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AUSTRALIA'S DWARF PYTHONS – GENUS *ANTARESIA*

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INTRODUCTION

Australia's dwarf pythons were, until the early 1980's, classified by most herpetologists as a single species, namely the Children's Python (*Liasis childreni*). An 1873 classification of the eastern form '*maculosus*' had long been regarded as being a junior synonym and thus a part of the same species. Few herpetologists in the early 1980's were even aware that such a synonymy even existed.

Things began to change when in 1981 I wrote a paper formally describing the Western Australian form as a new species. At the same time I also sought to redescribe the Ant-hill Python as *Liasis perthensis* (as a full species) in a separate paper, which was by that stage erroneously regarded by most as being an invalid name applied to western populations of the so-called Children's Python. I was told to 'hold-off' due to ongoing research by Laurie Smith and others at the Western Australian Museum and as a result, neither paper was published (although I had cited both as being in press at various stages in 1981-2; e.g. Hoser (1981)). (I suppose this is one good reason why authors should never cite material as being 'in press').

In 1985 Smith published a long awaited paper (Smith, 1985), dividing what was formerly regarded as a single species, the Children's Python *Liasis childreni* into three geographically exclusive species. He also accepted that *perthensis* was a separate (fourth) species in its own right. Although there is debate as to the validity of this division (see later) and one of the names used by Smith, I will for the time being treat these snakes as three similar but separate species. These are:-

1/ Children's Python *Antaresia childreni* of tropical Northern Australia west of Cape York, Queensland, including some offshore islands.

2/ Spotted Python *Antaresia maculosus* of coastal Queensland and nearby areas, including offshore islands, nearby highlands and slopes and north-east New South Wales.

3/ Stimson's Python *Antaresia stimsoni* (newly described by Smith) of most other parts of Australia, including arid areas. Not found in most parts of the far south of Australia, the far south-east and Tasmania. Found on at least some islands off the W.A. coast (Maryan, 1984).

Smith's name '*stimsoni*' although now widely used, is quite probably invalid. You see some months earlier Wells and Wellington described the same species as *Antaresia saxacola*. Due to the rule of priority, the Wells and Wellington name should (in theory) be the correct one to use. However before treating the preceding comment as dogma, readers should be aware that it has been argued by some that the Wells and Wellington description was inadequate in terms of diagnostic information and is therefore invalid. Wells and Wellington counter that their information as printed is sufficient as per ICZN rules, particularly when referenced with the specimen lodged at a public museum, to wit the Australian Museum in Sydney.

However the preceding dispute is probably not the main reason why the Wells and Wellington name wasn't adopted by most authors following its publication. You see shortly thereafter there was a petition to the ICZN by a substantial number of Australian herpetologists that called for the complete suppression of three works by Wells and Wellington (1984, 1985a, 1985b), which included the one relevant here. Although the case ultimately failed, the ICZN ruling wasn't until 1991 (see ICZN 1991 and references therein). By that stage the name *stimsoni* was already in common usage and had appeared in a number of books.

Which of the two names is ultimately deemed correct may in part hinge on a separate case currently before the ICZN, where it has been proposed to suppress another Wells and Wellington name (*Varanus keithhornei*) in favor of a junior synonym (*Varanus teriae*) on the basis of common usage of the latter. If that case succeeds then a similar fate probably awaits the name *saxacola*. If the case fails, then it is likely that the name *saxacola* may prove to be correct, and *stimsoni* relegated to nomen nudem or at best a subspecies.

A further spanner in the works was the date of the two publications. It appears that both the Western Australian Museum and Wells and Wellington backdated their publications (date printed on the cover or inside) to be some months prior to actual publication. Notwithstanding this, it appears that the Wells and Wellington one was still the first to be published. (My own opinion on the matter of *stimsoni* versus *saxacola* is that a submission be made to the ICZN for a ruling one way or the other, particularly in light of the relative simplicity of making petitions to the ICZN. Otherwise the issue could fester for decades). I think it is most important for the snake to carry a name and an agreed proper name at that. Which name this ultimately is, should be of secondary consideration.

Without siding one way or the other, I will for the rest of this paper use the name *stimsoni* to describe the arid form formerly regarded as a race of *childreni* on the sole basis that most readers recognise this at the present time (1999).

ANTARESIA

The genus name *Antaresia* was also proposed by Wells and Wellington. It appears to have been accepted by most authors since 1991 without dispute. The genus encompasses the smaller Australasian pythons, formerly lumped in the genus *Liasis*, and occasionally referred to as *Bothrochilus*. (*Bothrochilus* is now usually only applied to the species '*boa*'). Etymology for the name *Antaresia* comes from Antares, the yellow giant star in the 'tail' of the constellation of Scorpius. Incidentally, Wells named his daughter Antares.

HYBRIDISATION

Although Hybrids of the above three snakes (*childreni* et. al.) are known to exist in captivity and possibly in the wild (Hoser, 1993a), the following keys (below) can be used with a high degree of success and certainty to separate the above snakes from all other pythons. Although the keys may appear technical, persons experienced with the relevant snakes will not usually have to use them to identify the snake in question.

(Ant-hill Pythons *Antaresia perthensis* found in the Pilbara and nearby parts of Western Australia, are substantially different to the above snakes and are not the main subject of this paper. They are not known to hybridize with any other species. They are covered in detail in a paper later in this journal. (Also see Hoser (1992, 1995) for detailed accounts and then current bibliographies for the species).

KEY TO PYTHONINAE GENERA (EXCLUDING *CALABARIA*)

la Labials wihout pits *Aspidites*

lb Labials with pits 2

2a Premaxilla with teeth *Chondropython*

2b Premaxilla with teeth 3

3a Postorbital bone extends downward to meet the maxillo-ectopterygoid joint 4

3b Postorbital bone fails conspicuously to reach the maxilla and ectopterygoid *Antaresia*

4a Minimum of more than 47 scales from one side to other on the neck *Python*

4b Intercostal arteries arise from the dorsal aorta in groups of three to four in the anterior trunk *Morelia*

KEY TO *ANTARESIA, BOTHROCHILUS* AND *LEIOPYTHON*

la Single loreal 2

lb Two or more loreals 3

2a Less than 257 Ventrals *Bothrochilus boa* (Bismark Ringed Python)

2b More than 257 Ventrals *Leiopython albertisi* (White-lipped Python)

3a Fewer than 37 mid-body scale rows, 250 or less ventrals *perthensis* (Ant-hill Python)

3b 37 or more mid-body scale rows, 250 or more ventrals 4

4a No pattern, or if pattern is present it isn't bold and distinct *childreni* (Children's Python)

4b Bold pattern 5

5a Pattern of distinct blotches or spots, which may join along the dorsal midline *maculosus* (Spotted Python)

5b Pattern of bold blotches or bars and a white ventro-lateral stripe along the anterior part of the body *stimsoni* (=s*axacola*) (Stimson's Python)

COLOUR

See photos in this article for typical examples with locality information. Also see Hoser (1989) and Kend (1997) for further photos of these snakes and excellent habitat photos.

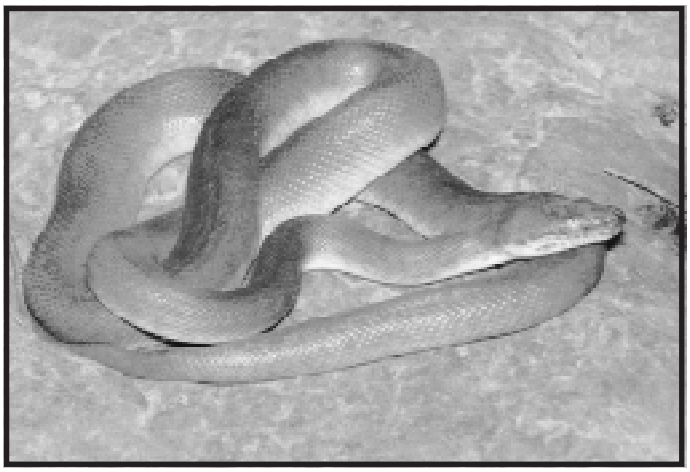
BIOLOGY IN WILD

Snakes of the *childreni* complex (and the Ant-hill Python) all tend to have similar requirements and preferences in the wild. In the wild these snakes are found in almost all types of habitat where they occur, ranging from very arid to very wet and from flat areas to hills. Having said this, there are some types of habitats that are most favoured. Hilly (and especially rocky) areas are preferred over flat and un-rocky areas. Essentially these snakes appear to prefer well-drained areas with lots of ground cover. Preferred vegetation is varied, but in arid areas, spinifex (*Triodia* sp.) is a most favored ground cover, compared with most other types of plant. It is a highly impenetrable but flammable type of grass that grows outwards in a circle and is common in many arid areas. In it's own right, spinifex provides excellent cover for reptiles, even in the hottest of places. For example, I retrieved a resting adult male Ant-hill Python from a small exposed spinifex clump at 12:10 PM (ten past noon), by burning the bush. This was 6 km west of Shay Gap (WA) when the air temperature was 34 degrees celcius and cloud cover was 40 per cent. The spinifex was surrounded by bare dirt and there was little if any wind, so there was effectively no risk of starting a grass fire.

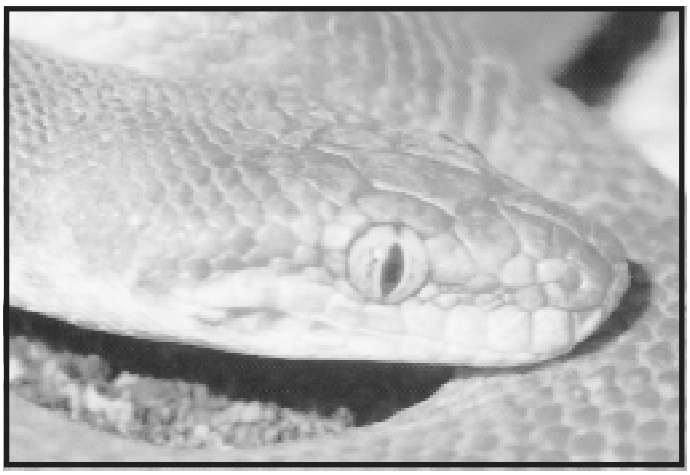
Large termite mounds are also preferred habitat of these snakes, particularly when no other cover is available. In the Shay Gap (WA) area, I recovered Stimson's and Ant-hill Pythons from these mounds in a flat area that had recently suffered a bush (grass) fire and therefore had little ground cover (in 1983) and from mounds on a low rocky hill with plenty of spinifex (in 1981).

Termite mounds are desirable cover due to the relatively constant, warm and humid temperatures maintained inside them by the insects. Small mouse-sized mammals such as *Antechinus* sp. and lizards burrow into these mounds, leaving large numbers of access holes which can be used by snakes. The snakes in turn enter the mounds for shelter and tend to feed on the small mammals and lizards. In Shay Gap alone, the following snakes were found inside 46 termite mounds in 1981 and 1983: King Brown Snake *Pseudechis australis* (1), Brown Snakes *Pseudonaja* sp. (3), Orange-naped Snake *Furina ornata* (adult pair in one mound), Black-headed Python *Aspidites melanocephalus* (one adult), Ant-hill Python (8) and Stimson's Python (10), plus numerous lizards and small mammals.

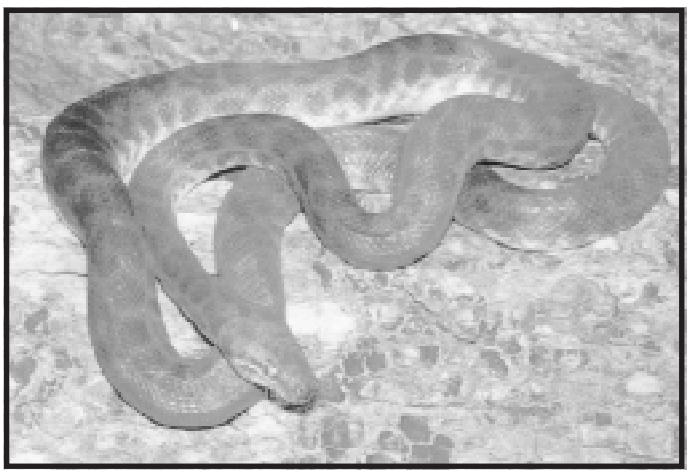
Although Desert Death Adders *Acanthophis pyrrhus* appeared to be by far the most common snake in the area based on accounts of local Herpetologists Shem Wills (Newman (WA)) and Val Bagshaw (Shay Gap (WA), and the number of snakes found both in total



Children's Python (*Antaresia childreni*) from Kunnanurra, W.A.



Children's Python (*Antaresia childreni*) from Kunnanurra, W.A.



Children's Python (*Antaresia childreni*) from near Humpty Doo, NT.

and on roads at night by myself on two trips to the area, NONE were found inside any mounds inspected. (Spinifex, preferably in hills, is by far the preferred habitat of that snake). See Hoser (1981b) for further details of Pilbara (WA) reptiles.

In Tropical Australia, Children's Pythons are most numerous in hilly rocky areas which have spinifex cover on rock outcrops. Such areas include the Kimberley

ranges and the Arnhem Land escarpment, where huge numbers occur. In Queensland, Spotted Pythons are most common in hilly rocky habitats and not dense forests, which appear to be dominated by Carpet Pythons *Morelia spilota*. In Western New South Wales and adjacent parts of South Australia and Queensland, Stimson's Pythons are usually confined to rocky hills. They appear to be absent from most of the flat rockless country that intervenes, regardless if the intervening soil is 'red' or 'black'. In warmer parts of Australia and during summer, most specimens are found crossing roads at night. Contrary to popular misconception, these reptiles do not appear to be basking on the road.

The form that occurs in Western New South Wales and adjacent parts of South Australia is an undescribed subspecies, (Kend 1997).

Greer (1997) and other authors note how *Antaresia* commonly occur in caves where they feed on small bats. Mount Etna, in Queensland is a limestone hill honeycombed with caves. It is also home to tens of thousands of bent-winged bats (various species) and many hundreds of Spotted Pythons (*A. maculosus*) that feed on them.

Excellent habitat photos for *Antaresia* can be found in Hoser (1989), Kend (1997) and elswehere.

Specimens can be taken from ant-hills at all times of year, although getting into these rock-hard structures always poses difficulties for the reptile collector. The best way is probably with the use of a bulldozer or road grading machine. In cooler parts of Australia and during cooler months, most specimens are found during daylight hours under ground cover such as rocks and in crevices. Unlike Carpet/Diamond Pythons, which are frequently observed basking during the day in cooler periods, wild pythons of the *Childreni* complex have not to my knowledge been observed doing this. They do however sometimes sit in crevices with exposure to direct sunlight. There is also evidence that they thermoregulate during the day by moving within crevices and under rocks. This isn't surprising noting the hot and cold temperature extremes in areas where the snakes occur.

DIET (IN WILD)

In the wild these snakes are presumed to feed an all vertebrates small enough to be taken. Preferences probably vary somewhat depending on locality and food availability, Captive specimens are usually fed mice or small rats. In the wild, it is presumed that lizards are the principal food source for smaller specimens, with birds and mammals becoming more important as the snakes get larger. Such is known to be the case with Diamond Pythons (*Morelia spilota spilota*) in the Sydney area.

CAPTIVITY AND BREEDING

The *childreni* complex snakes are one of the staples of herpetoculture in Australia. They are extremely common in captivity here in Australia and only a small fraction of the total come from the wild. The main reason for this situation is because it is usually cheaper to buy captive-bred rather than go in the bush and start looking. The overwhelming majority in captivity derive from captive breedings. This is no small feat considering the tight legislative regime in many Australian states. (Like with firearms, those who keep them legally (with a licence) are more likely to run foul of the law than those who keep them illegally (without a licence) and so are not on the relevant data-base and subjected to ongoing scrutiny).

Getting away from the inevitable discussions about legalities and the law, *childreni* complex snakes are very easy to keep and breed in captivity. I have kept and seen kept all snakes of the *childreni* complex in widely different cages and conditions, usually without incident. I have seen them thrive in conditions that would kill other less hardy snakes. These snakes are extremely hardy and in a few words 'hard to kill'. Kend and Kend (1992) accurately suggest 'standard terrestrial husbandry'. Barker and Barker (1994) provide what is one of the best overviews of keeping these snakes in captivity.

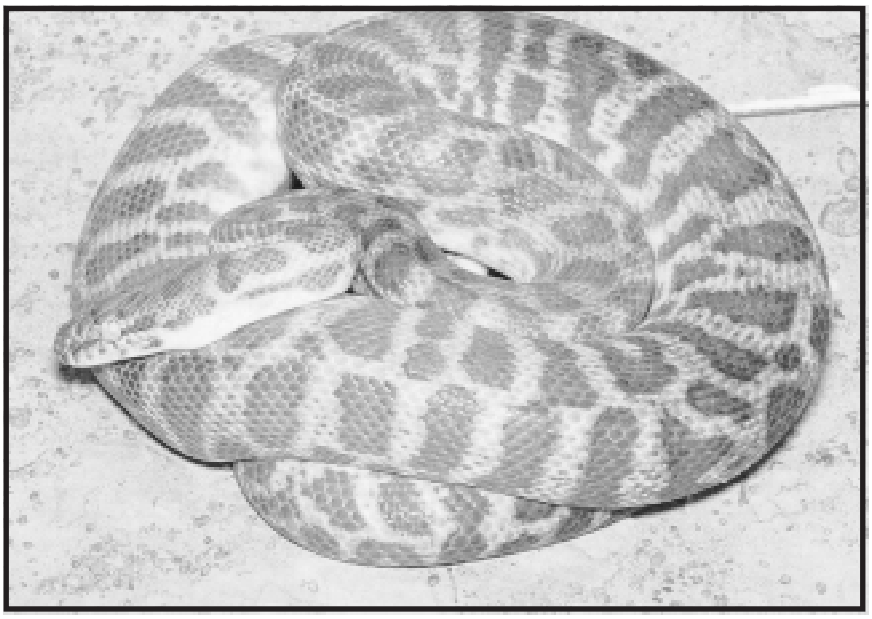
Cage designs usually involve minimal furnishings and/or cover, fairly dry, fresh water in an unspillable container and a mechanism for regulating the temperature. Although, like all pythons, *childreni* complex snakes are prone to diseases, parasites and so forth, they are so hardy as to be more resistant to these than most other snakes. They make excellent snakes for the 'beginner', although Stimson's Pythons and sometimes to a lesser extent Children's Pythons, may be of snappy disposition. Spotted Pythons are the most even tempered of these snakes (Ant-hill Pythons are also even tempered). Ross and Marzec (1990), detail keeping methods used for keeping and breeding these and other similar species. They noted different methods successfully used to keep, breed and hatch eggs of the *childreni* group.

When I kept a number of these snakes together during the period 1977-84, no cannibalistic tendencies were noted, other than the fact that two snakes may occasionally go for the same food item (mouse or rat). However Maguire (1990) noted a case of accidental cannibalism.

There are a number of published reports on breeding *childreni* complex snakes, including Barnett (1979, 1987), Chiras (1982), Dunn (1979), Heijden (1988), Hoser (1991), Kortlang (1989), Mattison (1988), McLain (1980), Ross (1983), Sheargold (1979), and Williams (1992). This list is far from exhaustive.

However for simplicity's sake I suggest intending breeders of these snakes consult Barnett (1987) and his paper in this journal for the perfect 'formula' for successfully breeding these snakes and Ross and Marzec (1990) or Barker and Barker (1994) for more wide ranging accounts on keeping and breeding these and other pythons. There are also innumerable 'general' texts on keeping and breeding reptiles available.

Although specimens of these species have been bred without separation of the sexes, doing so probably enhances chances of success, provided the keeper is aware of the correct time to re-introduce snakes. Cooling of snakes (10 weeks approx.) is indicated, (from a normal 27-29 degrees to 21-23 degrees Celsius), with mating activity peaking at the end of this period (Barnett, 1987). For those that separate sexes, palpatation (feeling for enlarged egg follicles) will indicate when re-introductions and matings should be attempted. Over winter (Southern Hemisphere) mating periods for captive snakes correlates with location of resting pairs of adult Spotted Pythons during cooler months in the wild. These include the following:



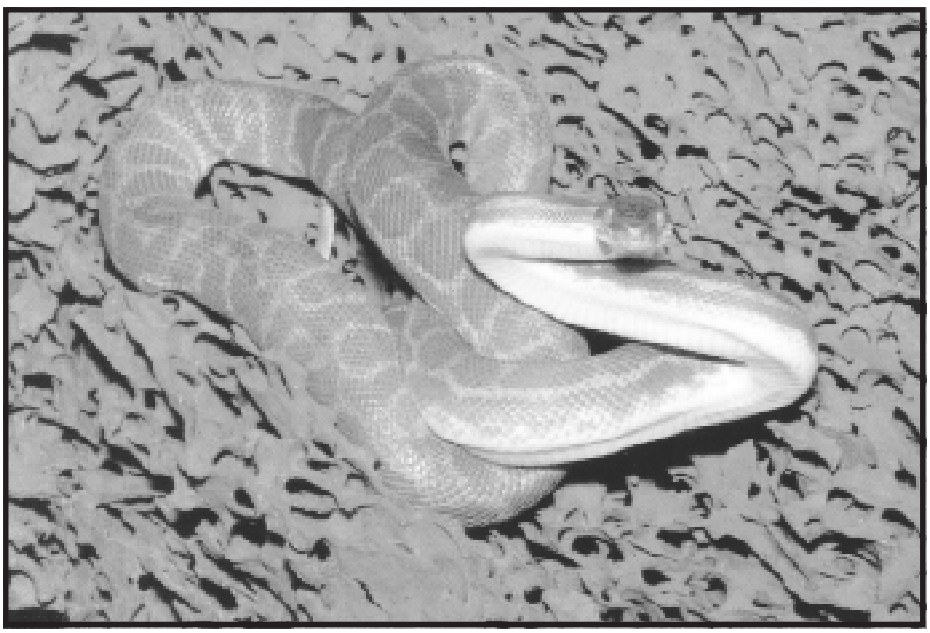
Stimson's Python (*Antaresia stimsoni*) from Barrow Creek, NT.

Myself (Charters Towers (Qld) 1979), (Dalby, (Qld) 1978), Robert Croft (Dalby (Qld) 1974 and again in 1975), Bill Saunderson (Dalby (Qld) 1974), and John Baker (Bingarra (NSW) 1974), (see Hoser (1990) for details).

Combat between males has been noted by a number of authors and although some such as Ross and Marzec (1990), have stated that this combat is 'non-injurious', a few keepers have indicated that males caged together should be monitored in the early stages of cohabitation before a well-established 'hierarchy' is established.

Simon Kortlang (Victoria, Australia), posessed a dominant male Spotted Python sourced from Townsville, Queensland, that actually killed another male when held in a 'bachelor' cage and discovered the same dominant male attempting to 'strangle' another snake at about the same time the dead snake was found. For obvious reasons, that snake is now housed alone. Interestingly, the male that was saved from being strangled by the more powerful snake still had a strong sexual urge and mated with the first female it was presented with. Pelvic spurs (moving), are used by fighting males and substantial injuries were noted, in particular in ventral areas among Kortlang's fighting Spotted Pythons. Males kept with males were also recorded as sometimes attempting to copulate with one another for extended periods (in the absence of females), which is a habit shared with other snakes including Death Adders (genus *Acanthophis*). Kortlang has also regularly observed spurs being used by males when mating with females.

Incubation is usually achieved by most successful breeders removing eggs from the female as soon as they are laid. They are placed in a medium of 50-55 per cent vermiculite (not fine grade) to a depth of about 3 cm in a container with 50-45 per cent water (by weight) with the container nearly totally sealed (Brian Barnett pers. comm. 1987). The eggs are about 80 per cent buried in the vermiculite. Thirty degrees Celsius appears to be the optimum temperature for incubation, although some variation from this figure, while not necessarily meaning failure, should be avoided by those hoping for maximum success. With an average incubation temperature of just under 30 degrees, Barnett (1987) recorded incubation times of 46-61 days for Spotted Pythons. Other published accounts for *childreni* complex snakes (see bibliography) had similar results. In summary, lower temperatures = longer incubation times.



Female Stimson's Python (*Antaresia stimsoni*) from Shay Gap, W.A.

DIET

Although hatchlings appear to prefer lizards as food, most keepers attempt to 'trick-feed' them into taking small mice or parts thereof at the earliest opportunity. Various degrees of 'force-feeding' are sometimes employed with difficult specimens, (usually termed 'assist-feeding') although raising these snakes appears to pose few difficulties. (See Weigel (1988), for information on 'assist feeding' and Barnett, (1987) for how he weans his young pythons onto mice using 'trick-feeding' methods).

(When switching Desert Death Adders (*Acanthophis pyrrhus*) from lizards to mice, I would tie a segment of lizard (head, tail, etc) to a small dead mouse and with long tongs wave it in front of the snake. The snake would then bite onto the food and commence consuming both mouse and lizard segment. After the snake had bitten the food item I was usually able to remove the lizard segment and reuse it while the snake would continue to consume the remaining mouse. Eventually (in theory) the Desert Death Adders would take mice alone without 'inducements ').

Feeding and sloughing data for these snakes are published by a number of authors including Hoser (1982). Barnett (1987), provides detailed growth data for hatchling Spotted Pythons. Not surprisingly snakes kept at higher temperatures tend to eat and slough more than their cooler counterparts. Maximum growth in young specimens is achieved by keeping them relatively warm and feeding them as much as possible (although preferably in lots of smaller feedings rather than irregular large feedings, which are more likely to result in digestive problems). Some fast growing specimens seem to get 'pin-head syndrome' which merely refers to the body appearing to grow at a faster rate than the head, resulting in a head appearing abnormally small for a snake of a given size. Ectoparasites, skin disorders and humidity problems can all lead to an accelerated sloughing rate. It goes without saying that all keepers of these (and any other) snakes should keep detailed keeping, feeding and breeding records, principally as a means to pre-empt and/or identify potential problems.

Recorded clutch sizes for *childreni* complex snakes varies from 2 to 20. (See bibliography for details). Shine (1991) published the following statistics for snakes of the *childreni* complex, based on his dissections of specimens in field and museum. (Averages).

Children's Python: Hatchling 23 cm, Adult Male 69 cm, Adult Female 72 cm, 7 eggs per clutch.

Spotted Python: Hatchling 24 cm, Adult Male 77 am, Adult Female 84 cm, 13 eggs per clutch.

Stimson's Python: Hatchling 24 cm, Adult Male 88 cm, Adult Female 85 cm, 6 eggs per clutch.

(Ant-hill Python: Hatchling 17 cm, Adult Male 45 cm, Adult Female 47 cm, 5 eggs per clutch).

Note: Some of the above statistics were based on small sample sizes. There is geographical variation in size and other features in the above snakes not revealed by the previous figures. Shine's figures would no doubt have biases to certain locations.

CLASSIFICATION

In the wild state Children's, Stimson's and Spotted Pythons act both as separate species and as the same species. In the north of Western Australia, it appears that Stimson's and Children's Pythons don't hybridise, even though they are found within a few kilometres from each other (but don't appear to coexist in any single locality). On that basis it would tentatively seem that they are different species.

However in parts of inland Queensland, Laurie Smith identified snakes that he was unable to assign to a given 'species' on the basis of their intermediate characteristics and their location of origin being on the convergence of the ranges of all three forms. Likewise, specimens from parts of New South Wales appear to be intermediate between Stimson's and Spotted Pythons. Alice Springs herpetologist Greg Fyfe has also observed wild caught snakes from Queensland intermediate in character between Stimson's and Spotted Pythons. (At this stage, no location in the wild is known where Stimson's, Children's or Spotted Pythons coexist in sympatry).

Smith's revision of *childreni* complex snakes has also came under criticism due to overlaps of scale features of each 'species', further adding fuel to the argument that all three snakes are merely different forms of the same species (subspecies). In his revision, Smith split Stimson's pythons into two subspecies, (a third remaining unnamed), but that division was based on overlapping characteristics, since found in some circumstances to place individuals from a single population into different subspecies. Therefore that division isn't accepted by a number of reptile people within Australia.

With the possible exceptions of Mirtschin (1992), and Gow (1989), most recent Australian authors, including Cogger (1992), Ehmann (1992) and Wilson and Knowles (1988), have at least tentatively accepted Smith's division of the *childreni* complex into the three species as dealt with in this paper/article. (Wells and Wellington divided the species complex along the same lines). Ant-hill Pythons, although in some old texts erroneously referred to as a subspecies of Children's (or Stimson's) Pythons (e.g. Worrell 1970, Cogger 1986), is clearly not so. The snakes are totally different in average size and appearance, including key diagnostic features. Furthermore it co-exists with Stimson's Pythons where it occurs and there is no evidence of cross breeding.

My opinion is that *childreni* complex snakes are a 'borderline case' in terms of whether or not they fit the man-made category of 'species'. The division into three 'species' by myself here is only tentative and in line with common useage among reptile people in Australia and elsewhere.

CAPTIVE HYBRIDIZATION

Clearly Pythons of the *childreni* complex have been cross-bred in captivity. To what extent is not clearly known. For example a snake held at Los Angeles Zoo (USA) had the pattern of a Spotted Python, but scale characteristics of a Children's Python, (Kend, 1992). Kend didn't state whether the snake had been derived from a captive hybridisation or wild-caught. Most *childreni* complex snakes in the United States and Europe appear to be Spotted Pythons. This makes sense as most *childreni* complex snakes in captivity in Australia are also Spotted Pythons. These snakes are the most common near the heavily populated eastern seaboard (Sydney (NSW), Brisbane (Qld)).

Melbourne snake breeder, Simon Kortlang has in his collection hybrids resulting from a male Children's Python from Darwin (NT) mating with female Stimson's and Spotted Pythons, (with all parents or their parents being sourced from known localities in the wild). Kortlang also has reliable breeding records of crosses between wild-caught Stimson's and Spotted Pythons.

On 29th December 1993, Peter Comber (Melbourne, Australia), obtained 8 fertile eggs from a female Spotted Python that had mated with one of Kortlang's male Children's X Spotted Python hybrids.

Although it has yet to be tested for all the *childreni* complex, it is currently assumed by myself that 'hybrid' offspring are fertile. ('Intergrades' between forms of Carpet/Diamond Python are clearly fertile and all are regarded as being of the same species by most herpetologists). Testing fertility of 'hybrid' offspring of *childreni* complex snakes could be useful in finally deciding the validity of these species, based on the 'classical' definition of the term; namely a group of animals that can mate and produce fertile offspring which in turn can do likewise.

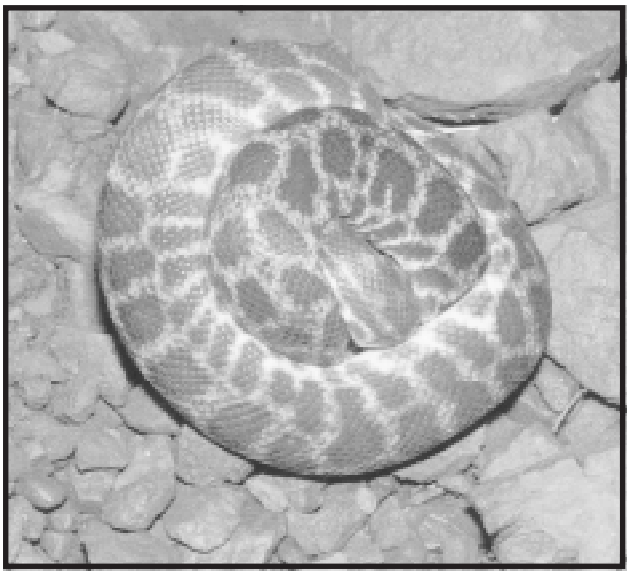
TRADE IN THESE SNAKES

Although Ant-hill Pythons are rare in captivity in all parts of the world including Australia, *childreni* complex snakes are common in most parts of the world, largely due to captive breeding. Many breeders do not appear to differentiate between the three 'species' and prices between them don't appear to vary much, if at all.

Prices for hatchlings (from price lists) though varying, seem to average about $120 (USA), 80 Pounds(UK), $120 (AUS). (Breeding Ant-hill Pythons, though generally unobtainable have been quoted at between $2,000 and $10,000 each or as pairs in the United States).

A good indication of how many of these snakes are in captivity can be gauged from dealers price lists and perusal of an annual publication put out by Frank Slavens, (see Slavens 1990 in bibliography).

Snakes and other fauna are smuggled through the post from Australia and also by corrupt fauna and/or airline officials. The latter by various means. It is impossible to ascertain how many specimens leave Australia



Stimson's Python (*Antaresia stimsoni*) from Barkly Highway, NT, in a defensive posture to hide it's head.

illegally on an annual basis, but anecdotal evidence points to a sizeable illicit trade. Those caught smuggling these animals from Australia often pay a penalty, although whether this acts as a deterrent is not known.

For example on 24th March 1991, Casey Stephen Lazik, an American citizen was arrested after mailing to the United States three snakes from Port Hedland in Western Australia. On 16th May, 1991, he was convicted and fined a total of $10,000 on federal and state charges for attempting to illegally export a Woma (*Aspidites ramsayi*), Black-headed Python (*A. melanocephalus*) and Ant-hill Python. This temporary set-back didn't seem to stop him getting the species he wanted. By 1998 he had a roaring trade selling numbers of captive-bred offspring of Knob-tailed geckoes (*Nephrurus laevis*), Womas and Ant-hill Pythons. Asking prices were huge. It seems that in this and other cases, the fines didn't even match the price of the animals being smuggled.

In three separate unrelated incidents, John Nichols of New Zealand, Tsuyoshi Shirawa of Japan and Jean-Pierre Blanc of Switzerland were all busted and subsequently jailed for substantial terms after attempting to illegally export Shingleback Lizards (*Trachydosaurus* (=*Tiliqua*) *rugosus*) in their luggage as they boarded planes leaving Australia.

While I can advise Non-Australian readers to take note of these and innumerable other cases, the potential profits from the sale of smuggled snakes and their offspring make smuggling a viable option for many. Furthermore customs and NPWS officials are on the record stating that a substantial amount of the fauna smuggled is never detected. Anecdotal evidence confirms this.

In the USA many businesses have been built on breeding snakes derived from specimens illegally exported from Australia. As the government cannot stop this trade, indeed bent officials are often a critical part of it (see Hoser 1993b, 1996) and there is little if

any evidence of it harming Australia's reptile populations, it makes more sense to legalise the trade and tax it as per the system outlined in *Smuggled* (Hoser, 1993b).

Notable is how once the animals are outside of Australia, there seems to be little difficulty in laundering founder stock as 'captive-bred' and legal. Laws such as the Lacey Act (USA) seem to be ineffective in preventing this laundering of illegally obtained stock. In many cases these are species which up until recently did not occur outside Australia and have never been legally exported from here. However they are now being traded 'legally' in the USA and elsewhere.

It is likely that the export of reptiles from Australia, such as small pythons will only cease (legal or otherwise), when captive breeding in the USA and elsewhere is able to supply specimens for the market at a price which makes obtaining specimens from the wild unviable (legally or otherwise). Hoser (1996) pp. 215-224, shows this already occurs for some Australian reptiles and the number of species for which this situation occurs is rising each year.

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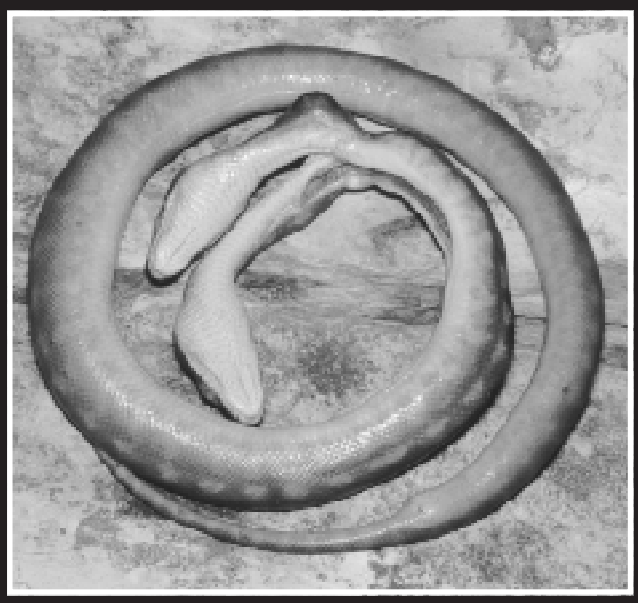
RAYMOND HOSER has had experience with all pythons of the genus *Antaresia*. Although regarded by some as common and uninteresting, this hasn't dampened his enthusiasm for them.



A hatchling two headed Queensland Carpet Snake(*Morelia spilota*) bred by Dale Gibbons of Bendigo. The snake hatched live but died shortly thereafter. Photos: Raymond Hoser.