislative outcomes reverberated around the world and in the case of the United States, meant that a major push to outlaw private ownership of reptiles in 1993 was also stopped in its tracks.

Charles Pierson as publisher of the first book *Smuggled: The Underground Trade in Australia's Wildlife* in 1993, took an incredibly courageous step in publishing it.

For North Americans reading this, it should be noted that the Australian government (at all levels) has considerably more powers than their North American counterparts, including control of media and information flow to the public. Persons publishing material critical of government, even when totally true and correct, run the risk of immense fines, jail or similar.

I have suffered both!

The book *Smuggled: The Underground Trade in Australia's Wildlife* (Hoser 1993) was (as totally expected), illegally banned by the NSW National Parks and Wildlife Service, (NPWS NSW) in May 1993. Only as a result of a supreme effort by Pierson and an extremely brave and courageous journalist named Fia Cumming, the ban was lifted.

Cumming subsequently lost her job as a result of this, but the book became a best-seller.

Fighting the ban ultimately cost Pierson his home in the expensive Sydney suburb of Mosman and he lost his business.

However this huge life-altering sacrifice against the tyranny of a corrupt and oversized government wildlife control bureaucracy should be permanently recognized. This is especially so in the context of reptiles, those who choose to study them and their conservation, including those many people who have the right to keep live reptiles as pets, solely as a consequence of Pierson's selfless actions.

Pierson also put wildlife conservation on the global agenda, with



the publication of the seminal works *Endangered Animals of Australia*, (Hoser 1991) and *Australian Reptiles and Frogs* (Hoser 1989), the latter used extensively by the late Steve Irwin and other television "personalities", including Bruce George, Mark O'Shea, Chris Humfrey and others as a reference source to bring Australian animals to TV viewers globally.

Unfortunately as this paper goes to press in 2016 there are new assaults on the rights of reptile keepers and herpetologists both in the USA, Australia and elsewhere with new restrictions either passed or about to be passed in these jurisdictions.

It is significant that the NSW Government has done a fantastic job of "managing" this subspecies of frog *M. iteratus piersoni subsp. nov.* (and many others) towards extinction in the period 1970 to present (2016) and wasting many hundreds of millions of dollars in the process, paying bureaucrats on the money gravytrain while simultaneously destroying the lives of the very people who could potentially help save the subspecies.

The government pursuit of a "big Australia policy" which involves long-term crowding of another 200 million people into Australia within the next 200 years (current population under 25 million people), will without doubt cause a mass of wildlife extinctions including quite possibly the subspecies *M. iteratus piersoni subsp. nov.*!

**MIXOPHYES (PARAMIXOPHYES) ITERATUS YEOMANSI SUBSP. NOV.**

**Holotype:** A specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number: J64087 collected at Belli Creek Crossing number 3, at the Sunshine Coast, Queensland.

The Queensland Museum, Brisbane, Queensland is a government-owned facility that allows public access to its specimen holdings.

**Paratype:** A specimen at the Australian Museum, Sydney, NSW, Australia, specimen number: R27629 collected at Rainforest National Park, near Nambour, Queensland.

**Diagnosis:** *M. iteratus yeomansi subsp. nov.* is readily separated from the other two subspecies by a distinctive salmon coloured sheen across the extremities of the limbs and the upper lips and snout.

*M. iteratus piersoni subsp. nov.* is readily separated from the other two species by the presence of small dark spots on the dorsal surface, versus a smaller number of larger (medium sized) spots on the dorsal surface in the other two subspecies. These spots as described are in addition to the single large mid dorsal stripe or blotch which may or not be absent in all three subspecies.

*M. iteratus piersoni subsp. nov.* is characterised by 9-10 crossbands on the upper thigh, versus 7-8 in the other two subspecies.

*M. iteratus piersoni subsp. nov.* is further separated from the other two subspecies by the presence of a distinct dark line running from the lower front of the eye to the upper lip. In other other subspecies this marking forms an ill defined blotch or blob (as opposed to a line) which may or may not merge with lighter posterior pigment.

*M. iteratus piersoni subsp. nov.* and *M. iteratus iteratus* are separated from *M. iteratus yeomansi subsp. nov.* by the presence of a thin black line bordering the upper tympanum, versus a moderately thick line in *M. iteratus yeomansi subsp. nov.*

Straughan (1968) and Cogger (2014), provide a key to separate *M. iteratus* from all other s in the genus.

**Distribution:** The region north and north-west of Brisbane, Queensland, including the Sunshine Coast and nearby hills forming the eastern rim of the Great Dividing Range.

**Etymology:** Named in honour of Luke Yeomans, a well-known British Herpetologist, who died prematurely from a King Cobra bite at his UK facility on 29 June 2011.

His contributions to herpetology are numerous and include his pioneering work in breeding the Irian Jaya Dwarf Mulga Snake (*Pseudechis (Pailsus) rossignolii*) in the decade following my formal description of the taxa in 2000 (Hoser 2000). The results of his breedings are expected to appear in a book about keeping and breeding Australasian elapid snakes by Scott Eipper later in 2012 (Eipper 2012).

Besides being an extremely passionate and skilled herpetologist,

Yeomans was also a wonderful human being who never lost sight of the beauty of the reptiles he loved so dearly. However it is the things that went wrong during his life that should be highlighted as a warning to other potential herpetologists in future generations.

Yeomans first came to my attention in the early 1990's after he was prosecuted for the heinous crime of feeding live food to a reptile.

For this mortal sin, he was dragged through Britain's criminal courts, prosecuted, convicted and fined. Then he was held up for public hatred in Britain's notorious tabloid media. The legal precedent now sits as a threat and if need be, a means to criminally charge any other reptile keeper who dares use live food for any reptiles, including such humble items as mealworms or crickets and then upsets anyone in a government authority.

Yeomans said he was originally "dobbed in" by another reptile person, Mark O'Shea, whom he said had an axe to grind against him. The relevant authority in this case, the RSPCA in the UK, ran the prosecution. I wrote about the case in the book *"Smuggled: The Underground Trade In Australia's Wildlife"*, (Hoser, 1993), and unexpectedly met Yeomans in person at the Orlando Reptile Expo in the United States.

That was in 1993, when the League of Florida Herpetological Societies invited me there to give a talk about Australia's own draconian wildlife law enforcement. As inferred already, it was the personality of Yeomans that impressed me rather than his herpetological skills, noting that in Orlando, I didn't get to see Yeomans working with reptiles!

My next contact with Yeomans was in the period postdating my description of the Irian Jaya Dwarf Mulga Snake in 2000 and him wanting to breed them in captivity. Ultimately he did this. Beyond that, the next conversations related to the issue of safety for himself in his own reptile shows that he intended doing at a "King Cobra Sanctuary" he was planning to open in the UK in mid 2011.

In this, I specifically mean the use of venomoid snakes as described by Hoser (2004). These are snakes that have had their venom glands surgically removed in a virtually painless operation and where the snakes get to keep their fangs and are as far as they are concerned "normal".

By 2010, Yeomans had seen how in the previous 6 years myself and ten staff had done over 10,000 venomous snake shows with the world's five deadliest snakes and without any fatal or near fatal snakebites.

He had seen videos of myself taking bites from the snakes to prove they were safe and was aware of the benefits of the venomoid snakes, not just for the safety aspect, but also the snake's welfare.

In fact Yeomans himself had previously owned a venomoid cobra! Yeomans toyed with the idea of making all his large King Cobras venomoid because he feared that sooner or later he'd make a handling error and get bitten. However he decided against doing so and the reason for this is important.

He had no issues with the surgery and the false claims of cruelty to the snakes made by his nemesis Mark O'Shea. In fact in terms of the venomoid snakes, there was no sensible reason for him not to get them except for one. That reason was the expected attacks he would get from Mark O'Shea, a man he described as his sworn enemy and Wolfgang Wüster.

Both were close mates in the UK reptile fraternity and both of whom had been key sponsors of an anti-Hoser and antivenomoid petition website. That was created by a convicted wildlife smuggler, David John Williams (who now as of 2016 scams money out of well-meaning people ostensibly to treat snakebite victims in third world countries) and his close friend Shane Hunter in Australia.

Yeomans was in extreme fear that should O'Shea or Wüster become aware of him having venomoid snakes, that they would attack and undermine his reptile display business and worse still have him targeted by the RSPCA again.

With one "animal cruelty" conviction already, Yeomans decided the likelihood of attacks and another more serious conviction would terminally disable his business and so he decided instead to take the risk of keeping his snakes that he handled for shows "hot".

Besides the phone calls we had, Yeomans also sent numerous e-mails complaining about the reckless conduct of Mark O'Shea and his friend Wolfgang Wüster in terms of himself, even detailing how O'Shea had improperly had him expelled from the International

Herpetological Society. Yeomans made countless comments about O'Shea in particular, whom he described as being a cross between a rat and a dog.

He said O'Shea was physically like a rat, as in small, bony and hairy and like a Shitzu dog in that he constantly "yapped", "shits you" and never shuts up. I could devote several pages to the adverse comments made by Yeomans about O'Shea, Wüster and their unethical and criminal behaviour, but these are not particularly relevant beyond what has already been told in terms of how they made Yeomans choose not to protect himself with venomoid Cobras.

On 29 June 2011, Yeomans made the snake handling error that cost him his life. Just days before his "King Cobra Sanctuary" was due to open, one of his "hot" snakes bit him and he died.

At just 47 years of age he was dead!

If Luke Yeomans had not been forced by these other self appointed so-called "herpetologists" to put his life at unnecessary risk with snakes that could easily have been de-venomized, he would still be breeding rare and endangered reptiles and educating people at his new "King Cobra Sanctuary".

Much has been made in recent years of the threats to private individuals and their rights to be allowed to keep and study reptiles. The alleged threat is often identified as coming from outside the herpetological community. The usual bogeyman identified are militant animal rights groups and the like.

They are not the real enemy. These people lack expertise in reptiles and do not carry any political or legal power in terms of reptiles and the law. Put simply, no one takes them seriously.

In any event, these animal rights groups concentrate their activities on "nice" "fluffy" animals and not col-blooded reptiles.

By contrast the real enemy is within the reptile community. The reckless conduct of O'Shea and Wüster were in effect directly responsible for the premature death of Yeomans. Here in Australia, in the period from 2006 to 2016, my family, my business, my friends and staff have been subjected to numerous illegal armed raids, fabricated criminal charges and the like designed to destroy the Snakebusters business and put innocent people's lives at risk.

While the raids, criminal charges and the like have been conducted by (in this case) very corrupt government wildlife officers under the control of the corrupt and hateful Glenn Sharp of the Victorian Government Wildlife Department (DSE), the whole series of actions were in fact initiated by people within the reptile fraternity. In our case the enemy was a group of newly established "reptile businesses", which included former employees of the government run zoo, part of the same department that regulates us.

Because they couldn't match the standards of Snakebusters, they simply used their powers to unlawfully close us down!

This was confirmed in a Court of Appeal Judgement in Victoria on 5 September 2014 (Court of Appeal 2014) and again by VCAT (another court) (VCAT 2015) in a ruling dated 30 July 2015.

Because we won in court, this being a miracle of biblical proportions, the government now must pay us millions of dollars in damages. However other victims of the likes of those who brought about the demise of Yeomans are rarely as fortunate.

By naming a frog subspecies after Luke Yeomans, it is hoped that people who look into the etymology of the name, familiarize themselves with the story of his totally avoidable and premature death and see who are the culpable people who not only made his life at times unbearable in life, but also effectively brought it to a premature abrupt end. It's hoped that people realise that the enemies of herpetology are more likely to be ostensibly within the reptile community and a part of it, rather than outside.

#### CONSERVATION

Notwithstanding myriad potential threats to frogs, including the advance of Chytrid fungus within the range of these species, numbers of the two newly described species from Queensland do not appear to have severely declined in recent years.

This is in contrast with that of other *Mixophyes* species and subspecies from more southern areas of New South Wales and north-east Victoria, which appear to have declined sharply since the 1970's, including *M. iteratus*, which has declined in numbers significantly since the 1970's. By way of example, *M. iteratus piersoni* *subsp. nov.* was seen by myself in large numbers in the Grose River Valley, north of Blackheath in the 1970's, but has rarely if ever, been seen there since year 2000.

Wildlife laws as administered by State Governments in Australia

have done nothing whatsoever to protect native frogs and have in fact impeded research into the frogs and any conservation outcomes that may have arisen. This is well documented by Hoser (1989, 1991, 1993 and 1996) and not only has little changed since these books were written and published, but the significant gains made at the time the books were published to improve wildlife laws, have since 2006 been largely eroded away in most Australian states. This leaves a bleak long-term prognosis for wildlife laws and protection of vulnerable species, if and when they need it.

#### REFERENCES CITED

- Barker, J., Grigg, G. C., and Tyler, M. J. 1995. *A Field Guide to Australian Frogs*. Surrey Beatty and Sons, NSW, Australia.
- Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia (1): Amphibia and Reptilia*. AGPS, Canberra, ACT, Australia:313 pp.
- Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh edition), CSIRO. Sydney, Australia:1064 pp.
- Corben, C. J. and Ingram, G. J. 1987. A new barred river frog (Myobatrachidae: *Mixophyes*). *Mem. of the Qld. Mus.* 25:233-237.
- Court of Appeal Victoria. 2014. Hoser v Department of Sustainability and Environment [2014] VSCA 206 (5 Sept. 2014).
- Donnellan, S. C., Mahony, M. J. and Davies, M. M. 1990. A new species of *Mixophyes* (Anura: Leptodactylidae) and first record of the genus in New Guinea. *Herpetologica* 46: 266-274.
- Eipper, S. 2012. *A guide to Australian snakes in captivity: Elapids and colubrids*. Australian Birdkeeper Publications (Reptile publications), Australia:280 pp.
- Gillespie, G. R. and Hines, H. B. 1999. Status of temperate riverine frogs in south-eastern Australia. pp. 109-130, in: Campbell, A. (ed.), *Declines and Disappearances of Australian Frogs*. Canberra: Environment Australia.
- Günther, A. 1864. Third contribution to our knowledge of batrachians from Australia. *Proceedings of the Zoological Society of London* 1864:46-49 [46, pl. 7 fig. 1].
- Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia: 238 pp.
- Hoser, R. T. 1991. *Endangered Animals of Australia*. Pierson and Co., Mosman, NSW, 240 pp.
- Hoser, R. T. 1993. *Smuggled: The Underground Trade in Australia's Wildlife*. Apollo Publishing, Moss Vale, NSW. 160 pp.
- Hoser, R. T. 1996. *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia*. Kotabi Publishing, Doncaster, Victoria, 3108, Australia:280 pp.
- Hoser, R. T. 2000. A new snake from Irian Jaya. *Litteratura Serpentiaria*, December 20(6):178-186.
- Hoser, R. T. 2004. Surgical Removal of Venom Glands in Australian Elapid Snakes: The creation of venomoids. *Herpitem* 29:1 (March 2004):36-52.(Reprinted in *Crocodylian* 4(5):cover and pages 17-31 (November 2004).
- Keogh, J. S., Scott, I. A. W., Fitzgerald, M. and Shine, R. 2003. Molecular phylogeny of the Australian venomous snake genus *Hoplocephalus* (Serpentes, Elapidae) and conservation genetics of the threatened *H. stephensii*. *Conservation Genetics* 4:57-65.
- Mahony, M., Donnellan, S. C., Richards, S. J. and McDonald, K. 2006. 'Species boundaries among barred river frogs, *Mixophyes* (Anura: Myobatrachidae) in north-eastern Australia, with descriptions of two new species. *Zootaxa*, 1228, 35-60.
- McDonald, K. R. 1992. *Distribution patterns and conservation status of north Queensland rainforest frogs*. Conservation Technical Report No. 1. Queensland Department of Environment and Heritage, Queensland. Australia.
- Ride, W. D. L. (ed.) et al. (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature* (Fourth edition). The Natural History Museum - Cromwell Road, London SW7 5BD, UK.
- Straughan, L. R. 1968. A Taxonomic review of the genus *Mixophyes*, (Anura, Leptodactylidae). *Proc. Linn. Society of New South Wales*, 93:52-59.
- VCAT 2015. *Hoser v Department of Environment Land Water and Planning* (Review and Regulation) [2015] VCAT 1147 (30 July).
- Wells, R. W. and C. R. Wellington. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1:1-61.

#### CONFLICT OF INTEREST

The author has no known relevant conflicts of interest.