

PRELIMINARY¹ ACCOUNT OF THE REPTILIA AND AMPHIBIA

COLLECTED BY THE NATIONAL GEOGRAPHIC SOCIETY-COMMONWEALTH
GOVERNMENT-SMITHSONIAN INSTITUTION EXPEDITION TO ARNHEM
LAND (April to November, 1948)

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Plate xxxvii and text fig. 1-7

UNDER the field curatorship of the ichthyologist, Dr. R. R. Miller, the expedition made an official collection of 729 specimens. These have been divided between the United States National Museum, Washington, and the South Australian Museum, Adelaide, as indicated by the abbreviations U.S.N.M. and S.A.M. R. respectively, which precede the reference numbers entered herein. All holotype specimens have been deposited in the latter institution. In addition, a series of 179 specimens comprising the bulk of a collection obtained by the expedition transport officer, Mr. J. E. Bray, and presented to the Australian Museum, Sydney, has also been made available for inclusion in this report. Such specimens are indicated by the abbreviation A.M. R. In all, 908 specimens representing 65 species and subspecies.

The present study was undertaken at the South Australian Museum and extensive use was made of its research collection for purposes of reference and comparison.

The titles of various Australian political areas have been abbreviated as follows: N.T., for Northern Territory; Qld., for Queensland; N.S.W., for New South Wales; Vict., for Victoria; S. Aust., for South Australia; and W. Aust., for Western Australia.

ACKNOWLEDGMENTS.

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¹A more detailed account will appear in the official journal of the expedition to be published at a later date.

Brisbane, and Messrs. J. Henry and S. J. Copland, of the Macleay Museum, University of Sydney, who forwarded type and other material housed in their respective institutions for my examination.

TESTUDINATA

FAMILY CHELONIIDAE

ERETMOCHELYS IMBRICATA (Linnaeus)

Testudo imbricata Linnaeus, 1766, p. 350.

Eretmochelys squamata Agassiz, 1857, p. 382.

U.S.N.M. 128527, Black Rock Point, Coberg Peninsula, N.T.

LORICATA

FAMILY CROCODYLIDAE

CROCODYLUS POROSUS Schneider

Crocodylus porosus Schneider, 1801, p. 169.

U.S.N.M. 128526, Black Rock Point, Coberg Peninsula, N.T.

U.S.N.M. 128685, South end of Melville Bay, west of Yirrkalla, N.T.

SERPENTES

FAMILY BOIDAE

LIASIS CHILDRENI CHILDRENI Gray

Liasis childreni Gray, 1842, p. 44.

U.S.N.M. 128469, Port Langdon, N.T.

LIASIS FUSCUS FUSCUS Peters

Liasis fuscus Peters, 1873, p. 607.

U.S.N.M. 128768, Oenpelli, N.T.

MORELIA SPILOTES VARIEGATA Gray

Morelia variegata Gray, 1842, p. 43.

U.S.N.M. 128235 (head only), Lee Point, 9 miles north-east of Darwin, N.T.

U.S.N.M. 128442, near Umba Kumba, Groote Eylandt, N.T.

As indicated by Loveridge (1934, p. 270), present data does not suggest any correlation between the distribution of the *variegata* colour phase and a particular geographical region or environment. However, no one worker has yet had the opportunity of examining a large Australia-wide series of this species, and as pure populations of both phases undoubtedly occur, *variegata* is herein retained. [See also Mitchell (1951, p. 545).]

FAMILY COLUBRIDAE

ACHROCHORDUS JAVANICUS Hornstedt

Achrochordus javanicus Hornstedt, 1787, p. 307, pl. xii.

U.S.N.M. 128765-128767, Oenpelli, N.T.

S.A.M. R.2844 (2 specimens), Oenpelli, N.T.

ACHROCHORDUS GRANULATUS GRANULATUS (Schneider).

Hydras granulatus Schneider, 1799, p. 243.

U.S.N.M. 128511, Milimgimbi Island, N.T.

FORDONIA LEUCOBALIA (Schlegel)

Homalopsis leucobalia Schlegel 1837, p. 345, pl. xiii, fig. 8-9.

U.S.N.M. 128334, Inlet at dock for Delisseville, 11 miles west-south-west of Darwin, N.T.

ENHYDRIS POLYLEPIS (Fischer)

Hypsirhina polylepis Fischer, 1886, p. 14.

U.S.N.M. 128474, Port Langdon, N.T.

U.S.N.M. 128450, near Umba Kumba, Groote Eylandt, N.T.

Kinghorn (1929, p. 90) appears to be in error when he records single subcaudals for *macleayi* Ogilby, a species which Loveridge (1934, p. 273) places in the synonymy of *polylepis*.

AHAETULLA PUNCTULATA PUNCTULATA (Gray)

Leptophis punctulatus Gray, 1827, p. 432.

U.S.N.M. 128445-128447, near Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128769-128771, S.A.M. R.2845, Oenpelli, N.T.

U.S.N.M. 128683-128684, Yirrkalla, N.T.

U.S.N.M. 128470-128472, Port Langdon, N.T.

U.S.N.M. 128233, West Point, 5 miles west of Darwin, N.T.

The longitudinal dark line under the tail, stated to be characteristic of the New Guinea race *lineolata* (Guichenot) is present in about half of this series, being particularly prominent in the three specimens from Groote Eylandt. As recorded by Loveridge (1948, p. 385) the horizontal diameter of the eye relative to the other head dimensions varies considerably with age in this species.

NATRIX MAIRII MAIRII (Gray).

Tropidonotus mairii Gray, 1841, p. 442.

U.S.N.M. 128443-128444, near Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128772, Oenpelli, N.T.

CERBERUS RHYNCHOPS AUSTRALIS (Gray)

Homalopsis australis Gray, 1842, p. 65.

U.S.N.M. 128264, Nightcliff, near Darwin, N.T.

A single South Australian Museum specimen from Melville Island, N.T., was also examined.

Ventral scales 146, 148; subcaudals in 48 (tail incomplete) and 56 pairs; anal divided; 23 and 25 rows of keeled scales at midbody. A suture through the nostril to the first labial on one side of the head and to the second labial on the other in both specimens; loreal contacting the 1st, 2nd, 3rd and 4th, or 2nd, 3rd and 4th upper labials. A single preocular scale extends around to a point well under the eye; one or two sub- and two post-oculars.

The designation of these two specimens to *australis* is based mainly on the locality, it being evident from the above data that they do not conform satisfactorily to any of the three subspecies as keyed by Loveridge (1948, p. 389), his key being based on a series of 70 *r. rhynchops*, 5 *r. novaeguinea*, 4 *r. australis* and presumably data published by Boulenger (1896, 1897) and De Rooij (1917).

If the tails were complete, both specimens would possess more than Loveridge's maximum of 51 pairs of subcaudals and would be identifiable as *r. rhynchops*. On the other hand, if the diagnosis is based on the nasal cleft, there would be equal grounds for placing these specimens with either *novaeguinea* or *australis*. It is possible that the circumocular scalation will be found to provide a better keying character for the separation of the three subspecies. In figuring *australis* Boulenger shows the nasal cleft joining the 2nd upper labial on one side and the preocular on the other, with only the second and third upper labials contacting the loreal, the fourth being widely separated from it. De Rooij (1917, fig. 70) figures *rhynchops* and shows a smaller preocular and two suboculars.

Although it seems probable that *australis* and *novaeguinea* can be satisfactorily distinguished from the type race, many more specimens will have to be examined and their variation tabled before a practicable key can be devised.

BOIGA FUSCA (Gray)

Dendrophis fusca Gray, 1842, p. 54.

U.S.N.M. 128473, Port Langdon, N.T.

FAMILY ELAPIDAE

ASPIDOMORPHUS DIADEMA (Schlegel)

Calamaria diadema Schlegel, 1837, p. 32.

U.S.N.M. 128261, Nightcliff, 7 miles north-east of Darwin, N.T.

Midbody scales in 15 rows; 176 ventrals; 54 pairs of subcaudals; anal divided.

Preocular almost separating the supraocular from the prefrontal. Nostril breaking the upper edge of the nasal shield.

The patterning of this specimen very closely resembles that of *christianus* Fry, with which this species coexists in the vicinity of Darwin. The head and neck are black with a broad lighter band across the nape replacing the more usual small crescent shaped marking. Upper labials and ventral surfaces white; dorsal surfaces pale yellow, each scale being edged with brown, giving a network effect.

ASPIDOMORPHUS CHRISTIANUS (Fry)

Pseudelaps christianus Fry, 1915, p. 91, fig. 6.

U.S.N.M. 128262, Nightcliff, 7 miles north-east of Darwin, N.T.

Midbody scales in 17 rows; 187 ventrals; 49 pairs of subcaudals; anal divided. The nasal is widely separated from the preocular which joins the frontal.

An additional specimen from Nightcliff was presented to the South Australian Museum in 1949 and a note forwarded with it suggests that the species is quite common within a limited distribution centred near Darwin. It is registered S.A.M. R.2995, and possesses 17 midbody scales; 185 ventrals; 43 pairs of subcaudals and a divided anal. It is the larger of the two and measures 375 (319+56) mm.

The tails of both of these specimens appear to be complete, indicating that the subcaudal count is variable. It has been recorded as 38 (type specimen), 49 and 43 (the present specimens), 56 (Loveridge, 1934, p. 276) and 57 (Longman, 1916, p. 48).

The general ground colour is almost white tending yellow middorsally; each scale is edged with purple, giving the dorsal surface a reticulate appearance. A light band across the nape separates a dark purple neck band from the still darker head.

The distributions of *diadema* and *christianus* appear to meet in the vicinity of Darwin, and the close superficial resemblance of the two snakes in this district, together with the geographical segregation of *christianus* in suitable districts of north-western Australia, suggests that it may only be a subspecies of *diadema*, distinguishable by its greater midbody count and several minor differences in colouration. Both snakes display a wide variation in ventral and subcaudal scale counts.

DEMANSIA CARINATA (Longman)

Diemenia carinata Longman, 1915, p. 31, fig.

U.S.N.M. 128471, Port Langdon, N.T.

The record of this specimen from Port Langdon is interesting as it considerably extends the known range of this arboreal *Demansia*, the type locality being Cane Grass Station, via Charlesville, in western Queensland.

DEMANSIA PSAMMOPHIS PSAMMOPHIS (Schlegel)

Elaps psammophis Schlegel, 1837, p. 455.

U.S.N.M. 128448, near Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128263, Nightcliff, near Darwin, N.T.

PSEUDECHIS AUSTRALIS (Gray)

Naja australis Gray, 1842, p. 55.

U.S.N.M. 128451, S.A.M. R.2843 (2 specimens), near Umba Kumba, Groote Eylandt, N.T.

OXYURANUS SCUTELLATUS (Peters)

Pseudechis scutellatus Peters, 1867, p. 710.

Oxyuranus macleynani Kinghorn, 1923, pp. 42-45.

U.S.N.M. 128773 (head and neck only), 20 miles N.E. of Oenpelli, N.T.

ACANTHOPHIS ANTARCTICUS ANTARCTICUS (Shaw)

Boa antarctica Shaw, 1894, pl. mxxxv.

U.S.N.M. 128476-128477, S.A.M. R.3226, Port Langdon, N.T.

Head shields multikeeled, one specimen approaching the *palpebroso* condition. General colouration typical of the species, these specimens possessing a smooth scaled, strongly compressed, white extremity to the tail.

A comparison of this Arnhem Land material together with other northern Australian specimens with southern Australian examples indicates that the colour variation of the caudal extremity is largely, if not completely, correlated with locality. Also, there would appear to be some variation in its form, southern specimens possessing an acutely keeled extremity with strongly imbricate scales. (See fig. 1.)

South Australian Museum specimens from the following localities were examined. Those possessing a light coloured caudal extremity were from Bathurst Head, Qld. (2 specimens); Coen River, Qld. (1 specimen); Melville Island, N.T. (1 specimen); Roper River, N.T. (1 specimen).

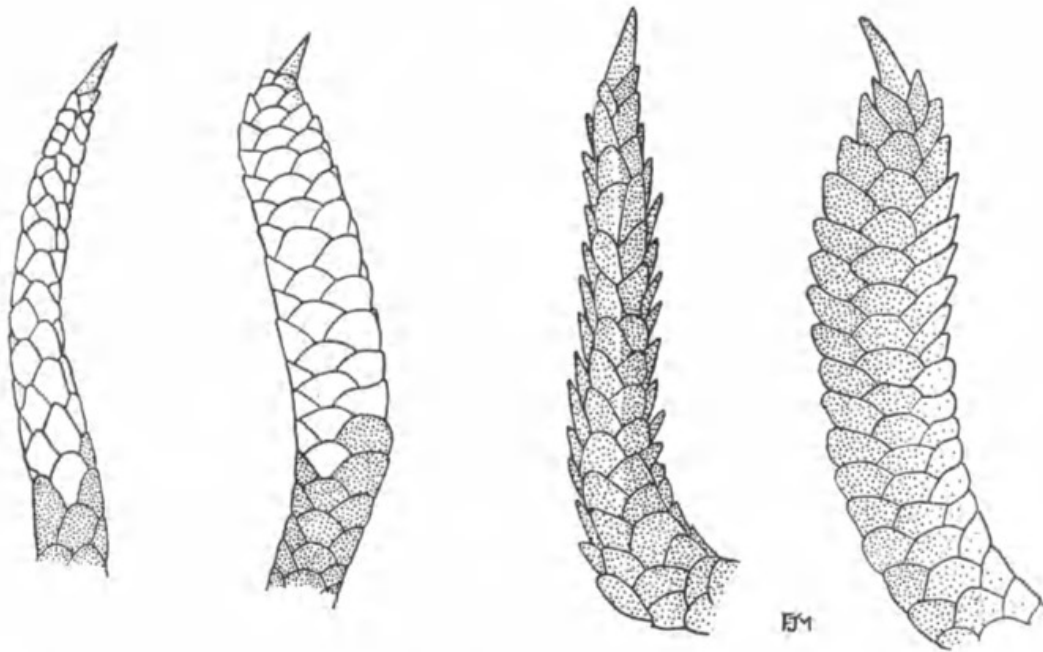


Fig. 1. *Acanthophis antarcticus* (Shaw): dorsal and lateral views of the caudal appendage, showing the variation in colour and form (see text).

Those possessing a dark coloured caudal extremity were from Penong, S. Aust. (1 specimen); Reevesby Island, S. Aust. (1 specimen); Koonibba, S. Aust. (2 specimens); Ardrossan, S. Aust. (6 specimens); 20 miles west of Whyalla, S. Aust. (1 specimen); Hallett's Cove, S. Aust. (1 specimen); Denial Bay, S. Aust. (1 specimen); Coorabie (near Fowlers Bay), S. Aust. (1 specimen); and 7 specimens taken at local beaches near Adelaide, S. Aust.

Although I have been unable to find any other character correlated with this caudal variation, its constancy within the material examined and apparent geographic segregation indicate that it is more than an irregular variant, and the possibility of the two groups being sub-specifically distinct is worthy of further consideration. In dealing with Indo-Australian specimens, De Rooij (1917, p. 273) states "end of tail yellow or black." Whether this statement is based on the Indo-Australian material examined or merely following Boulenger (1896, p. 355) is not clear. The specimen figured by De Rooij (*op. cit.* fig. 111) has a light caudal extremity.

FAMILY HYDROPHIIDAE

HYDROPHIS ELEGANS (Gray)

Aturia elegans Gray, 1842, p. 61.

U.S.N.M. 128473, Port Langdon, N.T.

SAURIA

FAMILY GEKKONIDAE

HETERONOTA BINOEI Gray

Heteronota binoei Gray, 1845, p. 174.

U.S.N.M. 128539-128556, S.A.M. R.2854 (28 specimens), Yirrkalla, N.T.

U.S.N.M. 128282-128291, 128463, A.M. R.12473 (3 specimens), R.13474 (3 specimens), Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128240-128246, Nightcliff, near Darwin, N.T.

U.S.N.M. 128518, Rocky Beach, Cape Arnhem, N.T.

U.S.N.M. 128525, Black Rock Point, Coberg Peninsula, N.T.

A.M. R.12651 (7 specimens), Cape Arnhem, N.T.

HEMIDACTYLUS FRENATUS Dumeril and Bibron

Hemidactylus frenatus (Schleg.) Dumeril and Bibron, 1836, p. 366.

U.S.N.M. 128494, S.A.M. R.2872 (2 specimens), Milimgimbi Island, Crocodile Islands, N.T.

OEDURA RHOMBIFERA Gray

Oedura rhombifera Gray, 1844, pl. xvi, fig. 6.

U.S.N.M. 128531-128534, S.A.M. R.2859 (3 specimens), Yirrkalla, N.T.

U.S.N.M. 128460-128461, Central Hill, Groote Eylandt, N.T.

U.S.N.M. 128293-128299, A.M. R.12627 (5 specimens), R.13518 (2 specimens), R.13517 (2 specimens), Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128728, Oenpelli, N.T.

U.S.N.M. 128516-128517, Birlouja Creek, N.T.

A.M. R.13559 (2 specimens), Cape Arnhem, N.T.

S.A.M. R.2870 (3 specimens), Gove Air Base, 8 miles south-west of Yirrkalla, N.T.

OEDURA MARMORATA Gray

Oedura marmorata Gray, 1842, p. 52.

U.S.N.M. 128557-128565, S.A.M. R.2864, Yirrkalla, N.T.

U.S.N.M. 128729, Oenpelli, N.T.

U.S.N.M. 128515, Purlonkoima Creek, N.T.

A.M. R.13551-13553, Cape Arnhem, N.T.

DIPLODACTYLUS STROPHURUS CILIARIS Boulenger

Diplodactylus ciliaris Boulenger, 1885, p. 98, pl. viii, fig. 2.

U.S.N.M. 128247, Nightcliff, near Darwin, N.T.

This specimen is almost topotypic.

Brazenor (1951) and Glauert (1952) have contributed much toward clarifying the taxonomy of this species and associated forms by examining the specimens preserved in the National Museum, Melbourne, and the Western Australian Museum, Perth, respectively. In an endeavour to link the work of these two authors, the collection in the South Australian Museum, Adelaide, has been examined and a general zoogeographical study undertaken.

This has resulted in *strophurus* being considered a polytypic species in which the subspecies *spinigerus*, *ciliaris* and *aberrans* can be satisfactorily distinguished from the type race. The subspecies *intermedius* Ogilby is provisionally recognized, but additional work on its variation will have to be undertaken before its status can be satisfactorily determined.

An analysis of the variation of the individual characters has revealed several distinct geographical trends. The supraciliary spines are well developed in the northern populations, reduced to short conical tubercles in Central Australian specimens, and ill-defined or absent in material collected in the south-western and south-eastern corners of the continent. A survey of the literature and the specimens examined reveals all stages in this north to south gradation, and the inconsistency of this, and other characters in the *intermedius* zone which separates the typical populations of *ciliaris* and *strophurus* has resulted in two or more of the races being recorded from the one locality. An example is two specimens in the South Australian Museum collection taken at Well 32 on the Canning Stock Route in Western Australia. One of these had been identified as *ciliaris* and the other as *intermedius*. Both of these specimens have the supraciliary and caudal spines reduced to short conical tubercles, but whereas the lineal distribution of the dorsal tubercles persists in one specimen, there is little sign of regularity in the other. Similarly, a collection of seventeen specimens collected from between the Everard and Musgrave Ranges, South Australia, contains these two variants, and other specimens showing additional intermediary stages. Kinghorn (1929, pp. 80-81) identified three forms from New South Wales, *intermedius* with regularly distributed dorsal tubercles, *strophurus* with scattered dorsal tubercles, and some specimens from the northern half of the State which he identified as *spinigerus*. From the variation noted among some collections taken further west, and the reference by Longman (1916, p. 50) to some southern Queensland specimens possessing short supraciliary spines, it is sug-

gested that the latter specimens strictly belong to the subspecies *ciliaris*, although the reduction of the supraciliary spines, without a corresponding decrease in the size of the caudal spines made *spinigerus* the only practicable identification at that time.

An examination of several Western Australian specimens, together with the data provided by Glauert (*op. cit.*) indicate a similar gradation of characters between *strophurus* and *spinigerus*. Typical specimens of *spinigerus* appear to be restricted to within the Mulga-Eucalypt line in the south-west, and although some specimens taken to the north-east can be identified as *spinigerus*, they show definite signs of gradation toward *strophurus*. Specimens examined from Laverton, Malcolm and Frazer Range, Western Australia, possess reduced caudal spines and distinct supraciliary tubercles. Glauert (*op. cit.*) mentions that some south-western specimens possess solid tubercles along the supraciliary border and also records an additional specimen from Laverton, W. Aust., with the caudal spines reduced to tubercles.

The describing of the subspecies *aberrans* has provided an additional link between *strophurus* and *ciliaris* as it indicates how the transverse rows of caudal tubercles in *strophurus* and *intermedius* could have evolved. Each ring of tubercles comprises four of approximately equal size on the dorsal surface. Two of these replace the spines, and an additional pair have formed between them. In *aberrans*, the central pair of tubercles have formed without any depreciation in the size of the caudal spines.

From the present study only one feature appears to be sufficiently stable to provide a foundation for separating *intermedius* from *strophurus*, and this is the regularity of the dorsal tubercle distribution. The disposition of the caudal tubercles appears to be identical in both forms although the segmentation is not as pronounced in the eastern form. If specimens of the *strophurus* type, but with the dorsal tubercles distributed uniformly in two longitudinal series are accepted as representing *intermedius*, then the race can be recorded as occurring from northern Victoria, south-eastern South Australia to central New South Wales and extending across a narrow zone in northern South Australia into Western Australia. Although this distribution pattern is rather unusual and one is hesitant to accept a race based on a single definable, but rather unstable difference, the large area over which recognizable specimens have been taken make its provisional recognition appear warranted. Ogilby's name for this race is most appropriate as it appears to cover a discontinuous series of populations, in which several of the major features are at median stages of distinct geographical trends.

A synopsis of the salient features and recorded distributions of the subspecies is as follows:

Diplodactylus strophurus strophurus (Dumeril and Bibron).

Supraciliary spines replaced by short conical tubercles; dorsal surface of the body with irregularly distributed tubercles. Tail with sixteen or seventeen rings of enlarged tubercles, each ring representing the position of one pair of caudal spines in other races, and composed of four major tubercles of approximately equal size on the dorsal surface.

Recorded distribution: Type locality, Shark's Bay, W. Aust.; Mount Narryer Station, W. Aust.; Murchison District, W. Aust.; Yalgoo District, W. Aust.; Carnarvon, W. Aust.; Milly Milly Station, W. Aust. (Glauert, 1952). Wells 32, 39 Canning Stock Route, W. Aust.; Barrow Ranges, W. Aust.; Ooldea, S. Aust.; between Everard and Musgrave Ranges, S. Aust. (South Australian Museum). Hillston, N.S. Wales; Leeton, N.S. Wales (Kinghorn, 1929).

Diplodactylus strophurus intermedius Ogilby.

General form and scalation similar to that of the type race, but possessing the dorsal tubercles uniformly distributed in two longitudinal series. Segmentation not obvious in regenerated tails although the tubercles are occasionally reproduced.

Recorded distribution: Type locality, "Interior of New South Wales." Northern Mallee districts of Victoria; Purnong, S. Aust. (Brazenor, 1951). Tintinara, S. Aust.; Peake, S. Aust.; Wilpena Pound, S. Aust.; between the Everard and Musgrave Ranges, S. Aust.; Well 32, Canning Stock Route, W. Aust. (South Australian Museum). Bogagabri, N.S. Wales; Lachlan River, N.S. Wales; Carinda, N.S. Wales (Kinghorn, 1929). Darling Downs, Qld. (Longman, 1916).

Diplodactylus strophurus ciliaris (Boulenger).

Supraciliary and caudal spines fully developed; dorsal tubercles distributed uniformly in two longitudinal series.

Recorded distribution: Type locality, Darwin, N.T.; Dunraven, Qld.; Prairie, Qld.; Army Downs, Qld. (Loveridge, 1934). Sylvania, Qld. (Kinghorn, 1929). Yuendumu, N.T.; Tempe Downs, N.T.; junction of Fitzroy and Margaret Rivers, W. Aust.; Well 39, Canning Stock Route, W. Aust.; Erldunda, N.T.; Tennant Creek, N.T.; Hermannsburg Mission, N.T. (South Australian Museum). Murchison District, W. Aust.; Mount Margaret, W.

Aust.; Yandie Station, Canning Stock Route, W. Aust. (Glauert, 1952). Specimens recorded by Kinghorn (1929) from Tamworth, Lachlan River, Yandembah, Barmedonan, Coonamble, Wyalong, Hillston in New South Wales and Bowen in Queensland and identified as *spinigerus* are probably referable to this race.

Diplodactylus strophurus aberrans Glauert.

Supraciliary and caudal spines fully developed, the supraciliary spines extending on to the nape in the form of short tubercles. Two enlarged tubercles between each pair of caudal spines.

Recorded distribution: Type locality, Mt. Wynna, West Kimberley, W. Aust.; La Grange, W. Aust.; Wallal, W. Aust.; King Sound, W. Aust. (an Australian Museum specimen recorded by Kinghorn (1929) as *ciliaris*). 100 miles east of 80-mile Beach, W. Aust. (South Australian Museum).

Diplodactylus strophurus spinigerus (Gray).

Supraciliary spines absent; caudal spines well developed. Tubercles on the dorsal surface of the body slightly irregular but forming two distinct longitudinal series.

Recorded distribution: Type locality, Houtman Abrolhos, W. Aust.; Cunderdin, W. Aust.; Kulin, W. Aust.; Mount Magnet, W. Aust.; Perth, W. Aust. (Loveridge, 1934); Frazer Range, W. Aust. (South Australian Museum).

GEHYRA VARIEGATA AUSTRALIS Gray

Gehyra australis Gray, 1845, p. 163.

U.S.N.M. 128292, 128300, Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128535-128538, S.A.M. R.2861, Yirrkalla, N.T.

A.M. R.13638 (2 specimens), East Alligator River, N.T.

A.M. R.13556, Cape Arnhem, N.T.

S.A.M. R.2863, Oenpelli, N.T.

S.A.M. R.2862, Milimgimbi Island, Crocodile Islands, N.T.

Subdigital seansors undivided anteriorly but with a median groove posteriorly; a slight rudiment of a claw is evident on the fifth toe in several specimens and the rudiment of a web at the base of the toe seems to be more prominent than in *variegata variegata*. A cutaneous fold present along the back of the thigh; in three specimens a dorsal-lateral fold is also present, but this may be the result of dehydration by strong preservative. Nine to eleven

enlarged upper, and seven to nine enlarged lower labials. Two or three post-nasals; internasals forming a medium suture or separated by one or two small granules. Five of this series are males and they possess 15-29 (average 22) preanal pores.

Contrary to the findings in other species, the Arnhem Land specimens of this species seem to possess a greater average number of preanal pores than specimens taken further south. Loveridge (1934, p. 313) records an average of 15 with range of 13-19 for five Queensland males, while an examination of the males in the South Australian Museum collection gave the following data. *G.v. australis*, six males possessing 13-21, average 16; *G.v. punctata*, four males possessing 11-13, average 12 (Loveridge (*op. cit.*) also records 11-13 for *punctata*); *G.v. variegata*, thirty-three males possessing 9-21, average 15.

The colour varies from uniform light blue to light brown with indistinct darker variegations. When analysed under a microscope, the light blue colour is shown to be a translucent white minutely punctate with black.

The position and status of *punctata* Fry have been verified by the examination of eleven specimens in the South Australian Museum collection. The best diagnostic feature for its separation appears to be the shape of the mental and chinshields (see fig. 2), the characters used by Fry in his type description being both variable and difficult to define.

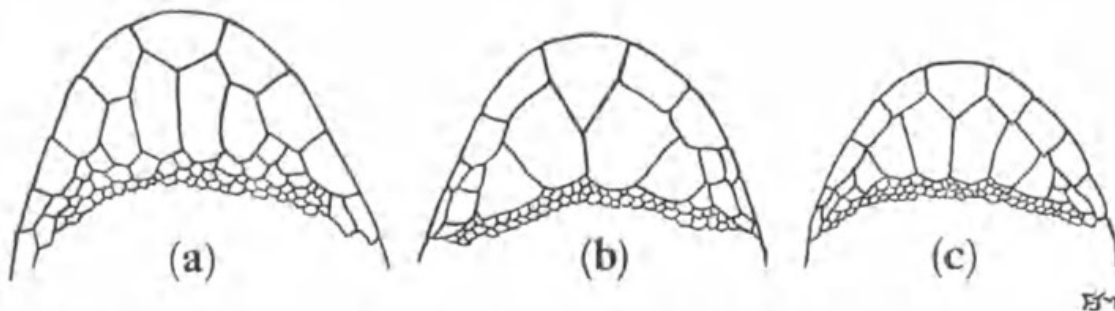


Fig. 2. *Gehyra variegata* (Dumeril and Bibron): ventral view of the snout of (a) *G. v. australis* Gray; (b) *G. v. punctata* (Fry) and (c) *G. v. variegata* (Dumeril and Bibron).

On examining the type description of *variegata* (Dumeril and Bibron, 1836, p. 353), it was noted that one of the four type specimens is referable to *punctata*, being from "baie de Chiens Marins" or Shark Bay, Western Australia. The remaining three specimens, which are mentioned first wherever the variation warrants a comparison and are therefore accepted as representing the type race, were reputedly taken in Tasmania ("la terre de Vandiemann"). The species has not been subsequently recorded as occurring on the island and the last

person to list the lizards of Tasmania, Hewer (1948), completely omits the species.

The South Australian Museum specimens are from the following localities:

Gehyra variegata variegata: South Australia.—Ooldea, 3 specimens; northern Flinders Ranges, 22 specimens; Mount Lofty Ranges, 8 specimens; Lake Phillipson, south-west of Stuart Range, 1 specimen; Quorn, 1 specimen; Koonibba, 1 specimen; Streaky Bay, 1 specimen; Devon Downs, 1 specimen; Puttiburra, via Marree, 1 specimen; Gawler Ranges, 2 specimens; Mt. Painter, 1 specimen; Lake Callabonna, 21 specimens; between Everard and Barrow Ranges, 2 specimens; Fowlers Bay, 1 specimen; Kangaroo Island, 10 specimens; Wynbring, 2 specimens; Encounter Bay, 1 specimen; Sutherlands, 1 specimen; Buckleboo, 2 specimens; Moolooloo, 7 specimens; Tarcoola, 3 specimens; Oodnadatta, 2 specimens; between Everard and Musgrave Ranges, 17 specimens; Finnis Springs, 10 specimens; Warcowie, 2 specimens; Marree, 4 specimens; Andamooka Ranges, 7 specimens; Gammon Ranges, 1 specimen; Strzelecki Creek, 5 specimens; Killalpaninna Mission, 4 specimens; Clayton, 2 specimens; Coopers Creek, 3 specimens; Eudunda, 1 specimen.

Northern Territory.—Hermannsburg, 25 specimens; Charlotte Waters, 1 specimen; Cordilla Downs, 2 specimens; Macdonnell Ranges, 23 specimens; Hanns Range, 1 specimen.

New South Wales.—Dareton, 2 specimens.

Western Australia.—Frazer Range, 3 specimens; Broad Arrow, 1 specimen.

Gehyra variegata australis: Northern Territory.—Darwin, 7 specimens; Tennant Creek, 3 specimens.

Queensland.—Bathhurst Head, 5 specimens; Cairns, 1 specimen.

Gehyra variegata punctata: Western Australia.—Gascoyne District, 7 specimens; Flora Valley, East Kimberleys, 1 specimen; Canning Stock Route, 3 specimens.

FAMILY AGAMIDAE

CHLAMYDOSAURUS KINGII Gray

Chlamydosaurus kingii Gray, 1827, p. 425, pl. A.

U.S.N.M. 128480, Milimimbi Island, Crocodile Islands, N.T.

U.S.N.M. 128452-128453, Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128568, S.A.M. R.3228, Yirrkalla, N.T.

U.S.N.M. 128752, Oenpelli, N.T.

AMPHIBOLURUS CAUDICINCTUS CAUDICINCTUS (Gunther)

Grammatophora caudicincta Gunther, 1844, p. 19.

U.S.N.M. 128751, S.A.M. R.3229, 4½ miles S.S.E. of Oenpelli, N.T.

Loveridge (1934, p. 319) suggests that *rufescens* Stirling and Zietz and *imbricatus* Peters may prove to be races of *caudicinctus* Gunther. Preliminary work on a revision of the genus *Amphibolurus* has been undertaken by the author and the above possibility investigated. The types (S.A.M. R.1423, R.1424 and R.1425) and four other specimens of *rufescens* have been examined and compared with *caudicinctus*. Although they do resemble one another in colour and general form, they differ markedly in structural detail, and until more extensive work on the distribution and variation of these lizards can be undertaken, no advantage is to be gained by linking them under a specific name, although this may ultimately prove warranted. The following characters serve to distinguish the two lizards:

<i>A. caudicinctus</i> Gunther	<i>A. rufescens</i> Stirling and Zietz
1. Femoral and preanal pores 29-35.	Femoral and preanal pores 56-60.
2. Canthus rostralis swollen and rounded, with nostril in the rostralis, directed upward.	Canthus rostralis obtuse, but angulate, with nostril below the rostralis, directed outward.
3. A longitudinal series of enlarged middorsal scales and low spinous nuchal crest.	No longitudinal series of enlarged middorsal scales, and a slightly enlarged, non spinous series of mid-nuchal scales.

After examining eleven specimens from the vicinity of Marree and Finnis Springs, S. Aust., the author is of the opinion that *imbricatus* Peters is specifically distinct from *caudicinctus* Gunther.

AMPHIBOLURUS BARBATUS BARBATUS (Cuvier)

Agama barbatus Cuvier, 1829, p. 35.

U.S.N.M. 128529, Horseshoe Bend, Finke River, S. Aust.

Although most characters of this specimen agree with those of the type race, the "beard" is not developed to the same extent as that of specimens taken further south, showing a tendency toward the sub-species *minor* Sternfeld, which was originally taken at Hermannsburg, N.T. It apparently occurs at that locality and westward, as specimens examined from localities to the south, east and north are all nearer the type race. Loveridge (1934, p. 325) records a specimen of *minor* from the north-west coast at Broome, W. Aust.

DIPORIPHORA BILINEATA Gray

Diporiphora bilineata Gray, 1842, p. 54; Loveridge, 1934, p. 327 (Syn.).

U.S.N.M. 128301, 129542-129561, S.A.M. R.2848 (29 specimens), Umba Kumba, Groote Eylandt, N.T.

A.M. R.13621 (7 specimens), R.13613 (6 specimens), R.13617 (6 specimens), Groote Eylandt, N.T.

U.S.N.M. 128734-128749, S.A.M. R.2847, Oenpelli, N.T.

U.S.N.M. 128248-128249, Nightcliff, near Darwin, N.T.

U.S.N.M. 128455, south end of Lake Hubert, N.T.

A.M. R.13644 (4 specimens), East Alligator River, N.T.

S.A.M. R.2858 (1 specimen), Yirrkalla, N.T.

Preanal pores present in the male, 1+1 or 2+2; gular fold constantly absent. This latter character serves to readily distinguish *bilineata* from *Physignathus gilberti* (Gray), some specimens of which closely resemble it.

PHYSIGNATHUS GILBERTI GILBERTI (Gray)

Lophognathus gilberti Gray, 1842, p. 53.

U.S.N.M. 128730, 128732-128733, S.A.M. R.2941 (3 specimens), Oenpelli, N.T.

U.S.N.M. 128731, 2 miles S.S.E. of Oenpelli, N.T.

U.S.N.M. 128566, Yirrkalla, N.T.

U.S.N.M. 128456, west side of Lake Hubert, N.T.

U.S.N.M. 128454, south end of Lake Hubert, N.T.

U.S.N.M. 128464, between Emerald River and Old Mission, Groote Eylandt, N.T.

A.M. R.13639, East Alligator River, N.T.

FAMILY VARANIDAE

VARANUS (VARANUS) GOULDII (Gray)

Hydrosaurus gouldii Gray, 1838, p. 394.

U.S.N.M. 128571-128573, 128575, Yirrkalla, N.T.

U.S.N.M. 128384, 4 miles south-west of Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128479, Port Langdon, N.T.

U.S.N.M. 128753, Red Lily Lagoon, 7 miles W.S.W. of Oenpelli, N.T.

U.S.N.M. 128754, Oenpelli, N.T.

VARANUS (VARANUS) VARIUS (Shaw)

Lacerta varia Shaw, 1790, p. 246, pl. iii, fig. 2.

U.S.N.M. 128386, near swamp at Lake Hubert, N.T.

S.A.M. R.3230, 5 miles west of Oenpelli, N.T.

VARANUS (ODATRIA) GLEBOPALMA sp. nov.

Holotype: S.A.M. R.3222 an adult male taken at the south end of Lake Hubert, N.T.

Diagnosis: This *Varanus* is a typical member of the *Odatria* group and is most nearly approached by the subspecies *timorensis tristis* (Schlegel). It differs from that lizard in possessing a much longer tail, different colouration and characteristic dorsal and caudal scalations (see pl. xxxvii). The best diagnostic feature is the presence of highly polished black pads on the soles of all four feet. (See fig. 3.)

Description: Teeth acute, slightly compressed. Canthus rostralis acute, nostrils oval, below the rostralis, nearer the tip of the snout than the anterior corner of the eye, the measurements from the centre of the nostril being 9 mm. and 12 mm. respectively. Upper head scales moderate, slightly larger than the temporals but smaller than the interorbitals; 37-40 between the supraciliary ridges. Two or three rows of scales at the supraciliary border larger than the supraoculars. Ear opening triangular, slightly oblique; its vertical diameter is approximately equal to the horizontal diameter of the eye. Dorsal and caudal scales of characteristic forms, not approached by the variation recorded for *timorensis*. (See pl. xxxvii.) Abdominal scales smooth, in one hundred and twenty-six transverse rows. Tail slightly depressed basally, compressed posteriorly; covered with uniform, obtusely keeled scales which do not rise to a spine. The spines often to be found on each side of the vent in males of *Odatria* species are absent, being replaced by several slightly prominent scales. Scales on the limbs with an obtuse central keel. The soles of both fore and hind limbs are covered with highly polished black pads, the largest pads being at the base of each digit. (See fig. 3.) The tail is very long, measuring more than the combined lengths of the head and body.

The basic colour pattern of the body is light grey-brown with numerous black scales distributed irregularly over the dorsal surface. On the anterior half of the tail the black scales become dominant, while toward its tip the basal colouring lightens and black pigmentation disappears. Under side of the lower jaw white with four black transverse bands; remainder of gular region and chest with a black and white reticulate patterning.

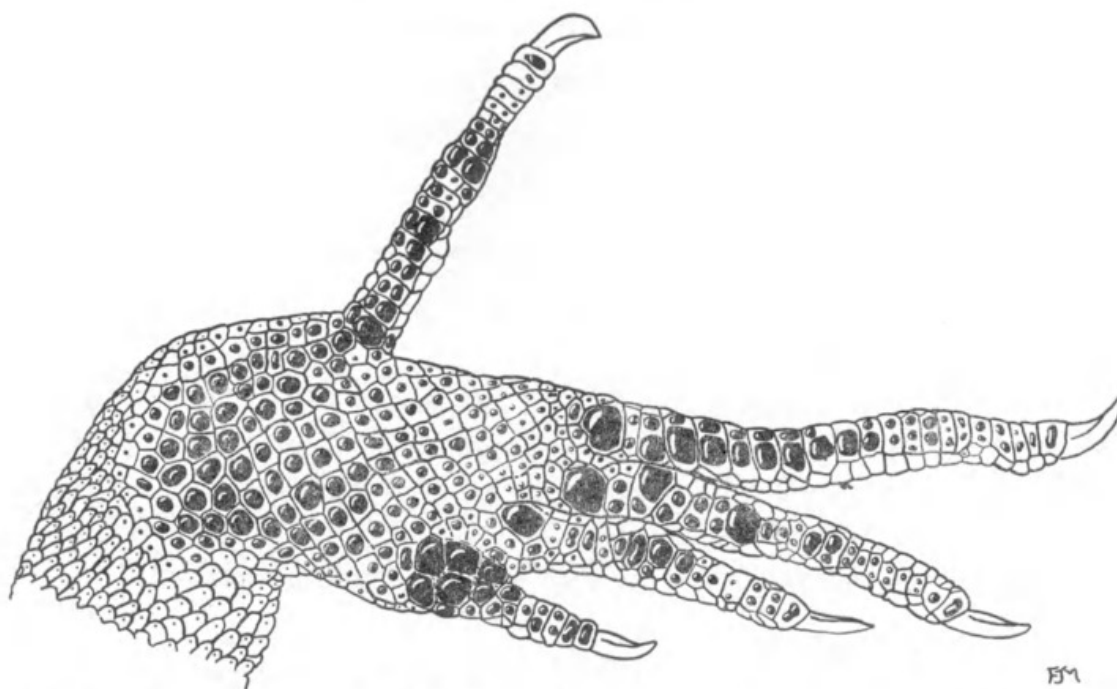


Fig. 3. *Varanus glebopalma* Mitchell: view of the sole of the hind foot showing the positions and size of the polished black pads.

Measurements: 821 (262+559) mm.—the distance from the tip of the snout to the gular fold is 112 mm., while 75 mm. and 107 mm. are the lengths of the fore and hind limbs respectively.

Comments: The type specimen is unique and was “shot by R. R. Miller and F. M. Setzler in a crevasse of a sandstone boulder at the base of a sandstone escarpment near south end of Lake Hubert” (R.R.M.).

VARANUS (ODATRIA) TIMORENSIS ORIENTALIS Fry

Varanus punctatus var. *orientalis* Fry, 1913, p. 18.

U.S.N.M. 128481-128485, 128487-128493, S.A.M. R.3227, Milimgimbi Island, Crocodile Islands, N.T.

U.S.N.M. 128569-128570, 138574, Yirrkalla, N.T.

U.S.N.M. 128387, S.A.M. R.2851, Umba Kumba, Groote Eylandt, N.T.

A.M. R.13637, R.13646, East Alligator River, N.T.

A.M. R.12550, Cape Arnhem, N.T.

The following South Australian Museum specimens were also examined: *V.t. orientalis*—R.137, R.182, R.183, Eidsvold, Qld. (type locality); R.351-353, Stewart River, Qld.; R.362-365, Melville Island, N.T.; R.1938, Flinders Island, Qld.

V.t. tristis—R.329, Macdonnell Ranges, N.T.; R.2058, between Mt. Singleton and Treur Range, S. Aust. (4 specimens); R.2186, Kairi, Qld.; R.3085, Frazer

Range, W. Aust.; R.3223, Innamineka, S. Aust.; R.3224, Tennant Creek, N.T. (5 specimens).

The dorsal and caudal scalations of the material listed above show considerable variation. It indicates that the scalation characters enumerated and figured by Fry (1913, pp. 18-19, fig. 7-10) as distinguishing features are inadequate to satisfactorily characterize this subspecies. However, several more easily discernible and constant features distinguishing it from the other subspecies are described by Mertens (1942, pp. 298-307). One of these, the supposed longer tail of *tristis* is not confirmed by the present material. In the Arnhem Land specimens the tail length, combined head and body length ratio varies from 1.5-1.7 and in the South Australian Museum specimens of *orientalis* from 1.4-1.7; in the *tristis* material the variation is 1.6-1.8. Except in cases where the difference is paramount, the taxonomic value of this character is limited because of the difficulties in accurately measuring the body lengths of many preserved specimens and in determining whether or not the last few centimeters of tail are present.

The measurements and tail/head and body ratio of the adult specimens taken by the expedition:

Specimen Number	Sex	Total length	Head and Body length	Tail length	Tail length Head and Body length
128484	♂	520	194	327	1.7
128485	♂	499	187	312	1.7
128486	♂	487	182	305	1.7
128487	♀	465	185	280	1.5
128488	♂	497	185	312	1.7
128489	♂	451	172	279	1.6
128490	♀	405	160	245	1.5
128492	♂	350	130	220	1.7
128387	♀	440	165	275	1.7
128574	♀	480	190	290	1.5

Several additional adults obviously possess incomplete tails.

Although comparatively constant in specimens from the one locality, the body scalation of this species varies markedly from one locality to another. The scales vary both in shape and relative density. The latter variation can be illustrated by counting the number of micro-scales. In the Arnhem Land specimens the dorsal scales are separated by as many as five rows of micro-scales, while in others, notably those from Tennant Creek, by only one or two rows. Fry (1913, fig. 7) figures 1-2 rows for his Eidsvold specimens, while the three South Australian Museum specimens, from the type locality possess 2-3. Further, the relative size of these micro-scales varies. The number bordering each dorsal

varies from an average of eight for the Stewart River specimens to fourteen for those from Tennant Creek; the average is twelve in the Arnhem Land series. Fry (*op. cit.*, fig. 8) figures eighteen for his *punctatus* var. *typica*. In some specimens there is a tendency for the micro-scales to become fused, forming larger elongate scales along the lateral borders of the dorsals. Working on a limited number of specimens, this variation does not appear to be significant, although the examination of a larger series may reveal grounds for the subdivision of the material at present referred to *tristis*. Plate xxxvii contains photographs illustrating this variation in both *tristis* and *orientalis*.

The number of abdominal scales averages 84 in a range of 79-94 in the Arnhem Land specimens and 90 in a range of 85-104 in the South Australian Museum series of *tristis*.

Two gravid females were opened, one U.S.N.M. 128574, contained twelve eggs, while the other, U.S.N.M. 128287, contained eight.

The largest specimen examined, S.A.M. R.3085, a male from the Frazer Range, W. Aust., originally recorded by Stirling and Zietz (1893, p. 170), measures 694 (265+435) mm., while the largest Arnhem Land specimen, U.S.N.M. 128483, also a male, measures 465 (210+255+) mm.—tail incomplete.

FAMILY PYGOPODIDAE

DELMA FRASERI FRASERI Gray

Delma fraseri Gray, 1831, p. 14.

Delma plebeia De Vis, 1888, p. 825.

U.S.N.M. 128679-128682, Yirrkalla, N.T.

U.S.N.M. 128260, Nightcliff, near Darwin, N.T.

A.M. R.13648 (2 specimens), R.13569 (2 specimens), R.13570 (2 specimens), Cape Arnhem, N.T.

A.M. R.13471, Groote Eylandt, N.T.

The anal scalation of this material is interesting as it confirms that *plebeia* De Vis is a variant of *fraseri*, as was suggested by Longman (1916, p. 51) and Kinghorn (1926, p. 53). Although all of the present series possess three anal scales, the size and position of the median scale varies considerably; the outer anals accordingly vary from widely separated by the median anal to forming a median suture, thereby excluding the median anal. (See fig. 4.) Probably the median anal is present in the type of *plebeia*, but its position and size make it of little apparent significance.

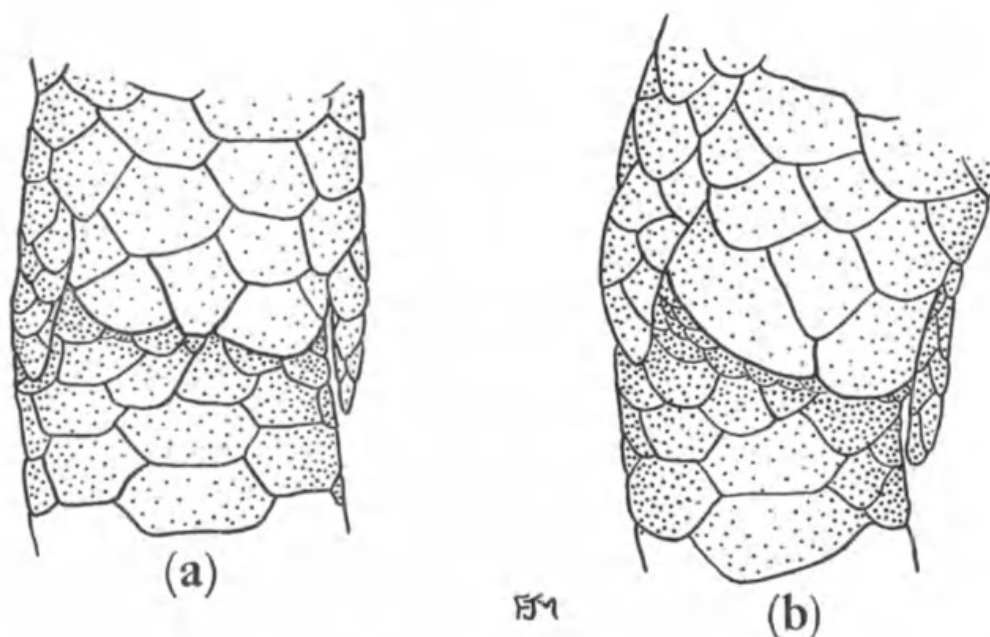


Fig. 4. *Delma fraseri fraseri* Gray: drawings of the anal region showing, (a) the var. *typica* condition and (b) the var. *plebeia* condition. Both drawings were made from specimens taken at or near Yirrkalla, N.T.

LIALIS BURTONIS Gray

Lialis burtonis Gray, 1834, p. 134.

U.S.N.M. 128379-128383, 128441, A.M. R.13610 (3 specimens), Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128467-128468, Port Langdon, N.T.

U.S.N.M. 128259, Nightcliff, near Darwin, N.T.

U.S.N.M. 128576, Yirrkalla, N.T.

U.S.N.M. 128504, Milingimbi Island, Crocodile Islands, N.T.

U.S.N.M. 128514, Kuraiturumuru, N.T.

A.M. R.13546, Oenpelli, N.T.

FAMILY SCINCIDAE

TILIGUA SCINCOIDES INTERMEDIA subsp. nov.

Holotype: S.A.M. R.3095, an adult male, Yirrkalla, N.T.

Paratypes: U.S.N.M. 128636-128637, 128639, Yirrkalla, N.T.

S.A.M. R.3225, near Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128478, Port Langdon, N.T.

Diagnosis: Differs from the southern Australian race in possessing a distinctive colour pattern and in attaining a larger adult size.

Scalation: Midbody scales in 32-35 rows, irregular in the dorso-lateral region of the body. Prefrontals narrowly separated or making point contact on the mid-line; nasals invariably separated. Nine or ten upper labials with the 5th, 6th and 7th or 6th, 7th and 8th subocular; 6-7 supraciliaries; 2-3 auricular lobules.

Colouration: The most distinctive feature of this race is its colour pattern. In the type race the dorsal surfaces of the body and tail have a uniform patterning of alternate light and dark crossbands; in *intermedia* this banding is broken up into a series of alternate light and dark bars on the dorso-lateral surface only, none of the bars extending to or across the dorsal midline. Furthermore, the bars are staggered along the body, a dark bar on one side facing a light bar on the other. The middorsal colouring is darker than the light bars, but with a light blotch the same shade as the light bars at the dorsal end of each dark bar. The dark temporal streak is not as prominent as in the type race.

This somewhat complicated colour pattern is constant in all specimens examined, including the South Australian Museum specimens recorded by Mitchell (1950, p. 295).

Measurements: The largest specimen examined is the holotype and it measures 447+ (334+113+) mm.—tail incomplete. All specimens examined, except the juvenile (U.S.N.M. 128388) possess body lengths in excess of 300 mm. Of twenty-one South Australian specimens of the type race examined, the largest measure 293 mm. from the tip of the snout to the vent.

LYGOSOMA (SPHENOMORPHUS) TAENIOLATA (Shaw)

Lacerta taeniolata Shaw, 1790, p. 245, pl. xxxii, fig. 1.

U.S.N.M. 128758, S.A.M. R.2868, Oenpelli, N.T.

U.S.N.M. 128756, East Alligator River, N.T.

LYGOSOMA (SPHENOMORPHUS) ESSINGTONII (Gray)

Tiliqua essingtonii Gray, 1842, p. 51.

U.S.N.M. 128251-128256, Nightcliff, near Darwin, N.T.

U.S.N.M. 128603-128607, 128609-128610, Yirrkalla, N.T.

U.S.N.M. 128402-128407, A.M. R.13466 (2 specimens), R.13467 (3 specimens), S.A.M. R.2866 (7 specimens), Umba Kumba, Groote Eylandt, N.T.

Loveridge (1934, p. 346) raises the question of the affinities of *T. essingtonii* Gray and suggests that it may be more nearly allied to *leonhardii* Sternfeld than *taeniolata* Shaw. Although varying a little, the colouration of this series of 31 specimens agrees well with Gray's type and Boulenger's catalogue descrip-

tion (1887, p. 228) of this species. An examination of the scalation supports Boulenger's statement (*op. cit.*) that it differs in no way from that of *taeniolata* Shaw.

The colour and pattern are distinctive. A broad dorsal stripe varies from light brown in the Nightcliff specimens through light bronze to almost cream in some of the Groote Eylandt material. This is bordered on each side by a wide, light edged, dark dorso-lateral stripe, which breaks up into a series of dark spots on the tail. The light upper edge of this stripe is defined on the nape and anterior half of the body by a further dark line, which is particularly prominent in the Nightcliff specimens. In the Yirrkalla and Groote Eylandt specimens a series of 16-24 bronze blotches are enclosed within the dark dorso-lateral stripe. In the Nightcliff series there are only occasional small lighter spots in the anterior half. Limbs bronze, spotted or striated with black. Upper labials and ventral surfaces white.

LYGOSOMA (SPHENOMORPHUS) SPALDINGI (Macleay)

Hinulia spaldingi Macleay, 1877, p. 63.

U.S.N.M. 128594-128595, 128548, 128600, 128585, Yirrkalla, N.T.

U.S.N.M. 128391, S.A.M. R.2851, Umba Kumba, Groote Eylandt, N.T.

A.M. R.13576 (part), Cape Arnhem, N.T.

LYGOSOMA (SPHENOMORPHUS) LEONHARDI (Sternfeld)

Lygosoma (Hinulia) taeniolatum var. *maculata* Rosen, 1905, p. 140.

Lygosoma (Hinulia) leonhardi Sternfeld, 1919, p. 79.

U.S.N.M. 128577-128584, 128586-128593, 128596-128597, 128599, 128601, 128608, 128618, S.A.M. R.2860, Yirrkalla, N.T.

U.S.N.M. 128389-128390, 128392-128401; S.A.M. R.2869; A.M. R.13605 (3 specimens), R.13602 (3 specimens), R.13611 (1 specimen), R.13465 (1 specimen), R.13514 (2 specimens), R.13603 (3 specimens), R.13508 (2 specimens), R.13597 (3 specimens), Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128757, S.A.M. R.2867, Oenpelli, N.T.

A.M. R.13655 (2 specimens), R.13577 (2 specimens), R.13576 (1 specimen), Cape Arnhem, N.T.

The variation displayed by this large series is as follows: Midbody scales in 28 rows (16 specimens) or 30 rows (24 specimens)—only the adults were counted. Nasals separated behind the rostral in all specimens; prefrontals forming a variable length median suture; ear opening oval, relatively smaller in the adult than in the juvenile; 3-5 auricular lobules, the shape of each varying from obtuse to very acute. A subnarial suture is present in many specimens. Two

or three pairs of enlarged nuchals. All specimens possess four supraoculars except U.S.N.M. 128582, which has only three, there being an indication of the fourth suture at the supraciliary border. The second anterior supraocular is invariably the largest. Except for two specimens which possess six on one side and five on the other, all specimens have five upper labials anterior to the first subocular. The length of the snout seems to be very variable with consequent variation in the shape and size of the loreals and proportions of the prefrontals and internasal.

The colour and pattern show some variation. Many adult specimens are without a black vertebral stripe, and when some vestige of this line is evident, it is usually without the white border characteristic of specimens taken further south.

Some interesting variation in the size and shape of the supraoculars is also evident from this study. Although the size of the second supraocular is variable in all populations examined, there appears to be a south to north gradation tending toward an enlargement of this supraocular, its average size in the Arnhem Land specimens being markedly greater than that of South Australian skinks examined. (See fig. 5.)

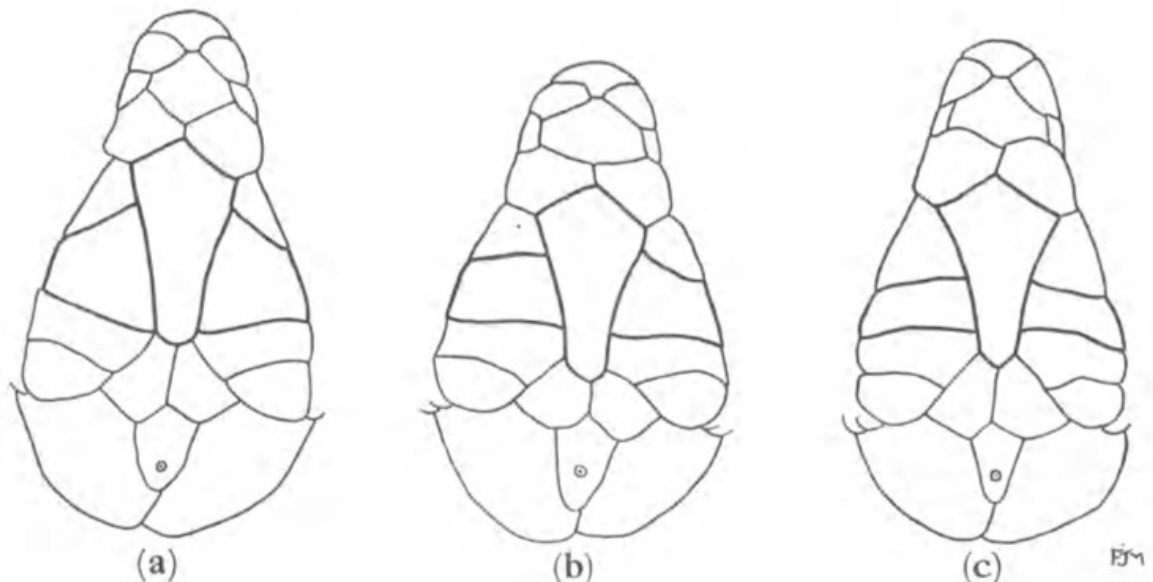


Fig. 5. *Lygosoma (Sphenomorphus) leonhardii* Sternerfeld: three drawings illustrating the variation in supraocular scalation and its correlation with latitude. (a) U.S.N.M. 128608, Yirrkalla, N.T.; (b) S.A.M. R.1532, Hermannsburg Mission, N.T. (type locality); (c) S.A.M. R.3177, Mern Merna, S. Aust.

LYGOSOMA (SPHENOMORPHUS) ISOLEPIS ISOLEPIS (Boulenger)

Lygosoma isolepis Boulenger, 1887, p. 234, pl. xv, fig. 1.

U.S.N.M. 128506, S.A.M. R.3249, Milingimbi Island, Crocodile Islands, N.T.

U.S.N.M. 128250, Nightcliff, near Darwin, N.T.

U.S.N.M. 128512, Larporkuru, N.T.

A.M. R.13606 (2 specimens), R.13468 (3 specimens), Groote Eylandt, N.T.

A.M. R.13549, Arnhem Land, N.T.

A.M. R.13654, Cape Arnhem, N.T.

A.M. R.13641, East Alligator River, N.T.

LYGOSOMA (LYGOSOMA) CRASSICAUDUM Dumeril

Lygosoma crassicaudum A. Dumeril, 1851, p. 172.

U.S.N.M. 128611, Yirrkalla, N.T.

Midbody scales in 20 longitudinal rows; four pairs of enlarged nuchals, contracting in size to a double series of slightly enlarged vertebrales. Auricular opening round, without lobules; approximately one-third the horizontal diameter of the eye. The axilla to groin measurement is approximately one and three-quarter times longer than that from the tip of the snout to the forelimb. The hindlimb measures 14 mm., a length equal to the distance between the centre of the eye and the forelimb. Fifth upper labial centrally subocular; frontonasal forming broad sutures with both rostral and frontal, the suture in each case being a little more than half the frontonasal length. The maximum combined length of the frontoparietals and interparietal is a little greater than that of the frontal. Subdigital lamellae smooth, 5, 7-8, 12-13, 18-19, 8-9 being the formula for the hindlimb and 5, 8, 8, 6, 4, the formula for the forelimb. Dorsal surfaces dark brown, minutely punctate with black; the black spots becoming more prominent as the basic colour lightens ventro-laterally. Upper labials and underside of tail also punctate with black. Remaining ventral surfaces uniform white. The limbs have longitudinal rows of black spots.

This specimen measures 78+ (56+22+) mm.—tail incomplete.

Although it possesses the long frontonasal-frontal and frontonasal-rostral sutures stated to be characteristic of *mjobergi* Lonnberg and Andersson (1915, p. 6), this specimen has the larger number of subdigital lamellae of *crassicaudum*. While confidently claiming on the evidence of an examination of a specimen from Ravenshoe, Qld., referred to *mjobergi* by Proctor (1923, p. 1073), and another without locality data, that these two names refer to distinct species, Loveridge (1934, p. 367) refers the latter specimen which possesses only twelve lamellae beneath the fourth toe to *crassicaudum*. If correct, this would greatly reduce the value of the hindlimb lamellar formula as a taxonomic character for the separa-

tion of these two lizards. Similarly, the validity of the relative lengths of the frontonasal sutures as a distinguishing feature is endangered if this specimen has been correctly referred to *crassicaudum*.

A comparison with the literature also shows the following characters to vary. The Arnhem Land specimen and the type material as figured by Hombron and Jacquinot (1842-1853, pl. iv, fig. 1), have the fifth upper labial centrally subocular, while Lonnberg and Andersson record the fourth as being "below the centre of the eye" in the cotypes of *mjobergi*; Boulenger (1887, p. 325), after examining the specimens from Fly River, New Guinea, Murray and Cornwallis Islands records both conditions in his material. A suggestion of variation in the relative proportion of the frontonasal and in the number of supraoculars contacting the frontal is dependent on the accuracy of the Hombron and Jacquinot figure (*op. cit.*) which shows the frontonasal to be much longer than wide and the 1st, 2nd and 3rd supraoculars contacting the frontal. In colouration *mjobergi* is intermediate between that of the Arnhem Land specimen described above and that of typical *crassicaudum*. No evidence of a dark dorso-lateral stripe, sharply defined at its dorsal edge, is to be found in the present specimen, while some reference to this is made in all other relevant literature, including Macleay's *Lygosoma ornatum* (1878, p. 64).

Loveridge (*op. cit.*) mentions that *mjobergi* is a much larger species, a suggestion supported by the measurements of the larger cotype.

Genus LEIOLOPISMA

Because of the confused nomenclature in certain sections of this genus, it was found necessary to make a brief revision of the "Heteropus" species group, which is characterized within the genus by the possession of 4+5 digits and an undivided frontoparietal, to enable three of the species taken by the expedition to be satisfactorily identified. This revision has been published in the "Records of the South Australian Museum," xi, pp. 75-90, and the synonymies quoted below are discussed in it.

LEIOLOPISMA FUSCUM FUSCUM (Dumeril and Bibron)

Heteropus fuscus Dumeril and Bibron, 1839, p. 759.

Heteropus schmeltzii Peters, 1867, p. 23.

Heteropus tricarinatus Meyer, 1874, p. 133.

Heteropus longipes Macleay, 1877, p. 66.

Heteropus sexdentatus Macleay, 1877, p. 67.

Heteropus maculatus De Vis, 1885, p. 169.

Heteropus rubricatus De Vis, 1885, p. 170.

Heteropus rostralis De Vis, 1885, p. 171.

U.S.N.M. 128612-128617, 128518, Yirrkalla, N.T.

A.M. R.13583-13584, R.13656 (3 specimens), Cape Arnhem, N.T.

LEIOLOPISMA VIVAX (De Vis)

Heteropus peronii Dumeril and Bibron, 1839, p. 760.

Myophila vivax De Vis, 1884, p. 77.

Heteropus blackmanni De Vis, 1883, p. 168.

U.S.N.M. 128507-128510, Milimgimbi Island, Crocodile Islands, N.T.

U.S.N.M. 128257, Nightcliff, near Darwin, N.T.

A.M. R.13585 (4 specimens), R.13586 (4 specimens), Cape Arnhem, N.T.

U.S.N.M. 128439-128440, 128412; A.M. R.13464 (2 specimens), R.13470 (2 specimens); R.13607 (2 specimens); S.A. M. R.2857 (3 specimens), Umba Kumba, Groote Eylandt, N.T.

S.A.M. R.2865, Yirrkalla, N.T.

LEIOLOPISMA PECTORALIS (De Vis)

Carlia melanopogon Gray, 1844, pl. vii, fig. 1.

Heteropus lateralis De Vis, 1885, p. 168.

Heteropus pectoralis De Vis, 1885, p. 169.

Heteropus mundus De Vis, 1885, p. 172.

Lygosoma devisii Boulenger, 1890, p. 79 (n.n. for *lateralis* De Vis, as preoccupied in *Lygosoma*).

?*Lygisaurus foliorum* De Vis, 1884, p. 77.

U.S.N.M. 128764, Oenpelli, N.T.

U.S.N.M. 128528, Port Essington, N.T.

LEIOLOPISMA GUICHENOTI DELICATA (De Vis)

Mocoa delicata De Vis, 1888 (1887), p. 820.

A.M. R.13461, Groote Eylandt, N.T.

Midbody scales in 26 rows; no auricular lobules. General scalation similar to that of South Australian and Victorian specimens of *guichenoti*, but with a much wider frontonasal-frontal suture. Its general form is more slender and the limbs weaker. On the above evidence *delicata* is retained as a subspecies. The colour corresponds accurately with that described by De Vis, and if constant would distinguish it readily from the type race.

Loveridge (1934, p. 359) doubtfully referred *delicata* to the synonymy of *guichenoti*, commenting on the fact that all specimens of *guichenoti* possessed enlarged preanals, and that this feature was not characteristic of *delicata*. This is confirmed by material examined.

RHODONA STYLIS sp. nov.

Holotype: S.A.M. R.3094, Yirrkalla, N.T.

Paratypes: U.S.N.M. 128640-128678; S.A.M. R.2856 (5 specimens), Yirrkalla, N.T.

U.S.N.M. 128409-128411, S.A.M. R.2855 (2 specimens), Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128520, Rocky Beach, Cape Arnhem, N.T.

A.M. R.13566 (4 specimens), R.13567 (5 specimens), R.13568 (5 specimens), R.13657 (8 specimens), R.13658 (8 specimens), Cape Arnhem, N.T.

Diagnosis: This species most nearly approaches *Rhodona lineata* Gray in the degree of reduction of the limbs, but is immediately distinguished from it by the presence of frontoparietals and at least three supraoculars. The scalation closely resembles that of *Rhodona wilkinsi* Parker, with which it agrees in all essential details including the midbody scale count. However, the presence of a styliform hind limb immediately separates it from that species.

Type description: Body elongate; forelimb absent; hindlimb minute, styliform, variable in size (see fig. 7), but equivalent in length to two of the

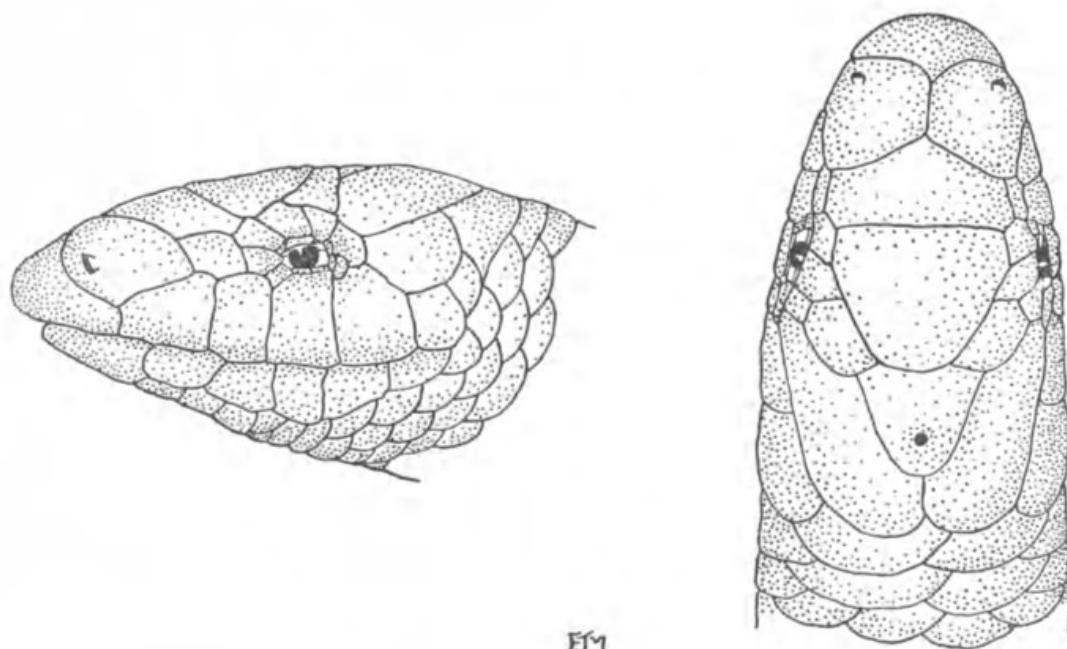


Fig. 6. *Rhodona stylis* Mitchell: dorsal and lateral views of the head of the holotype ($\times 10$ approx.).

adjacent scales in the holotype. Snout cuneiform with angularly projecting labial edge; eye small, lower eyelid with a large transparent disk. Three supraoculars; frontoparietals and interparietal distinct, the former being widely separated and less than half the size of the latter; parietals forming a suture behind the interparietal. A loreal and one or two preoculars; two postoculars. Five upper and five lower labials, the third upper labial being subocular; two pairs of enlarged nuchals and a pair of slightly enlarged anal plates present. Eighteen smooth scales at midbody. Ear opening minute.

Colouration: Light grey dorsally with a black dorso-lateral stripe extending from behind each eye to the tip of the tail. On the dorsal surface a longitudinal line of fine black dots extends down each side of the vertebral line, the two rows coalescing on the tail. Ventral surfaces uniform white.

Measurements: The holotype measures 113 (60+53) mm.—tail regenerating.

Variation: The head scalation is very constant within the type series of 82 specimens, the main variation being in the size and number of the small ocular and supraciliary scales. In several of the Groote Eylandt specimens the large postocular has been forced up into line with the supraoculars by the enlargement of several small scales at the posterior border of the eye, and it might therefore be considered an additional supraocular. The number of scales at

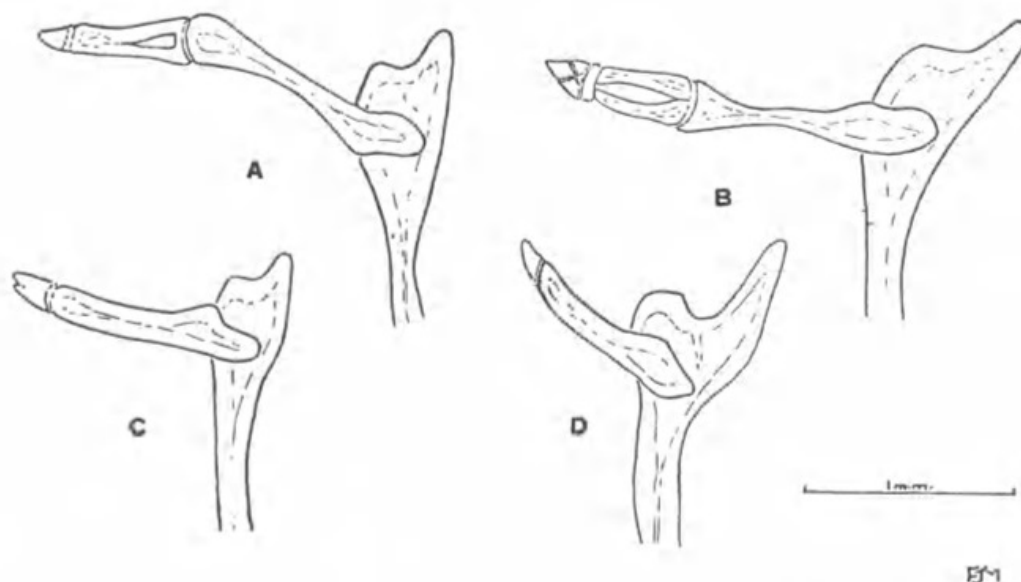


Fig. 7. Drawings of the bones dissected from within the styliiform hindlimb of *Rhodona stylis* Mitchell.

A and B—specimens from Groote Eylandt, N.T.

C and D—specimens from Yirrkalla, N.T. (type locality).

The body lengths of the four specimens from which the bones figured above were taken are 60 ± 2 mm.

midbody is usually eighteen, but the lateral scales are often irregular and in such cases twenty can often be counted, particularly in the Yirrkalla material. The basic midbody count for the Groote Eylandt skinks is sixteen, with eighteen occurring in the two specimens with irregular lateral scaling. Accepting midbody as being the middle point of the distance between the ear opening and the hind limb, fifty specimens were counted with the following results: eighteen specimens were found to possess 20 midbody scales, twenty-seven possessed 18, and five possessed 16. Many specimens have only four lower labials.

Although no point would seem to be gained by separating them, the Groote Eylandt specimens have several characters which distinguish them from the Yirrkalla series. Apart from the small scalation differences indicated above, they differ in possessing less degenerate hind limbs, some evidence of the tibia, fibula and tarsals being present. There is only a short rudiment of the tibio-fibula present in the Yirrkalla lizards (see fig. 7).

The uniform degeneration of the limbs and digits in the genus *Rhodona* has been of considerable interest to the author, and limb dissections of the nine species available in the South Australian Museum collection have been made and studied. Although by no means conclusive, the variation in tarsal (carpal) and metatarsal (metacarpal) bones, particularly among specimens of the same species, but from different localities, suggests that the loss of digits and digital bones may not be always indicative of specific variation. The genus may be found to contain polytypic species within which the number of digits varies.

ABLEPHARUS TAENIOPLEURUS Peters

Ablepharus (Morethia) taeniopleurus Peters, 1874, p. 375.

U.S.N.M. 128759, Red Lily Lagoon, 7 miles W.S.W. of Oenpelli, N.T.

U.S.N.M. 128635, Yirrkalla, N.T.

ABLEPHARUS ORIENTALIS (De Vis)

Miculia orientalis De Vis, 1888, p. 160.

U.S.N.M. 128408, near Umba Kumba, Groote Eylandt, N.T.

Except for the possession of 20 instead of 18 midbody scales, this specimen corresponds accurately with De Vis's type description. De Vis (*op. cit.*) refers to *orientalis* as the "eastern representative of *elegans* Gunther." This suggests subspecific relationship, and it is possible that the western and north-eastern populations do intergrade at some point in north-western Australia. Zietz (1920, p. 222) gives the distribution of *elegans* as Western Australia, South Australia, Central Australia, New South Wales and Victoria. Except for

Western Australia, I have been unable to find grounds for suggesting that the species occur in any of the States mentioned. The South Australian Museum collection contained 18-20 specimens which had been identified as *elegans*, but all are referable to *A. greyi* Gray or *A. timidus* De Vis. The occurrence of *elegans* in South Australia is therefore doubtful. The present specimen differs from the Western Australian *elegans* in possessing a higher number of midbody scales, the presence of only three upper labials anterior to the subocular and in the complete encirclement of the eye by small granular scales.

ABLEPHARUS BOUTONII METALLICUS Boulenger

Ablepharus boutonii var. *metallicus* Boulenger, 1887, p. 347.

U.S.N.M. 128619-128634, Yirrkalla, N.T.

U.S.N.M. 128413-128438; A.M. R.13469 (3 specimens), R.13592 (10 specimens), S.A.M. R.2852 (3 specimens), near Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128760-128763, S.A.M. R.2850 (3 specimens), 2 miles S.S.E. of Oenpelli, N.T.

U.S.N.M. 128232, 128258, Nightcliff, N.T.

A.M. R.13582 (5 specimens), R.13650 (7 specimens), Cape Arnhem, N.T.

SALIENTIA

FAMILY LEPTODACTYLIDAE

LIMNODYNASTES ORNATUS (Gray)

Discoglossus ornatus Gray, 1842, p. 56.

U.S.N.M. 128457-128458, Central Hill, Groote Eylandt, N.T.

U.S.N.M. 128274-128275, S.A.M. R.3250, Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128465-128466, Port Langdon, N.T.

CYCLORANA AUSTRALIS (Gray)

Alytes australis Gray, 1842, p. 56.

U.S.N.M. 128236-128239, Nightcliff, near Darwin, N.T.

This species is separable from its more slender ally, *C. alboguttatus* (Günther) by the strong sculpturing of the upper surfaces of the maxillae, premaxillae and zygomatic processes of the squamosals. The occurrence of both species at Alexandra Station, N.T. (Loveridge, 1935, p. 13; 1949, p. 213, quoting Parker, 1940, p. 20) and Port Denison, Queensland (Parker, 1940, pp. 19-20) indicates that they coexist over a large range.

GLAUERTIA ORIENTALIS Parker

Glauertia orientalis Parker, 1940, p. 67.

U.S.N.M. 128276-128277, Umba Kumba, Groote Eylandt, N.T.

These two interesting frogs support Parker's type description in all respects, one paratype female having been taken on Groote Eylandt.

FAMILY HYLIDAE

HYLA CAERULEA (Shaw)

Rana caerulea Shaw, 1790, p. 248.

U.S.N.M. 128267, Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128530, Yirrkalla, N.T.

HYLA RUBELLA Gray

Hyla rubella Gray, 1842, p. 57.

U.S.N.M. 128281, Umba Kumba, Groote Eylandt, N.T.

HYLA LESUEURII Dumeril and Bibron

Hyla lesueurii Dumeril and Bibron, 1841, p. 595.

U.S.N.M. 128719, Oenpelli, N.T.

This specimen agrees well with Gunther's type description (1867, p. 56) and Boulenger's redescription and figure (1882, p. 413, pl. xxvi. fig. 2), of the type of *nigrofrenata*, which name was placed in the synonymy of *lesueurii* by Loveridge (1935, p. 51).

HYLA PERONI (Tschudi)

Dendryhyas peroni Tschudi, 1838, p. 75.

U.S.N.M. 128715-128718, Oenpelli, N.T.

This species appears to be widely distributed in northern, eastern and southern Australia, having been recorded from the Northern Territory, Queensland, New South Wales, Tasmania, and I take this opportunity to record its occurrence in the lower reaches of the River Murray, at Taillem Bend, S. Aust. It seems probable that the species also occurs in Victoria.

Except for a darker and more variegated colour pattern, the South Australian specimens are not distinguishable from northern and eastern Australian specimens. In life these dorsal variegations contain numerous green flecks which are not evident in preserved material.

HYLA ADELAISENSIS Gray

Hyla adelaidensis Gray, 1841, p. 447, pl. viii, fig. 2.

U.S.N.M. 128720-128725, S.A.M. R.3252, Oenpelli, N.T.

HYLA NASUTA (Gray)

Pelodytes nasutus Gray, 1842, p. 56.

U.S.N.M. 128268-128271, S.A.M. R.3253, Umba Kumba, Groote Eylandt, N.T.

U.S.N.M. 128459, Central Hill, Groote Eylandt, N.T.

U.S.N.M. 128462, near Old Mission, Groote Eylandt, N.T.

HYLA BICOLOR (Gray)

Eucnemis bicolor Gray, 1842, p. 57.

U.S.N.M. 128712-128714, Oenpelli, N.T.

U.S.N.M. 128686-128703, S.A.M. R.3251, Cahill's Landing, East Alligator River, N.T.

U.S.N.M. 128710-128711, Red Lily Lagoon, N.T.

The latter localities are within a mile or so of each other, approximately six miles west of Oenpelli, N.T.

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EXPLANATION OF PLATE.

PLATE XXXVII

Photographs showing the form and density of the middorsal (right) and basal third caudal scales of:

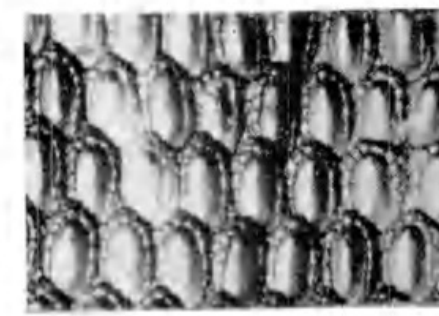
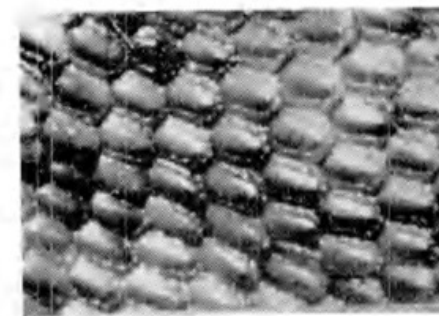
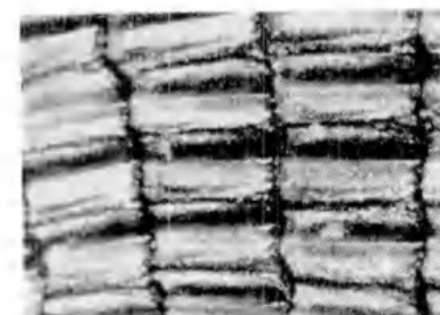
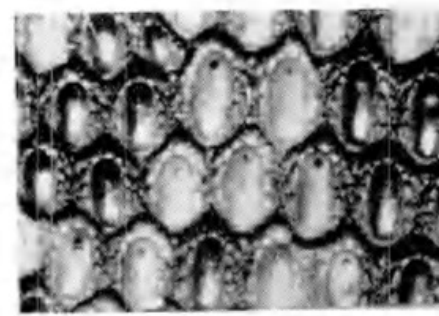
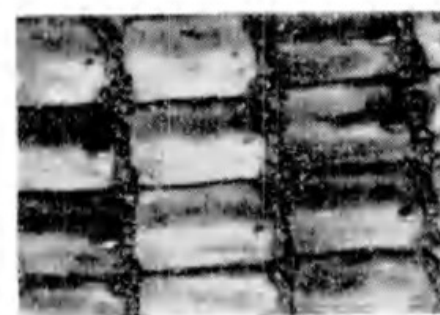
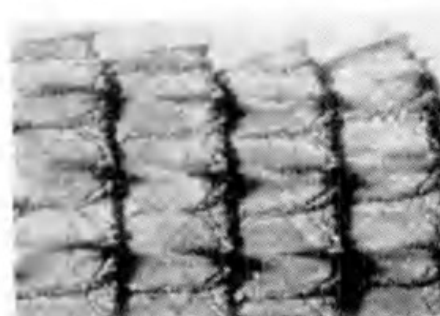
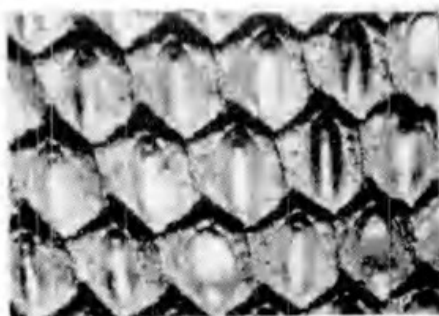
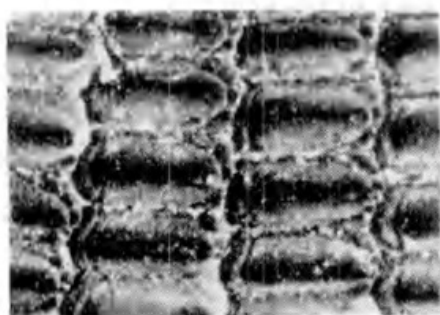
Varanus glebopalma Mitchell. Holotype.

Varanus timorensis tristis (Schlegel). Loc. Fraser Range, W. Aust.

Varanus timorensis tristis (Schlegel). Loc. Tennant Creek, N.T.

Varanus timorensis orientalis Fry. Loc. Eidsvold, Qld.

Varanus timorensis orientalis Fry. Loc. Groote Eylandt, N.T.





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