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Checklist of the frogs and reptiles of Western Australia

K.P. Aplin and L.A. Smith
Western Australian Museum, Francis Street, Perth, Western Australia 6000, Australia

INTRODUCTION

A formal checklist of the frogs and reptiles of Western Australia has not been published previously, although similar functions have been served by the various generations of handbooks produced originally by Glauert (1950, 1957, 1961, 1967) for lizards and snakes and more recently by Storr, Smith and Johnstone (1981, 1983, 1986, 1990, 1999) for these groups and by Tyler, Smith and Johnstone (1984, 1994, 2000) for frogs.

The general philosophy of this checklist, along with the companion checklists of mammals, birds and fishes, has been discussed in a brief introductory essay (Aplin *et al.*, 2001). Before presenting this particular checklist, however, it is necessary to address a number of additional points of historic and taxonomic interest.

For any reader familiar with the taxonomic usage employed in the Western Australian Museum's current handbook series, published in first editions between 1981 and 1990, the content of the present checklist will represent a radical departure. In part this reflects the significant advances in phylogenetic knowledge gained for several groups over the last two decades. However, it also represents a reconciliation of the often-contrasting taxonomies employed by two of Australia's most influential herpetologists, Glen Storr, Curator of Birds and Reptiles at the Western Australian Museum 1962–1986, and Hal Cogger, Curator of Reptiles and later, Deputy Director of the Australian Museum, 1963–1995.

Another factor in determining the content of this listing has been the decision by the International Commission on Zoological Nomenclature (Anonymous, 1991) rejecting suppression of the two self-published works by Wells and Wellington (1984, 1985), in which many hundreds of taxonomic actions were taken in relation to Australian frogs and reptiles. This decision has confirmed the availability of many names, some of which predate names proposed for valid taxa in subsequent taxonomic reviews.

In general, we have employed species and subspecies ranks in accordance with the principles outlined in the introductory essay. To recapitulate briefly, "species are essentially biological entities maintained by *intrinsic* attributes promoting reproductive isolation, while subspecies are essentially geographic entities maintained by *extrinsic* factors that effectively deny reproductive interaction." In practical terms, this definition leads us to recognise subspecies for allopatric populations that are essentially alike in basic ethology and reproductive biology, but are diagnosably distinct in features that are likely to have been subject to environmentally determined patterns of selection and/or random drift. Such differences most often involve features such as size and body proportions, ground colour or minor details of patterning and/or scalation. Such taxa are more likely to be treated as full species where the differences between them involve aspects of the 'specific mate recognition system' (*sensu* Paterson, 1985) or where there has been divergence in features that might imply contrasting lifestyles.

In the relatively few cases where hybrid interaction has been demonstrated between closely-related taxa of frogs and reptiles, the frequency and outcome of hybridization is also taken into account in deciding the taxonomic rank of participating populations. As a general rule of thumb, occasional or spatially-restricted hybridization with limited introgression generally does not challenge the identity of separate species, while frequent, widespread hybridization and effective introgression is likely to eliminate genetic and morphological distinction between subspecies brought into secondary contact in relatively few generations. Where hybridization occurs at moderate to high frequency along a zone of contact or narrow overlap, a stable or gradually shifting 'tension zone' (*sensu* Barton and Charlesworth, 1984) may form. These are sometimes aligned with an environmental gradient of some kind, but more often they owe their origin and stability to partial chromosomal incompatibility. In such cases, the individual taxa are generally treated as subspecies or as chromosomal 'races', depending on the degree of morphological and ecological distinctiveness.

Wherever possible, we have attempted to eliminate or at least highlight any prior subspecific nomenclature that was created solely to label geographical isolates in the absence of morphological or other differentiation, or to designate subdivisions or points along extended clines. Both practices were standard practice during the earlier years of vertebrate systematics in

Australia, as elsewhere in the world (Wilson and Brown, 1953), but are no longer regarded as acceptable taxonomic actions.

Format and scope

The checklist covers all taxa of frogs and reptiles recorded in Western Australia, including several that have become established since European settlement. The naturalised exotics are clearly identified as such in the list. Taxa that are recorded as occasional accidental introductions, either from eastern Australia (e.g., naturalised Cane Toads, *Bufo marinus*) or from overseas (e.g., *Bufo melanostictus*), are not listed.

The list includes taxonomic ranks above the genus level in order to convey a sense of phylogenetic structure, but only where the integrity of a particular clade is well-supported by several lines of evidence. Otherwise the list is presented in alphabetical order and without synonyms or summaries of prior combinations. An extended series of footnotes are presented in justification of certain decisions and as a means of highlighting major areas of taxonomic or phylogenetic uncertainty.

Bibliographic details of type descriptions of most species can be obtained from Cogger *et al.* (1983); for ease of reference, we provide these details for taxa described subsequent to their work.

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Class AMPHIBIA

Order ANURA

Family HYLIDAE[1] (Tree Frogs)

Subfamily Pelodryadinae

Cyclorana Steindachner, 1867
  C. australis (Gray, 1842)
  C. cryptotis Tyler and Martin, 1977
  C. cultripes Parker, 1940
  C. longipes Tyler and Martin, 1977
  C. maini Tyler and Martin, 1977
  C. platycephala (Günther, 1873)
  C. vagitus Tyler, Davies and Martin, 1981
Litoria[2] Tschudi, 1838
  L. adelaidensis (Gray, 1841)
  L. bicolor (Gray, 1842)
  L. caerulea (White, 1790)
  L. cavernicola Tyler and Davies, 1979
  L. coplandi (Tyler, 1968)
  L. cyclorhyncha (Boulenger, 1882)
  L. dahlii (Boulenger, 1896)
  L. inermis (Peters, 1867)
  L. meiriana (Tyler, 1969)
  L. microbelos (Cogger, 1966)
  L. moorei (Copland, 1957)
  L. nasuta (Gray, 1842)
  L. pallida Davies, Martin and Watson, 1983
  L. rothii (DeVis, 1884)
  L. rubella (Gray, 1842)
  L. splendida Tyler, Davies and Martin, 1977
  L. tornieri (Nieden, 1923)
  L. wotjulumensis (Copland, 1957)

Family MYOBATRACHIDAE[3] (Australasian Ground Frogs)

Subfamily Limnodynastinae

Heleioporus Gray, 1841
  H. albopunctatus Gray, 1841
  H. barycragus Lee, 1967
  H. eyrei (Gray, 1845)
  H. inornatus (Lee and Main, 1954)
  H. psammophilus (Lee and Main, 1954)
Limnodynastes[4] Fitzinger, 1843
  L. convexiusculus (Macleay, 1877)
  L. depressus Tyler, 1976
  L. dorsalis (Gray, 1841)
  L. ornatus (Gray, 1842)
  L. spenceri Parker, 1940
  L. tasmaniensis[5] Günther, 1858 (naturalised exotic)
Megistolotis Tyler, Martin and Davies, 1979
  M. lignarius Tyler, Martin and Davies, 1979
Neobatrachus Peters, 1863
  N. albipes Roberts, Mahony, Kendrick and Majors, 1991
  N. aquilonius[6] Martin, Tyler and Davies, 1980
  N. centralis (Parker, 1940)
  N. fulvus Mahony and Roberts, 1986
  N. kunapalari Mahony and Roberts, 1986
  N. pelobatoides (Werner, 1914)
  N. sutor Main, 1957
  N. wilsmorei (Parker, 1940)
Notaden Günther, 1873
  N. melanoscaphus Hosmer, 1962
  N. nichollsi Parker, 1940
  N. weigeli Shea and Johnston, 1987

Subfamily Myobatrachinae

Arenophryne Tyler, 1976
  A. rotunda Tyler, 1976
Crinia[7] Tschudi, 1838
  C. bilingua Martin, Tyler and Davies, 1980
  C. georgiana Tschudi, 1838
  C. glauerti (Loveridge, 1933)
  C. insignifera[8] (Moore, 1954)
  C. pseudinsignifera (Main, 1957)
  C. subinsignifera (Littlejohn, 1957)
Geocrinia[9] Blake, 1973
  G. alba Wardell-Johnson and Roberts, 1989
  G. leai (Fletcher, 1898)
  G. lutea (Main, 1963)

  - *G. rosea* (Harrison, 1927)
  - *G. vitellina* Wardell-Johnson and Roberts, 1989
- *Metacrinia* Harrison, 1927
  - *M. nichollsi* Harrison, 1927
- *Myobatrachus* Schlegel, 1850
  - *M. gouldii*[10] (Gray, 1841)
- *Pseudophryne* Fitzinger, 1843
  - *P. douglasi* Main, 1964
  - *P. guentheri* Boulenger, 1882
  - *P. occidentalis* Parker, 1940
- *Uperoleia* Gray, 1841
  - *U. aspera* Tyler, Davies and Martin, 1981
  - *U. borealis* Tyler, Davies and Martin, 1981
  - *U. crassa* Tyler, Davies and Martin, 1981
  - *U. glandulosa* Davies, Mahony and Roberts, 1985
  - *U. lithomoda* Tyler, Davies and Martin, 1981
  - *U. marmorata* Gray, 1841
  - *U. micromeles* Tyler, Davies and Martin, 1981
  - *U. minima* Tyler, Davies and Martin, 1981
  - *U. mjobergi* (Andersson, 1913)
  - *U. russelli* (Loveridge, 1933)
  - *U. talpa* Tyler, Davies and Martin, 1981
  - *U. trachyderma* Tyler, Davies and Martin, 1981

Class REPTILIA

Order TESTUDINES[11]

Suborder CRYPTODIRA

Family CHELONIIDAE (Marine Turtles)

Subfamily Cheloniinae[12]

- *Caretta* Rafinesque, 1814
  - *C. caretta* (Linnaeus, 1758)
- *Chelonia* Sonnini and Latreille, 1802
  - *C. mydas*[13] (Linnaeus, 1758)
- *Eretmochelys* Fitzinger, 1843
  - *E. imbricata* (Linnaeus, 1766)
    - *E. i. bissa*[14] (Rüppell, 1835)
  - *Lepidochelys* Fitzinger, 1843
  - *L. olivacea* (Eschscholtz, 1829)
- *Natator* McCulloch, 1908
  - *N. depressus* (Garman, 1880)

Family DERMOCHELYIDAE

- *Dermochelys* Blainville, 1816
  - *D. coriacea*[15] (Vandelli, 1761)

Suborder PLEURODIRA

Family CHELUIDAE[16] (Freshwater Tortoises)

- *Chelodina* Fitzinger, 1826
  - *C. kutchlingi* Cann, 1997
  - *C. oblonga* Gray, 1841
  - *C. rugosa* Ogilby, 1890
  - *C. steindachneri* Siebenrock, 1901
- *Elseya* Gray, 1867
  - *E. dentata* (Gray, 1863)
- *Emydura* Bonaparte, 1836
  - *E. australis* (Gray, 1841)
  - *E. victoriae* (Gray, 1842)
- *Pseudemydura* Siebenrock, 1901
  - *P. umbrina* Siebenrock 1901

Order SQUAMATA[17]

Suborder IGUANIA

Family AGAMIDAE (Dragons)

Subfamily Amphibolurinae[18]

- *Amphibolurus*[19] Wagler, 1830
  - *A. norrisi* Witten and Coventry, 1984
- *Caimanops* Storr, 1974
  - *C. amphiboluroides* (Lucas and Frost, 1902)
- *Chelosania* Gray, 1845
  - *C. brunnea* Gray, 1845
- *Chlamydosaurus* Gray, 1825
  - *C. kingi* Gray, 1825
- *Cryptagama* Witten , 1984
  - *C. aurita* (Storr, 1981)
- *Ctenophorus* Fitzinger, 1843
  - *C. caudicinctus*[20] (Günther, 1875)
    - *C. c. caudicinctus* (Günther, 1875)
    - *C. c. infans* (Storr, 1967)
    - *C. c. graafi* (Storr, 1967)
    - *C. c. macropus* (Storr, 1967)
    - *C. c. mensarum* (Storr, 1967)
  - *C. clayi* (Storr, 1966)
  - *C. cristatus* (Gray, 1841)
  - *C. femoralis* (Storr, 1965)
  - *C. fordi* (Storr, 1965)
  - *C. isolepis* (Fischer, 1881)
    - *C. i. citrinus* (Storr, 1965)
    - *C. i. gularis* (Sternfeld, 1924)
    - *C. i. isolepis* (Fischer, 1881)
  - *C. maculatus* (Gray, 1831)
    - *C. m. badius* (Storr, 1965)
    - *C. m. dualis* (Storr, 1965)
    - *C. m. griseus* (Storr, 1965)
    - *C. m. maculatus* (Gray, 1831)
  - *C. mckenziei* (Storr, 1981)
  - *C. nuchalis*[21] (De Vis, 1884)
  - *C. ornatus* (Gray, 1875)
  - *C. pictus* (Peters, 1866)
  - *C. reticulatus* (Gray, 1845)
  - *C. rubens* (Storr, 1965)
  - *C. rufescens* (Stirling and Zietz, 1893)
  - *C. salinarum* (Storr, 1966)
  - *C. scutulatus* (Stirling and Zietz, 1893)
  - *C. yinnietharra* (Storr, 1981)
- *Diporiphora*[22] Gray, 1842
  - *D. albilabris*[23] Storr, 1974
    - *D. a. albilabris* Storr, 1974
  - *D. arnhemica* Storr, 1974
  - *D. bennettii* (Gray, 1845)

  - *D. convergens* Storr, 1974
  - *D. lalliae* Storr, 1974
  - *D. linga*[24] Houston, 1977
  - *D. magna* Storr, 1974
  - *D. pindan* Storr, 1974
  - *D. reginae* Glauert, 1959
  - *D. superba* Storr, 1974
  - *D. valens* Storr, 1979
  - *D. winneckei* Lucas and Frost, 1896
- *Lophognathus* Gray, 1842
  - *L. gilberti* Gray, 1842
    - *L. g. gilberti* Gray, 1842
  - *L. longirostris* (Boulenger, 1883)
  - *L. temporalis* (Günther, 1867)
- *Moloch* Gray, 1841
  - *Moloch horridus*[25] Gray, 1841
- *Pogona* Storr, 1982
  - *P. microlepidota* (Glauert, 1952)
  - *P. minor*[26] (Sternfeld, 1919)
    - *P. m. minima* (Loveridge, 1933)
    - *P. m. minor* (Sternfeld, 1919)
    - *P. m. mitchelli* (Badham, 1976)
  - *P. nullarbor* (Badham, 1976)
- *Rankinia*[27] Wells and Wellington, 1984
  - *R. adelaidensis* (Gray, 1841)
    - *R. a. adelaidensis* (Gray, 1841)
    - *R. a. chapmani*[28] (Storr, 1977)
  - *R. parviceps*[29] (Storr, 1964)
    - *R. p. butleri* (Storr, 1977)
    - *R. p. parviceps* (Storr, 1964)
- *Tympanocryptis* Peters, 1863
  - *T. cephala*[30] Günther, 1867
  - *T. lineata* Peters, 1863
    - *T. l. centralis* Sternfeld, 1924
    - *T. l. houstoni* Storr, 1982
    - *T. l. macra*[31] Storr, 1982

Suborder SCLEROGLOSSA

'GEKKOTA'

Family GEKKONIDAE[32] (Geckos)

Subfamily Diplodactylinae[33]

- *Crenadactylus*[34] Dixon and Kluge, 1964
  - *C. ocellatus* (Gray, 1845)
    - *C. o. horni* (Lucas and Frost, 1895)
    - *C. o. naso* Storr, 1978
    - *C.o. ocellatus* (Gray, 1845)
    - *C.o. rostralis* Storr, 1978
- *Diplodactylus*[35] Gray, 1832
  - *D. alboguttatus* Werner, 1910
  - *D. conspicillatus* Lucas and Frost, 1897
  - *D. damaeus* (Lucas and Frost, 1896)
  - *D. fulleri* Storr, 1978
  - *D. granariensis* Storr, 1979
    - *D. g. granariensis* Storr, 1979
    - *D. g. rex* Storr, 1988
  - *D. kenneallyi* Storr, 1988
  - *D. klugei* Aplin and Adams, 1998
  - *D. maini* Kluge, 1962
  - *D. mitchelli*[36] Kluge, 1963
  - *D. ornatus* Gray, 1845
  - *D. polyophthalmus* Günther, 1867
  - *D. pulcher* (Steindachner, 1870)
  - *D. savagei* Kluge, 1963
  - *D. squarrosus* Kluge, 1962
  - *D. stenodactylus*[37] Boulenger, 1896
  - *D. wombeyi* Storr, 1978
- *Nephrurus* Günther, 1876
  - *N. sheai*[38] Couper 1994
  - *N. laevissimus* Mertens, 1958
  - *N. levis* DeVis, 1886
    - *N. l. levis* DeVis, 1886
    - *N. l. occidentalis* Storr, 1963
    - *N. l. pilbarensis* Storr, 1963
  - *N. stellatus* Storr, 1968
  - *N. vertebralis* Storr, 1963
  - *N. wheeleri* Loveridge, 1932
    - *N. w. cinctus* Storr, 1963
    - *N. w. wheeleri* Loveridge, 1932
- *Oedura* Gray, 1842
  - *O. filicipoda* King, 1984
  - *O. gracilis* King, 1984
  - *O. marmorata* Gray, 1842
  - *O. obscura* King, 1984
  - *O. reticulata* Bustard, 1969
  - *O. rhombifera* Gray, 1845
- *Pseudothecadactylus* Brongersma, 1936
  - *P. cavaticus* Cogger, 1975
- *Rhynchoedura*[39] Günther, 1867
  - *R. ornata* Günther, 1867
- *Strophurus* Fitzinger, 1843
  - *S. assimilis* (Storr, 1988)
  - *S. ciliaris* (Boulenger, 1885)
    - *S. c. aberrans* (Glauert, 1952)
    - *S. c. ciliaris* (Boulenger, 1885)
  - *S. intermedius* (Ogilby, 1892)
  - *S. elderi* (Stirling and Zietz, 1893)
  - *S. jeanae* (Storr, 1988)
  - *S. mcmillani* (Storr, 1978)
  - *S. michaelseni* (Werner, 1910)
  - *S. rankini* (Storr, 1979)
  - *S. robinsoni* (Smith, 1995)
  - *S. spinigerus*[40] (Gray, 1842)
    - *S. s. inornatus* (Storr, 1988)
    - *S. s. spinigerus* (Gray, 1842)
  - *S. strophurus* Duméril and Bibron, 1836
  - *S. taeniatus* (Lönnberg and Andersson, 1913)
  - *S. wellingtonae* (Storr, 1988)
  - *S. wilsoni* (Storr, 1983)
- *Underwoodisaurus*[41] Wermuth, 1965
  - *U. milii* (Bory, 1825)

Subfamily Gekkoninae

- *Christinus*[42] Wells and Wellington, 1985
  - *C. alexanderi* (Storr, 1984)
  - *C. marmoratus* (Gray, 1845)

Gehyra[43] Gray, 1834
  G. australis Gray, 1845
  G. montium Storr, 1982
  G. nana Storr, 1978
  G. occidentalis King, 1984
  G. pilbara (Mitchell, 1965)
  G. punctata (Fry, 1914)
  G. purpurascens Storr, 1982
  G. variegata (Duméril and Bibron, 1836)
  G. xenopus Storr, 1978
Hemidactylus Gray, 1825
  H. frenatus Duméril and Bibron, 1836 (naturalised exotic)
Heteronotia Wermuth, 1965
  H. binoei[44] (Gray, 1845)
  H. planiceps Storr, 1989
  H. spelea (Kluge, 1963)

Family PYGOPODIDAE[45] (Legless Lizards)

Aclys Kluge, 1974
  A. concinna Kluge, 1974
    A. c. concinna Kluge, 1974
    A. c. major Storr, 1987
Aprasia Gray, 1839
  A. fusca[46] Storr, 1979
  A. haroldi Storr, 1977
  A. inaurita Kluge, 1974
  A. picturata Smith and Henry, 1999
  A. pulchella Gray, 1839
  A. repens (Fry, 1914)
  A. rostrata Parker, 1956
  A. smithi Storr, 1970
  A. striolata Lütken, 1863
Delma Gray, 1831
  D. australis[47] Kluge, 1974
  D. borea Kluge, 1974
  D. butleri[48] Storr, 1987
  D. elegans Kluge, 1974
  D. fraseri Gray, 1831
    D. f. fraseri Gray, 1831
    D. f. petersoni Shea, 1991
  D. grayii Smith, 1849
  D. haroldi Storr, 1987
  D. nasuta Kluge, 1974
  D. pax Kluge, 1974
  D. tincta DeVis, 1888
Lialis Gray, 1835
  L. burtonis Gray, 1835
Pletholax Cope, 1864
  P. gracilis Cope, 1864
    P. g. edelensis Storr, 1978
    P. g. gracilis Cope, 1864
Pygopus Merrem, 1820
  P. lepidopodus (Lacépède, 1804)
  P. nigriceps (Fischer, 1882)
    P. n. nigriceps (Fischer, 1882)
    P. n. schraderi Boulenger, 1913

'SCINCOMORPHA'

Family SCINCIDAE[49] (Skinks)

Subfamily Lygosominae

Acritoscincus Wells and Wellington, 1985
  A. trilineatum[50] (Gray, 1839)
Carlia Gray, 1845
  C. amax Storr, 1974
  C. gracilis Storr, 1974
  C. johnstonei Storr, 1974
  C. munda (DeVis, 1885)
  C. rufilatus Storr, 1974
  C. triacantha (Mitchell, 1953)
Cryptoblepharus[51] Wiegmann, 1834
  C. carnabyi Storr, 1976
  C. megastictus Storr, 1976
  C. plagiocephalus (Cocteau, 1836)
  C. virgatus (Garman, 1901)
    C. v. clarus (Storr, 1961)
Ctenotus[52] Storr, 1964
  C. alacer Storr, 1970
  C. alleni Storr, 1974
  C. angusticeps Storr, 1988
  C. atlas Storr, 1969
  C. australis (Gray, 1838)
  C. ariadnae Storr, 1969
  C. brooksi (Loveridge, 1933)
    C. b. brooksi (Loveridge, 1933)
    C. b. euclae Storr, 1975
  C. burbidgei Storr, 1969
  C. calurus Storr, 1969
  C. catenifer Storr, 1974
  C. colletti (Boulenger, 1896)
  C. decaneurus Storr, 1970
  C. delli Storr, 1974
  C. duricola Storr, 1975
  C. dux Storr, 1969
  C. ehmanni Storr, 1985
  C. fallens Storr, 1974
  C. gemmula Storr, 1974
  C. grandis Storr, 1969
    C. g. grandis Storr, 1969
    C. g. titan Storr, 1980
  C. greeri Storr, 1979
  C. hanloni Storr, 1980
  C. helenae Storr, 1969
  C. iapetus Storr, 1975
  C. impar Storr, 1969
  C. inornatus (Gray, 1845)
  C. labillardieri (Duméril and Bibron, 1839)
  C. lancelini Ford, 1969
  C. leae (Boulenger, 1887)
  C. leonhardii (Sternfeld, 1919)
  C. maryani Aplin and Adams, 1998
  C. mastigura Storr, 1975
  C. militaris Storr, 1975
  C. mimetes Storr, 1969
  C. nasutus Storr, 1979

  - *C. nigrilineatus* Storr, 1990
  - *C. orientalis* Storr, 1971
  - *C. pallescens* Storr, 1969
  - *C. pantherinus*[53] (Peters, 1866)
    - *C. p. acripes* Storr, 1975
    - *C. p. calx* Storr, 1970
    - *C. p. ocellifer* (Boulenger, 1896)
    - *C. p. pantherinus* (Peters, 1866)
  - *C. piankai* Storr, 1969
  - *C. quattuordecimlineatus* (Sternfeld, 1919)
  - *C. regius* Storr, 1971
  - *C. rimicola* Horner and Fishcher, 1998
    - *C. r. camptris* Horner and Fischer, 1998
  - *C. robustus*[54] Storr, 1970
  - *C. rubicundus* Storr, 1978
  - *C. rufescens* Storr, 1979
  - *C. rutilans* Storr, 1980
  - *C. saxatilis* Storr, 1970
  - *C. schomburgkii* (Peters, 1863)
  - *C. septenarius* King, Horner and Fyfe, 1988
  - *C. serventyi* Storr, 1975
  - *C. severus* Storr, 1969
  - *C. tanamiensis* Storr, 1970
  - *C. tantillus* Storr, 1975
  - *C. uber*[55] Storr, 1969
    - *C. u. uber* Storr, 1969
    - *C. u. johnstonei* Storr, 1980
  - *C. xenopleura* Storr, 1981
  - *C. yampiensis* Storr, 1975
  - *C. youngsoni* Storr, 1975
  - *C. zastictus* Storr, 1984
- *Cyclodomorphus* Fitzinger, 1843
  - *C. branchialis* (Günther, 1867)
  - *C. celatus* Shea and Miller, 1995
  - *C. maximus* Storr, 1976
  - *C. melanops* (Stirling and Zietz, 1893)
    - *C. melanops elongatus* (Werner, 1910)
    - *C. melanops melanops* (Stirling and Zietz, 1893)
    - *C. melanops siticulosus* Shea and Miller, 1995
- *Egernia* Gray, 1838
  - *E. depressa* (Günther, 1875)
  - *E. douglasi* Glauert, 1956
  - *E. formosa* Fry, 1914
  - *E. inornata* Rosén, 1905
  - *E. kingii* (Gray, 1838)
  - *E. kintorei* Stirling and Zietz, 1893
  - *E. luctuosa* (Peters, 1866)
  - *E. multiscutata* Mitchell and Behrndt, 1949
    - *E. m. bos* Storr, 1960
  - *E. napoleonis* (Gray, 1838)
  - *E. pilbarensis* Storr, 1978
  - *E. pulchra* Werner, 1910
    - *E. p. longicauda* Ford, 1963
    - *E. p. pulchra* Werner, 1910
  - *E. richardi* (Peters, 1869)
  - *E. stokesii*[56] (Gray, 1845)
    - *E. s. badia* Storr, 1978
    - *E. s. stokesii* (Gray, 1845)
  - *E. striata*[57] Sternfeld, 1919
- *Eremiascincus* Greer, 1979
  - *E. fasciolatus*[58] (Günther, 1867)
  - *E. richardsonii* (Gray, 1845)
- *Glaphyromorphus*[59] Wells and Wellington, 1984
  - *G. brongersmai* (Storr, 1972)
  - *G. darwiniensis* (Storr, 1967)
  - *G. gracilipes*[60] (Gray, 1839)
  - *G. isolepis* (Boulenger, 1887)
- *Hemiergis* Wagler, 1830
  - *H. initialis* (Werner, 1910)
    - *H. i. brookeri* Storr, 1975
    - *H. i. initialis* (Werner, 1910)
  - *H. millewae* Coventry, 1976
  - *H. peronii*[61] (Fitzinger, 1826)
    - *H. p. peronii* (Fitzinger, 1826)
    - *H. p. tridactyla* (Boulenger, 1915)
  - *H. quadrilineata* (Duméril and Bibron, 1839)
- *Lerista*[62] Bell, 1833
  - *L. allochira* Kendrick, 1989
  - *L. apoda* Storr, 1976
  - *L. arenicola* Storr, 1972
  - *L. axillaris* Storr 1991
  - *L. baynesi* Storr, 1972
  - *L. bipes* (Fischer, 1882)
  - *L. borealis* Storr, 1972
  - *L. bunglebungle* Storr 1991
  - *L. christinae* Storr, 1979
  - *L. connivens* Storr, 1972
  - *L. desertorum* (Sternfeld, 1919)
  - *L. distinguenda* (Werner, 1910)
  - *L. dorsalis* Storr, 1985
  - *L. elegans* (Gray, 1845)
  - *L. eupoda* Smith, 1996
  - *L. flammicauda* Storr, 1985
  - *L. gascoynensis* Storr, 1986
  - *L. gerrardii* (Gray, 1864)
  - *L. greeri* Storr, 1982
  - *L. griffini* Storr, 1982
  - *L. haroldi* Storr, 1983
  - *L. humphriesi* Storr, 1972
  - *L. ips* Storr, 1980
  - *L. kalumburu* Storr, 1976
  - *L. kendricki* Storr, 1991
  - *L. kennedyensis* Kendrick, 1989
  - *L. labialis* Storr, 1972
  - *L. lineata* Bell, 1833
  - *L. lineopunctulata*[63] (Duméril and Bibron, 1839)
  - *L. macropisthopus* (Werner, 1903)
    - *L. m. fusciceps* Storr, 1991
    - *L. m. galea* Storr, 1991
    - *L. m. macropisthopus* (Werner, 1903)
    - *L. m. remota* Storr, 1991
  - *L. microtis* (Gray, 1845)
    - *L. m. microtis* (Gray, 1845)
    - *L. m. intermedia* Storr, 1991
  - *L. muelleri*[64] (Fischer, 1881)
  - *L. neander* Storr, 1972
  - *L. nichollsi* (Loveridge, 1933)
  - *L. onsloviana* Storr, 1984
  - *L. orientalis* (DeVis, 1889)

- *L. petersoni*[65] Storr, 1976
- *L. picturata* (Fry, 1914)
- *L. planiventralis* (Lucas and Frost, 1902)
  - *L. p. decora* Storr, 1978
  - *L. p. maryani* Storr, 1991
  - *L. p. planiventralis* (Lucas and Frost, 1902)
- *L. praefrontalis*[66] Greer, 1986
- *L. praepedita* (Boulenger, 1987)
- *L. puncticauda* Storr, 1991
- *L. quadrivincula*[67] Shea, 1991
- *L. robusta* Storr, 1990
- *L. separanda* Storr, 1976
- *L. simillima* Storr, 1984
- *L. stictopleura* Storr, 1985
- *L. taeniata* Storr, 1986
- *L. tridactyla* Storr, 1990
- *L. uniduo*[68] Storr, 1984
- *L. varia* Storr, 1986
- *L. vermicularis* Storr, 1982
- *L. viduata* Storr, 1991
- *L. walkeri* (Boulenger, 1891)
- *L. xanthura* Storr, 1976
- *L. yuna* Storr, 1991
- *L. zietzi*[69] Wells and Wellington, 1985

Menetia[70] Gray, 1845
- *M. greyii* Gray, 1845
- *M. maini* Storr, 1976
- *M. surda*[71] Storr, 1976
  - *M. surda cresswelli* Aplin and Adams, 1998
  - *M. surda surda* Storr, 1976

Morethia Gray, 1845
- *M. adelaidensis* (Boulenger, 1887)
- *M. boulengeri* (Ogilby, 1890)
- *M. butleri* (Storr, 1963)
- *M. lineoocellata* (Duméril and Bibron, 1839)
- *M. obscura* Storr, 1973
- *M. ruficauda* (Lucas and Frost, 1895)
  - *M. r. exquisita* Storr, 1973
  - *M. r. ruficauda* (Lucas and Frost, 1895)
- *M. storri* Greer, 1980

Notoscincus Fuhn, 1969
- *N. butleri* Storr, 1979
- *N. ornatus*[72] (Broom, 1896)
  - *N. o. ornatus* (Broom, 1896)
  - *N. o. wotjulum* (Glauert, 1959)

Proablepharus Fuhn, 1969
- *P. reginae* (Glauert, 1960)
- *P. tenuis* (Broom, 1896)

Pseudemoia Fuhn, 1967
- *P. baudini* (Greer, 1982)

Tiliqua Gray, 1825
- *T. multiscutata* Sternfeld, 1919
- *T. occipitalis* (Peters, 1863)
- *T. rugosa*[73] (Gray, 1825)
  - *T. r. aspera* (Gray, 1845)
  - *T. r. konowi* (Mertens, 1958)
  - *T. r. palarra* Shea, 2000
  - *T. r. rugosa* (Gray, 1825)
- *T. scincoides*[74] (Hunter, 1790)
  - *T. s. intermedia* Mitchell, 1955

'VARANOIDEA'

Family VARANIDAE (Goannas, Monitors)

Varanus Merrem, 1820
- *V. acanthurus* Boulenger, 1885
- *V. brevicauda* Boulenger, 1898
- *V. caudolineatus*[75] Boulenger, 1885
- *V. eremius* Lucas and Frost, 1895
- *V. giganteus* (Gray, 1845)
- *V. gilleni* Lucas and Frost, 1895
- *V. glauerti* Mertens, 1957
- *V. gouldii*[76] (Gray, 1838)
- *V. glebopalma* Mitchell, 1955
- *V. kingorum* Storr, 1980
- *V. mertensi* Glauert, 1951
- *V. mitchelli* Mertens, 1958
- *V. panoptes* Storr, 1980
  - *V. p. panoptes* Storr, 1980
  - *V. p. rubidus* Storr, 1980
- *V. pilbarensis* Storr, 1980
- *V. rosenbergi* Mertens, 1957
- *V. scalaris* Mertens, 1941
- *V. storri* Mertens, 1966
  - *V. s. ocreatus* Storr, 1980
- *V. tristis* (Schlegel, 1839)
  - *V. t. tristis* (Schlegel, 1839)

'SERPENTES'

SCOLECOPHIDIA

Family TYPHLOPIDAE[77] (Blind Snakes)

Ramphotyphlops Fitzinger, 1843
- *R. ammodytes*[78] (Montague, 1914)
- *R. australis* (Gray, 1845)
- *R. bituberculatus* (Peters, 1863)
- *R. braminus*[79] (Daudin, 1803) (naturalised exotic)
- *R. diversus* (Waite, 1894)
- *R. endoterus* (Waite, 1918)
- *R. ganei* Aplin, 1998
- *R. grypus* (Waite, 1918)
- *R. guentheri* (Peters, 1865)
- *R. hamatus* Storr, 1981
- *R. howi* Storr, 1983
- *R. kimberleyensis* Storr, 1981
- *R. leptosoma* Robb, 1972
- *R. ligatus* (Peters, 1879)
- *R. longissimus* Aplin, 1998
- *R. margaretae* (Storr, 1981)
- *R. micromma* Storr, 1981
- *R. pilbarensis* Aplin and Donnellan, 1993
- *R. pinguis* (Waite, 1897)
- *R. splendidus* Aplin, 1998
- *R. troglodytes* Storr, 1981
- *R. unguirostris* (Peters, 1867)
- *R. waitii* (Boulenger, 1895)
- *R. yampiensis* Storr, 1981

ALETHINOPHIDIA

Family BOIDAE[80] (Pythons)

Subfamily Pythoninae

- *Antaresia* Wells and Wellington, 1984
  - *A. childreni* (Gray, 1842)
  - *A. perthensis* (Stull, 1932)
  - *A. stimsoni*[81] (Smith, 1985)
    - *A. s. orientalis* (Smith, 1985)
    - *A. s. stimsoni* (Smith, 1985)
- *Aspidites*[82] Peters, 1876
  - *A. melanocephalus* (Krefft, 1864)
  - *A. ramsayi* (Macleay, 1882)
- *Liasis* Gray, 1842
  - *L. mackloti*[83] (Duméril and Bibron, 1844)
  - *L. m. fuscus* (Peters, 1873)
  - *L. olivaceus* (Gray, 1842)
    - *L. o. barroni* Smith, 1981
    - *L. o. olivaceus* (Gray, 1842)
- *Morelia* Gray, 1842
  - *M. carinata* (Smith, 1981)
  - *M. spilota* (Lacépède, 1804)
    - *M. s. imbricata* (Smith, 1981)
    - *M. s. variegata* Gray, 1842

CAENOPHIDIA[84]

Superfamily ACHROCHORDOIDEA

Family ACROCHORDIDAE (File Snakes)

- *Acrochordus*[85] Hornstedt, 1787
  - *A. granulatus* (Schneider, 1799)

Superfamily COLUBROIDEA

Family COLUBRIDAE[86] (Back-fanged Snakes)

Subfamily Colubrinae

- *Boiga* Fitzinger, 1826
  - *B. irregularis*[87] (Merrem, 1802)
- *Dendrelaphis* Boulenger, 1890
  - *D. punctulata* (Gray, 1826)

Subfamily Homalopsinae

- *Cerberus* Cuvier, 1829
  - *C. australis*[88] (Gray, 1842)
- *Fordonia* Gray, 1842
  - *F. leucobalia* (Schlegel, 1837)
- *Myron* Gray, 1849
  - *M. richardsonii* Gray, 1849

Subfamily Natricinae

- *Tropidonophis*[89] Jan, 1863
  - *T. mairii* (Gray, 1841)
    - *T. m. mairii* (Gray, 1841)

Family ELAPIDAE[90] (Front-fanged Snakes)

Subfamily Hydrophiinae

'Terrestrial hydrophiins'

- *Acanthophis*[91] Daudin, 1803
  - *A. antarcticus* (Shaw and Nodder, 1802)
  - *A. praelongus* Ramsay, 1877
  - *A. pyrrhus* Boulenger, 1898
  - *A. wellsi*[92] Hoser, 1998
- *Brachyurophis*[93] Günther, 1863
  - *B. approximans* (Glauert, 1954)
  - *B. fasciolata* (Günther, 1872)
    - *B. f. fasciata* (Stirling and Zietz, 1893)
    - *B. f. fasciolata* (Günther, 1872)
  - *B. roperi* (Kinghorn, 1931)
  - *B. semifasciata* (Günther, 1863)
- *Cryptophis* Worrell, 1961
  - *C. pallidiceps* (Günther, 1858)
- *Demansia* Günther, 1858
  - *D. calodera* Storr, 1978
  - *D. olivacea* (Gray, 1842)
  - *D. papuensis*[94] (Macleay, 1877)
  - *D. psammophis* (Schlegel, 1837)
    - *D. p. cupreiceps* Storr, 1978
    - *D. p. psammophis* (Schlegel, 1837)
    - *D. p. reticulata* (Gray, 1842)
  - *D. rufescens* Storr, 1978
  - *D. simplex* Storr, 1978
  - *D. vestigiata* de Vis, 1884
  - *Drysdalia* Worrell, 1961
  - *D. mastersii* (Krefft, 1866)
- *Echiopsis* Fitzinger, 1843
  - *E. curta* (Schlegel, 1837)
- *Elapognathus*[95] Boulenger, 1896
  - *E. coronatus* (Schlegel, 1837)
  - *E. minor* (Günther, 1863)
- *Furina* Duméril, 1853
  - *F. ornata* (Gray, 1842)
- *Neelaps* Günther, 1863
  - *N. bimaculatus* (Duméril, Bibron and Duméril, 1854)
  - *N. calonotos* (Duméril, Bibron and Duméril, 1854)
- *Notechis*[96] Boulenger, 1896
  - *N. scutatus* (Peters, 1861)
- *Oxyuranus* Kinghorn, 1923
  - *O. scutellatus* (Peters, 1837)
- *Paraplocephalus*[97] Keogh, Scott and Scanlon, 2000
  - *P. atriceps* (Storr, 1980)
- *Parasuta* Worrell, 1961
  - *P. gouldii* (Gray, 1841)
  - *P. monachus* (Storr, 1964)
  - *P. nigriceps* (Günther, 1863)
  - *P. spectabilis* (Krefft, 1869)
    - *P. s. bushi* Storr, 1988
    - *P. s. nullarbor* (Storr, 1981)
- *Pseudechis* Wagler, 1830
  - *P. australis*[98] (Gray, 1842)
  - *P. butleri* L.A. Smith, 1982

- *Pseudonaja* Günther, 1858
  - *P. affinis*[99] Günther, 1872
    - *P. a. affinis* Günther, 1872
    - *P. a. exilis* Storr, 1989
    - *P. a. tanneri* (Worrell, 1961)
  - *P. ingrami* (Boulenger, 1908)
  - *P. modesta* (Günther, 1872)
  - *P. nuchalis*[100] Günther, 1858
  - *P. textilis* (Duméril, Bibron and Duméril, 1854)
- *Rhinoplocephalus* Müller, 1885
  - *R. bicolor* Müller, 1885
- *Simoselaps* Jan, 1859
  - *S. anomalus* (Sternfeld, 1919)
  - *S. bertholdi* (Jan, 1859)
  - *S. littoralis* Storr, 1968
  - *S. minimus* (Worrell, 1960)
- *Suta* Worrell, 1961
  - *S. fasciata* Rosén, 1905
  - *S. ordensis* Storr, 1984
  - *S. punctata* (Boulenger, 1896)
  - *S. suta* (Peters, 1863)
- *Vermicella* Günther, 1858
  - *V. intermedia* Keogh and Smith, 1996
  - *V. multifasciata* (Longman, 1915)
  - *V. snelli*[101] Storr, 1969

'*Hydrophis* group of sea-snakes'

- *Acalyptophis* Boulenger, 1896
  - *A. peronii* (Duméril, 1853)
- *Aipysurus* Lacépède, 1804
  - *A. apraefrontalis* M.A. Smith, 1926
  - *A. duboisii* Bavay, 1869
  - *A. eydouxii* (Gray, 1849)
  - *A. foliosquama* M.A. Smith, 1926
  - *A. fuscus* (Tschudi, 1837)
  - *A. laevis* Lacépède, 1804
  - *A. pooleorum* L.A. Smith, 1974
  - *A. tenuis* Lönnberg and Anderson, 1913
- *Disteira*[102] Lacepede, 1804
  - *D. kingii* Boulenger, 1896
  - *D. major* (Shaw, 1802)
  - *D. stokesii* (Gray, 1846)
- *Emydocephalus* Krefft, 1869
  - *E. annulatus* Krefft, 1869
- *Ephalophis* M.A. Smith, 1931
  - *E. grayae*[103] M.A. Smith, 1931
- *Hydrelaps* Boulenger, 1896
  - *H. darwiniensis* Boulenger, 1896
- *Hydrophis* Sonnini and Latreille, 1802
  - *H. coggeri*[104] (Kharin, 1984)
  - *H. czeblukovi* (Kharin, 1984)
  - *H. elegans* (Gray, 1842)
  - *H. mcdowelli* Kharin, 1983
  - *H. ocellatus* Gray, 1849
- *Lapemis* Gray, 1835
  - *L. hardwickii* Gray, 1834
- *Pelamis* Daudin, 1803
  - *P. platura* (Linnaeus, 1766)

ORDER CROCODYLIA

Family CROCODYLIDAE[105] (Crocodiles)

- *Crocodylus* Laurenti, 1768
  - *C. johnstoni* Krefft, 1873
  - *C. porosus* Schneider, 1801

NOTES

[1] We follow Tyler (1979) in recognizing the subfamily Pelodryadinae for the Australo-papuan hylid genera *Litoria*, *Cyclorana* and *Nyctimystes*. See Tyler (1971) and Tyler and Davies (1979) for morphological evidence for pelodryadine monophyly; and Hutchinson and Maxson (1987) for a supportive molecular perspective.

[2] Although the genus *Litoria* encompasses considerable morphological (Tyler, 1971; Tyler and Davies, 1978; Burton, 1996), chromosomal (Menzies and Tippett, 1976; King *et al.*, 1979; King, 1980, 1981) and molecular diversity (Maxson *et al.*, 1982; Hutchinson and Maxson, 1986, 1987), sub-generic categories have not been applied. Tyler and Davies (1978) recognised a total of 37 species-groups within the extended Australo-papuan radiation, while King (1981) identified a lesser number of groupings based on chromosomal evidence. Hutchinson and Maxson (1987) identified eight major phylogenetic lineages based on immunological evidence, but noted that these cut across the groupings identified on other criteria. Wells and Wellington (1985: 4-5) proposed various new genera corresponding to various, previously identified species-groups within *Litoria*; their names are nomenclatorialy available in the event of future sub-division of the genus.

[3] Although the majority of Australian workers have followed Savage (1973) in recognising the endemic leptodactyloid family Myobatrachidae, there has been little evidence put forward in support of myobatrachid monophyly (Ford and Cannatella (1993). Burton (1998) has recently identified a potential synapomorphy of Myobatrachidae in the superficial digital flexors. In contrast, the subfamilial division into Myobatrachinae and Limnodynastinae is supported by various lines of evidences, both morphological (Heyer and Liem, 1976) and molecular (Daugherty and Maxson, 1982).

[4] The genus *Limnodynastes* encompasses extensive morphological and molecular diversity. However, recent attempts at generic subdivision on morphological criteria [e.g., recognition of *Platyplectron* for the *L. dorsalis* group; Heyer and Liem (1976)] are not congruent with the available immunological evidence (Roberts and Maxson, 1986). On immunological grounds (Roberts and Maxson, 1986) the most divergent lineage is probably that comprised of *Limnodynastes spenceri* and *L. ornatus*; morphological studies underway by T.C. Burton (*pers. comm.*) also highlight the close affinity of these taxa and their distinctness from other *Limnodynastes*. Hutchinson and Maxson (1987) argue on immunological evidence that the genus *Megistolotis* falls within the *Limnodynastes* as currently recognised.

[5] Apparently introduced to the Kununurra area with transportable homes (Martin and Tyler, 1978); its current status in the area is unknown.

[6] Mable and Roberts (1997) found differences in mtDNA haplotype between northwestern populations of *N. aquilonius* and those from Central Australia; and found the latter to be more similar to *N. centralis* from Central Australia and *N. sudelli* from Queensland. Roberts (1997) documented the close similarity in call structure among these taxa and suggested that they are perhaps better treated as geographic variants of a single species. We maintain *N. aquilonius* as distinct from *N. centralis*, but suggest that the former name be restricted in use for

tetraploid populations in the northwestern coastal and northern desert regions of Western Australia. More southerly Western Australian and central Australian populations would in this arrangement be treated as *N. centralis*, resulting in a greatly expanded range over that shown in Tyler *et al.* (2000: 152). The type locality of *N. centralis* is 100 miles east of Lake Eyre, South Australia.

[7] *Crinia* as employed here includes the suite of species sometimes placed under *Ranidella* Girard. This reflects the close genetic relationship of *georgiana* (type species of *Crinia*) with the *'Ranidella' signifera – glauerti* group, as revealed by genetic analyses of Bardense (1984) and Aplin and Adams (unpublished data).

[8] *Crinia insignifera* and *C. pseudinsignifera* are weakly differentiated both genetically and morphologically, but they have audibly distinct male advertisement calls (Main, 1957; Littlejohn, 1959). They are also very similar in general ecology and reproductive biology. Where the two taxa come into contact, along the foothills of the Darling Scarp, they hybridize at low to moderate frequency (Bull, 1978, 1979). Bull (1978) suggested that the interspecific boundary was stable in time and somehow determined by unspecified environmental gradients associated with the major topographic feature. Although *pseudinsignifera* and *insignifera* could perhaps could be treated as subspecies according to the criteria set out in the introduction, we retain them as distinct species in view of the integrity and apparent stability of the contact zone along a remarkable 480 km front. *Crinia subinsignifera* of south coastal regions in Western Australia is genetically and morphologically more distinct (Aplin and Adams, unpublished data).

[9] The Western Australian species of *Geocrinia* can be divided on reproductive criteria into two assemblages, one containing only the arboreal nest building *G. leai;* the second containing members of the terrestrial egg-laying *G. rosea* species-group (*G. alba, G. lutea, G. rosea, G. vitellina*). These groups are also readily distinguished morphologically, and the latter encompasses significant genetic diversity (Roberts *et al.* 1990; Driscoll 1997, 1998); the two groups probably warrant generic distinction.

[10] The endemic southwestern genus *Myobatrachus*, long considered to be monotypic, has recently been found to contain significant genetic diversity across its range (Aplin and Adams, unpublished data). Further collecting is underway to explore the possibility that this genus contains two or more species.

[11] The higher level classification of turtles follows Gaffney (1975).

[12] Various generic and tribal classifications of the living cheloniines have been proposed, based on interpetations of morphological (e.g., Gaffney and Meylan, 1988; Limpus *et al.*, 1988; Zangerl *et al.*, 1988; Hirayama, 1994; Parham and Fastovsky, 1997), serological (Frair, 1979) and molecular (Bowen *et al.*, 1993; Dutton *et al.*, 1996) evidence. Points of general agreement include the distinctiveness of *Natator depressus* from *Chelonia*, and the relatively close affinity of *Lepidochelys* to *Caretta* (these usually united as the Tribe Carettini). *Eretmochelys* can probably be included with the carettins based on the serological and molecular results and some morphological evidence (Parham and Fastovsky, 1997). *Natator* and *Chelonia* are usually grouped as the Tribe Cheloniini, but there is little evidence of monophyly between these taxa.

Although two or more subspecies are commonly recognised for most sea turtle species, these generally serve to label what are regarded as distinct breeding stocks. Subspecies are only listed here if they have significant morphological or genetic support.

[13] *Chelonia mydas* has a pantropical distribution. In earlier literature (e.g., Wermuth and Mertens, 1961: 235-238) populations in the Indian and Pacific Oceans were usually distinguished taxonomically (as *C. m. japonica*) from the nominotypical population in the Altantic. More recently, attention has focussed on morphologically distinctive populations in the Eastern Pacific area. These are variably listed as a subspecies (*C. m. agassizii* Boucourt) or even as a full species (e.g. Hendrickson, 1980; King and Burke, 1989: 19-20), with one author claiming that *C. agassizii* and *C. mydas* are "sympatric without interdigitation in Pacific Mexico, the Galapagos and even Papua New Guinea" (Pritchard, 1983: 1110). Although various regional populations including that usually identified as *C. m. agassizii* can be distinguished on craniometric grounds (Kamezaki and Matsui, 1995), the available genetic evidence (Karl and Bowen, 1999) fails to support the hypothesis of separate breeding populations.

[14] Two subspecies of Hawksbill Turtle are usually recognised, the nominate form in the Atlantic Ocean and *E. i. bissa* (Rüppell) in the Indian and Pacific Oceans. The distribution of mtDNA haplotype diversity is consistent with this fundamental division, but also points to significant lineage segregation within the Indo-Pacific stock (Okayama *et al.*, 1999). Broderick *et al.* (1994) reported significant differences in haplotype frequencies between northwestern and northeastern Australia.

[15] Two or three subspecies may be present in *D. coriacea* (Ernst and Barbour, 1989: 117-118) but the relationships among various nesting stocks are as yet poorly studied. The Indian Ocean population may be referrable to *D. c. schlegelii* (Garman), a poorly defined taxon which currently lacks either a specified type locality or an identifiable holotype (Brongersma, 1996).

[16] The family name is more correctly spelled Cheluidae, as indicated by Storr (1964) and Shea and Miller (1999).

Significant insights into the generic and species level taxonomy of Australian cheluids have emerged from recent molecular studies (Georges and Adams, 1992; Seddon *et al.*, 1997; Georges *et al.*, 1998). These support the monophyly of each of *Chelodina* and *Emydura*, but show *Elseya* to be paraphyletic with respect to *Emydura*. *Elseya dentata*, the sole West Australian representative of this group, is the type species of *Elseya* by subsequent designation (Lindholm, 1929). Georges *et al.* (1998) found the highly restricted endemic *Pseudemydura umbrina* to be the sister taxon to all other Australian short-necked tortoises, rather than a more basal cheluid lineage as inferred by Gaffney (1997) from osteological features. *Chelodina oblonga* of southwestern Australia is a close relative of *C. longicollis* of southeastern waterways (Georges *et al.*, 1998).

[17] Recent phylogenetic analyses of both morphological and molecular data agree that the traditional taxonomic distinction within the Order Squamata between lizards (traditionally 'Lacertilia') and snakes ('Ophidia' or 'Serpentes') is artificial. Snakes are now widely accepted to be derivatives of a diverse squamate clade that also contains the majority of the living lizards, but excludes the agamids, chamaeleontids and iguanids sensu lato (Estes *et al.*, 1988; Lee, 1998). Some authors (e.g., Lee, 1997, 1998) go further in suggesting a special relationship between snakes and Varanoidea (including varanids and the extinct mosasaurs), however this remains contested on both morphological (e.g., Hallerman, 1998; Zaher and Rieppel, 2000) and as yet incompletely published molecular (Reeder, 1997) grounds. Here we follow Estes *et al.* (1988) and Lee (1998) in recognising a fundamental distinction between Iguania (Acrodonta of some authors) and Scleroglossa, but treat all major scleroglossan taxa as *incertae sedis* pending clarification of relationships within this diverse and complex group. The suprafamilial classification of snakes follows Scanlon and Lee (2000).

[18] The notion of an endemic Australasian agamid radiation has been given a major boost by the molecular studies of Macey *et al* (2000), in particular through their identification of a novel secondary structure for $tRNA^{Asn}$ shared by all studied Australopapuan agamids together with *Physignathus cocincinus* of mainland Southeast Asia This finding confirms Witten's (1982) earlier suggestion of amphibolurine monophyly based on presence of a widely shared karyotype.

Although the generic classification of Australian agamids has undergone extensive changes over the last two decades, largely through disbandment of the mega-genus *Amphibolurus*, certain aspects remain contested. Storr *et al.* (1983) recognised the following genera among the Western Australian agamids: *Caimanops, Chelosania, Chlamydosaurus, Ctenophorus, Diporiphora, Gemmatophora, Moloch, Pogona* and *Tympanocryptis*. Cogger *et al.* (1983) considered *Gemmatophora* Kaup to be a *nomen oblitum* and recognised *Lophognathus* as distinct from *Amphibolurus*. Witten (1984) proposed *Cryptagama* for the distinctive *T. aurita*, while Wells and Wellington (1984, 1985) proposed various genera for previously recognised species-groups within *Ctenophorus* and *Tympanocryptis*. Greer (1989) adopted *Cryptagama* and employed *Rankinia* Wells and Wellington for the *Tympanocryptis adelaidensis* species-group, but maintained a unified *Ctenophorus*. He also reunited *Lophognathus* with *Amphibolurus*, but professed little faith in the monophyly of the expanded genus. Cogger (1995, 2000) retained *Lophognathus* as distinct from *Amphibolurus*, but retained the *adelaidensis* species-group within *Tympanocryptis*.

Our generic arrangement differs again in retaining both *Lophognathus* and *Rankinia*, but with the latter expanded to include additional taxa (*parviceps* and *butleri*). Specific rationale for these actions is given below.

[19] *Amphibolorus* is used here in the restricted sense of Cogger (1995, 2000); the extralimital species are *A. muricatus* White and *A. nobbi* Witten of eastern Australia. Although the species of *Amphibolorus* and *Lophognathus* are phenetically very alike, they appear to be widely separated in molecular genetic terms, at least as represented by *A. muricatus* and *L. longirostris* (Macey *et al.*, 2000). Use of *Amphibolurus* Wagler, 1830 over *Gemmatophora* Kaup, 1827 (type species: *Lacerta*

muricata White, 1790 by original designation) follows Cogger *et al.* (1983), who regard the earlier name as a *nomen oblitum*.

[20] The subspecies of *Ctenophorus caudicinctus* are variably based on features of colour and body proportions (Storr, 1967). In the case of *caudicinctus* vs *mensarum*, the available evidence suggests that these forms may well represent the ends of a cline (Storr, 1967; Aplin *et al.*, *submitted*). Further morphological and molecular genetic studies are needed to determine appropriate infraspecific taxonomies for this and other widespread, polytypic species within *Ctenophorus*.

[21] Listed in Storr *et al.* (1983) as *C. inermis* De Vis, 1888. Both names were originally proposed for Queensland populations; there has been no continental scale revision of the group.

[22] *Diporiphora* is phenetically similar to *Amphibolorus* and *Lophognathus* but differs in having reduced numbers of femoral and pre-anal pores, and in all but two species, a distinct, finely-scaled axillary patch that is under separate chromatic control (Greer, 1989: 23; absent in *D. winneckei* and *D. linga*). Macey *et al.* (2000) found *D. bilineata* to be closest to *Caimanops* in their molecular genetic comparsions.

The present listing of species within *Diporiphora* is essentially that provided by Storr *et al.* (1983) but with the formal addition of *D. linga*. Studies commenced by Dr A. Greer and now being pursued by Aplin indicate the presence of at least one additional species currently included within *D. bennettii*.

[23] Storr (1974) distinguished nominotypical *albilabris* from *D. a. sobria* of the Northern Territory on the basis of differences in the intensity of patterning. In Storr *et al.* (1983), *D. albilabris* was treated as monotypic, presumably signifying elevation of *sobria* to specific rank, but without discussion. The taxa are here regrouped pending more detailed assessment.

[24] Storr *et al.* (1983) flagged the possible occurrence of *Diporiphora linga* in the Great Victoria Desert of W.A.; this has been confirmed by the recovery of further material from this region (Aplin, *in preparation*).

[25] Greer (1989: 34) noted variation in phalangeal formula within *Moloch*, with retention of a primitively high count in mid-west coastal populations. A recent study of genetic variation (Adams and Aplin, unpublished data), including populations from across Western Australia and South Australia, found evidence of a limited degree of genetic sub-structuring, with the mid-west coast population being the most divergent. Further studies are required to establish the nature of interaction between the various sub-units.

[26] The taxonomy of *Pogona* in W.A. is not yet firmly established. Badham (1976) identified the south-western and near-coastal populations north to North West Cape as *P. minimus*, those of the Murchison, Gascoyne and southern Pilbara regions as *P. minor*, and those of the northern Pilbara as *P. mitchelli*. Possible hybrids or intergrades were noted along the boundaries between each of *minimus* and *minor*, and *minor* and *mitchelli*.

Storr (1982) treated all of these populations as subspecies of *P. minor*, and restricted *minimus* to the Abrolhos Islands. He postulated the presence of a narrow hybrid zone to explain the apparent intergradation between *minor* and *mitchelli*. He also noted consistent geographic variation in the colour of the oral mucosa in *P. m. minor* (yellow in the south, changing to white, north of Kalbarri). Witten's (1994a,b) morphometric analysis largely confirmed Storr's impressions. Aplin *et al.* (submitted) also favoured Storr's interpretation, noting that material from the Carnarvon Basin is "relatively uniform in both body proportions and details of spination". Although Storr's nomenclature is followed here, a detailed genetic and morphometric investigation of the group is clearly required.

Wells and Wellington (1985: 19) named *Pogona loriae* from "West River crossing, on the road between Ravensthorpe and Jerramungup", distinguished from *P. minor* "by its much longer tail and its extreme southern distribution". The type specimen has been registered as R105588 in the collection of the Australian Museum (Shea and Sadlier, 1999: 55). The claimed "much longer tail" of *loriae* is puzzling in light of the fact that south coastal populations as a whole were shown by Badham (1976: 439) to be shorter tailed than those further north. This further underscores the need for further taxonomic studies of Western Australian *Pogona*.

[27] The species grouped here as *Rankinia* have caused no end of taxonomic trouble, and the problems are still far from solved. Storr originally described *parviceps* as a species of *Amphibolurus* and formally associated it with an *A. adelaidensis* species group (Storr, 1977). However, on disbandment of that genus he transferred both *A. parviceps* and *A. adelaidensis* to *Tympanocryptis* (Storr 1982c). In the meantime, Moody (1980) and Witten (1982) had independently decided that *adelaidensis*, *diemensis* and *parviceps* were closely related to each other, and further, that they were probably closer to *Pogona* than to *Tympanocryptis*. Cogger (1983, 1995, 2000) followed Storr's example and placed all of the small-bodied taxa in *Tympanocryptis*, athough he commented on its likely polyphyletic nature. Wells and Wellington (1984) proposed a new genus, *Rankinia*, for the group identified by Moody and Witten, but provided a brief diagnosis of limited value. Greer (1989) adopted *Rankinia* for *adelaidensis* and *diemensis*, but left *parviceps* (and *butleri*; described by Storr in 1982) within *Tympanocryptis*. In so doing, he placed considerable faith in the phylogenetic significance of a shared pattern of phalangeal reduction (loss of one phalanx from 5th toe in all '*Tympanocryptis*', but retained in '*Rankinia*'). However, Greer (1989) drew a clear distinction within *Tympanocryptis* between a '*T. parviceps* group' and a '*T. lineata* group', noting several diagnostic characters for each group.

We agree with Greer's (1989) recognition of *Rankinia* for the '*adelaidensis*' group, but disagree with the decision to retain the '*parviceps*' group in *Tympanocryptis*. Without *parviceps* and *butleri*, the genus *Tympanocryptis* forms a compact group defined by a host of specializations in scalation, body proportions, osteology and myology (Smith 1938; Mitchell, 1965; reviewed by Moody, 1980). These specializations (e.g., reduction in femoral and pre-anal pore numbers, substantial modification of the middle ear apparatus and *depressor mandibulae* muscle; Greer, 1989: 17; Aplin, unpublished observations) are absent in each of *parviceps* and *butleri*, which thus appear to fall outside of typical '*Tympanocryptis*'. More importantly from a cladistic viewpoint, however, *parviceps* and *butleri* together share a number of equally striking, derived features with members of two other genera, namely *Rankinia* and *Pogona*. These features include a specialised condition of the postmental scalation to produce a 'terraced' morphology (illustrated by Storr, 1964: Fig. 2), the presence of a dorsolateral skin fold, and the presence of an enlarged lateral row of scales along the base of the tail. Special similarity is seen between the '*parviceps* group' species and *Pogona* in the nature of the dorsal scalation, which is highly heterogeneous and contains numerous broad, mucronate scales; and between the *parviceps* group and *Rankinia* in general body proportions including the reduction in presacral vertebral and postsacral diapophysial counts (Greer 1989: 42). However, in several respects, *parviceps* and *butleri* appear to be more plesiomorphic than either *Rankinia* or *Pogona*, most noticably in the relatively small size of the head, which lacks the characteristic broadening of *Rankinia* and *Pogona* species, and is more consistent with a small species of *Ctenophorus* e.g., *C. isolepis*).

The decision to place the '*parviceps*' group in *Rankinia*, rather than in *Pogona* or in a genus of its own, thus contains an element of phenetic arbitrariness. Nevertheless, we believe that it represents an advance over the previous arrangments, and is perhaps more acceptable than either of the two alternatives, namely placment of the *parviceps* group in *Pogona* or the erection of yet another agamid genus. Perhaps future molecular studies will finally resolve the relationships of these diminutive taxa, which may represent three or more separate instances of 'miniaturization' among the Australian agamids.

[28] Greer (1989: 31) treated the allopatric *chapmani* as a full species, but without comment. The published morphological distinction between *adelaidensis* and *chapmani* is no more profound than between other amphibolurine subspecies and we retain them at this level, pending more detailed morphological studies or some estimate of molecular divergence.

[29] Storr (1982c) elevated *Tympanocryptis parviceps butleri* to a full species primarily on the strength of four specimens from 15 km S of Kalbarri (R33683-33686) that he identified as possibly belonging to *T. parviceps*, despite their disjunct occurrence south of the area occupied by *T. butleri*. Aplin *et al.* (submitted) established by dissection that the adult female of this series possesses the low femoral pore count characteristic of *T. butleri*, and noted that the two taxa were morphologically no more divergent than many other allopatric taxa currently treated as subspecies. We return *butleri* to subspecies level.

[30] This species encompasses considerable morphological variation in Western Australia, with four morphologically distinct geographic forms and some instances of regional sympatry. Smith *et al.* (2000) recorded 15% fixed genetic difference between typical *T. cephala* and *T. intima* Mitchell from the Lake Eyre Basin, hinting at a relatively recent history of speciation within this group. The type locality of *Tympanocrytis cephalus* Günther is Nickol Bay, Western Australia.

[31] The various subspecies of *T. lineata* probably all warrant recognition as full species. In South Australia, the nominotypical form is reportedly sympatric with *T. l. houstoni* along the eastern margin of the Nullarbor Plain (Houston 1998). No cases of sympatry are recorded between *T. l. houstoni* and *T. l. centralis* in Western Australia, however *T. l. centralis*

and *T. l. macra* are regionally sympatric in the South Kimberley. Smith *et al.* (1999) found 12% fixed genetic difference between allopatric populations of *T. l. lineata* and *T. l. houstoni*, and greater than 15% fixed difference between each of these taxa and *T. l. centralis*. This difference is equivalent to that observed between *T. cephala* and *T. intima*, and between *T. l. lineata* and each of *T. tetraporophora* Lucas and Frost and *T. pinguicolla* Mitchell. Our hesitancy in suggesting elevation of these taxa to species level comes from uncertainty as to the true number of species and their distributions, with indications of further regional diversity in each of *T. 'centralis'* and *T. cephala* in Western Australia. A more detailed assessment of the group is urgently needed.

[32] The current familial classification of geckos and their relatives is challenged by morphological (Kluge, 1987) and molecular (Donnellan *et al.*, 1999) evidence that suggests that the endemic Australasian Diplodactylinae (including the New Caledonian and New Zealand gekkonid radiations) and Pygopodidae are sister taxa to the exclusion of the Gekkoninae. One possible taxonomic action is to recognise a family Diplodactylidae with two subfamilies, however there is clearly considerable pressure to maintain the familial identity of the legless lizards, despite the fact that to do so renders the Gekkonidae paraphyletic. A more appealing alternative may be to separate the Gekkonidae into three families.

[33] Recent classifications of the diplodactyline gekkos (e.g., Bauer, 1990), based on a combination of chromosomal and morphological criteria, generally feature two tribal units, Diplodactylini and Carphodactylini. Major differences of opinion chiefly relate to the placement of the genus *Oedura*, which is variably treated as a diplodactylin (Kluge, 1967a, 1987; Greer, 1989) or a carphodactylin (King, 1987; Bauer, 1990). This perspective has been challenged by Donnellan *et al.*'s (1999) molecular genetic study of a limited number of representative gekkonid taxa. Their results support the notion of a monophyletic Diplodactylini that includes *Oedura*, but do not support monophyly of Carphodactylini. Instead, their results suggest that *Nephrurus* and *Carphodactylus* together form a major lineage to the exclusion of *Rhacodactylus*, *Pseudothedactylus* and the 'diplodactylins'. Donnellan *et al.*'s (1999) results also show *Pseudothecadactylus* and *Rhacodactylus* to be very distantly related, confirming the earlier finding of Good *et al.* (1997) of a high level of genetic divergence between these taxa, but contrary to Bauer's (1990) inclusion of *Pseudothecadactylus* as a subgenus of *Rhacodactylus*. In the light of these findings, tribal classification with Diplodactylinae is abandoned until such time as a new phylogenetic synthesis of the group is attempted.

[34] The current classification of *Crenadactylus* considerably understates the taxonomic diversity within this genus, with each of *ocellatus* and *horni* (*sensu* Storr, 1978) encompassing several distinct taxa, some of which occur in sympatry. A major morphological and genetic study of the genus is underway by Aplin and Adams. For the present, the various subspecies erected and defended by Storr (1978; Storr *et al.*, 1990) are listed, but with notice of major revisions to come.

[35] *Diplodactylus* is used here in a restricted sense, following excision of Kluge's (1967a) *strophurus* group into the genus *Strophurus* Fitzinger. This action was proposed by Wells and Wellington (1984) and endorsed by Greer (1989), who summarised the considerable morphological evidence for monophyly of *Strophurus*. However, as acknowledged by Greer (1989: 78), there is little evidence that the species 'left behind' in *Diplodactylus* form a comparable monophyletic group. Greer (1989: Fig. 35) postulated monophyly of *Strophurus* with *Oedura*, based on shared possession of basal digital pads and loss of lateral cloacal bones, but this relationship is not supported by the molecular sequence data that points instead to more immediate links between *Strophurus* and *Rhynchoedura* (Donnellan *et al.*, 1999).

In keeping with Kluge (1967a) and Storr *et al.* (1983), we believe that *Ceramodactylus damaeus* Lucas and Frost can probably be accommodated within *Diplodactylus*. The alternative view recognises a monotypic genus *Lucasium* Wermuth (e.g., Cogger *et al.*, 1983; Greer, 1989).

[36] The North West Cape population referred by Kluge (1967b) to *D. mitchelli* represents a morphologically distinct species; a description is in preparation.

[37] *Diplodactylus stenodactylus* encompasses at least three genetically distinct geographic populations; the molecular systematics of the group is currently under study by Donnellan (*pers. comm.*). The type locality of *Diplodactylus stenodactylus* Boulenger is Roebuck Bay, Western Australia.

[38] This taxon was formerly included within *N. asper* Günther. The latter species is confined to eastern Australia (Couper and Gregson, 1994).

[39] The affinities of *Rhychoedura ornata* are uncertain. Greer (1989) noted morphological similarities to each of *D. pulcher* and members of the *D. stenodactylus* group. Donnellan *et al.* (1999) found *R. ornata* to be possibly monophyletic with *Strophurus*, and considerably more distant from *Diplodactylus vittatus* (the type species of *Diplodactylus*).

[40] The subspecies of *S. spinigerus* have been collected in immediate sympatry at various localities near Perth. It is not currently known whether or not they hybridise in contact. They are retained as subspecies, pending further study of the contact zone.

[41] Bauer (1990) recommended inclusion of the 'barking geckos' in an expanded genus *Nephrurus*, presumably because he was unable to diagnose a monophyletic *Underwoodisaurus* as distinct from basal *Nephrurus* (1990: Fig.17). This suggestion has not been followed in major Australian herpetological works (e.g., Cogger, 2000) and we too prefer to retain the more familiar usage pending further assessment of relations within this group.

[42] Use of the generic name *Christinus* Wells and Wellington follows Bauer *et al.* (1997) who have re-diagnosed this endemic Australian lineage as part of clarifying the generic status of Old World representatives of the former, pan-continental genus *Phyllodactylus*. Greer (1989) had earlier employed *Christinus* for these Australian geckos, but based chiefly on geographic considerations.

The genus includes at least three species distributed across southern Australia. *Christinus alexanderi* is restricted to the Nullarbor Plain where it occurs in sympatry with *C. marmoratus* (Donnellan *et al.* 2000). *Christinus marmoratus* is widely distributed from inland New South Wales to the west coast of W.A.; although it shows significant chromosomal diversity (King and Rofe, 1976; King and King, 1977; Donnellan and Aplin, unpublished data), there is only limited genetic differentiation across its range (Donnellan *et al.* 2000). A third species, also showing a geographical pattern of chromosomal differentiation, is confined to the high rainfall zone and south coastal strip of southwest W.A., including many of the off-shore islands (Teale, 1991; Aplin, unpublished data).

[43] The taxonomy of *Gehyra* is far from satisfactory, with as yet incompletely documented chromosomal diversity in each of *G. variegata* and *G. punctata*, and major morphological variation across the ranges of both these species and *G. pilbara*.

[44] Chromosomal and genetic diversity in *Heteronotia binoei* is consistent with the presence of three or more distinct species (Moritz *et al.*, 1990a,b), with numerous unisexual clonal lineages also recorded. Various species-level names are available within this group, but at present even the wider distribution of typical *Heteronotia binoei* (type locality: Houtman Abrolhos) is unresolved.

[45] Most of the genera of Pygopodidae are defined by clear synapomorphies (Kluge, 1976; Greer, 1989). However, the genus *Delma* is united largely by shared ancestral features and appears to contain a number of major lineages; it may also be paraphyletic with respect to *Aclys* (Greer, 1989).

[46] Storr's sample of *Aprasia rostrata fusca* contains representatives of three species, including one specimen from North West Cape now referred to typical *A. rostrata* (Aplin *et al.* submitted). True *fusca* is restricted to the Bullara - Giralia area. A previously referred population from the Gnaraloo - Cape Cuvier region represents a new species (Aplin *in prep.*). Another undescribed taxon allied to *A. fusca* is known from two localities near Geraldton. A population of uncertain affinities is known from a single specimen from Kalbarri.

[47] The southern-most populations referred by Storr *et al.* (1991) to *Delma australis*, often associated with granite outcrop habitats, represent an undescribed taxon that is well-differentiated genetically but only subtly distinct morphologically; a species description is in preparation by Aplin and Adams. The remaining populations of *Delma australis* are morphologically diverse and show some evidence of genetic subdivision (Aplin *et al. submitted*).

[48] Shea (1991) recommended that *Delma haroldi* Storr, 1987 of northwestern Australia be synonymised with *D. butleri* Storr, 1987 of southern Australia. Although many of his observations concerning clinal variation in *D. butleri* and the similarity of northwestern *butleri* to geographically proximate *haroldi* are cogent, our own studies indicate that *D. haroldi* can be distinguished from all populations of *D. butleri* by the fact that the preauricular and postauricular pale bands run completely across the parietal and nuchal region, except in some large adults where they may be faded and interrupted dorsally. The two species appear to be sympatric or at least parapatric in the Hamersley Range. We further note that *D. butleri* itself displays a complex pattern of geographic variation, with possible sympatry of two quite distinct forms on Dirk Hartog Island, Shark Bay, specifically a large, stockily built and complexly patterned form (extends north to

include nominotypical *butleri*; this form is mentioned by Shea, 1991: 78) and a smaller, more slender form with little facial patterning save for a small postocular bar (extends across southern Western Australia, with tendency towards more complex facial patterning in more inland regions). These observations lead us to reject the proposed synonymy until such time as the group has been subjected to a molecular genetic investigation.

[49] All Australasian skinks belong in the subfamily Lygosominae. Three major groups are recognised by Greer (1989: 128): the *Mabuya* group (including *Egernia, Tiliqua* and *Cyclodomorphus* within the Western Australian fauna); the *Eugongylus* group (including *Acritoscincus, Cryptoblepharus, Menetia, Morethia, Proablepharus* and *Pseudemoia* in W.A.); and the *Sphenomorphus* group (including *Ctenotus, Eremiascincus, Glaphyromorphus, Hemiergis, Lerista* and *Notoscincus* in W.A.). Greer (1989: 128) summarises evidence of monophyly for each of the *Eugongylus* and *Sphenomorphus* groups, but notes the possibility that the *Mabuya* group is a grade-taxon rather than a true clade.

[50] Formerly known as *Leiolopisma trilineatum*. Placed in *Bassiana* by Hutchinson and Donnellan (1990), but the Wells and Wellington (1984) name *Acritoscincus* has priority over *Bassiana* for the *duperreyi* group.

[51] A recent molecular genetic study by Adams and Horner (unpublished) has confirmed suspicions that the Australian chapter of the genus *Cryptoblepharus* is considerably more diverse than currently indicated. On a local scale, Aplin *et al.* (*submitted*) noted sympatry in the Shark Bay region between two distinct morphological types within '*C. carnabyi*'. The molecular genetic data show multiple taxa with each of '*carnabyi*' and '*plagiocephalus*' as currently conceived.

[52] There have been various attempts to subdivide this speciose but morphologically conservative genus into species-groups (Storr, 1965; Storr *et al.*, 1981; Wilson and Knowles, 1988). In most cases, the proposed species-groups are diagnosed on characters of uncertain polarity and dubious phylogenetic value. Wells and Welington (1984, 1985) proposed various new genera for components of *Ctenotus*; these are not defined other than by content, but are nonetheless nomenclaturally available. An evolutionary molecular study of this fascinating genus is currently in progress by Eric Pianka and his co-workers at the University of Texas.

[53] The subspecific classification of *C. pantherinus* is in need of revision in the light of the now greatly expanded collections. Aplin *et al.* (*in press*) discussed the lack of clear morphological distinction between *C. p. ocellifer* and the nominotypical race, which are narrowly allopatric in the southern Carnarvon Basin.

[54] Several disjunct populations of a new *Ctenotus* species, closely allied to *C. robustus*, were recently detected in the Pilbara region.

[55] Hutchinson and Donnellan (1999) allocate one paratype of *C. uber* (WAM R26897; one of three specimens from Mungilli Claypan) to their new species *C. olympicus* of the Lake Eyre and Lake Frome Basins and adjacent regions of South Australia, the Northern Territory, New South Wales and Queensland. We have re-examined the Mungilli Claypan specimens along with others from contiguous regions of Western Australia. While we concur Hutchinson and Donnellan (1999) that there is considerable geographic variation within *C. uber uber* sensu Storr *et al.* (1999), we are unconvinced by their suggestion that the Mungilli Claypan sample contains two distinct species. As Hutchinson and Donnellan (1999: 186) note themselves, all three specimens "have the very long tail of *C. uber*" and the differences in patterning are a matter only of degree, not kind. Pending further analysis of this complex group, we therefore prefer not to accept *C. olympicus* as part of the herpetofauna of W.A.

[56] Prior subspecific treatment of Western Australian *Egernia stokesii* is challenged by the recent collection of what appears to be typical *stokesii* from Edel Land in the Shark Bay region (Aplin *et al. submitted*), proximate to populations of *badia* (Dirk Hartog Island and Peron Peninsula) and *aethiops* (Baudin Island). Following Aplin *et al.* (*submitted*), we recognise two subspecies (*stokesii* and *badia*), and consider *aethiops* to be either an insular version of typical *stokesii* or a population of possible hybrid origin. An additional, morphologically distinctive population of *E. stokesii* is restricted to several, isolated granite outcrops in the upper Murchison catchment. Genetic studies are underway to establish the level of divergence and extent of gene flow among these forms.

[57] Storr *et al.* (1999: 157) included *E. slateri* Storr, 1968 in the herpetofauna of Western Australia, based on specimens from the Bungle Bungle Range in southeast Kimberley. The specimens in question resemble *E. slateri* in their relatively small size and presence of dark mottling on the flanks and sides of the neck. However, they differ from *E. slateri* and resemble the closely related *E. striata* in having lower midbody scale counts and less dark pigment dorsally. Until the true affinities of this population are determined, we hesitate to include *E. slateri* in this checklist.

[58] Additional, regionally distinctive forms of *Eremiascincus* are recorded from the Hamersley Range and Eighty Mile Beach area. An unpublished electrophoretic study by S. Donnellan (S.A. Museum) points to generally low levels of genetic divergence within this genus, and emphasises the need for caution in recognition of further species.

[59] The genus *Glaphyromorphus* as currently delimited is an unsatisfactory 'grab-bag' of relatively unspecialised *Sphenomorphus* group skinks (Greer, 1989: 157-158). The Western Australian species are readily divisible on morphological and biogeographic grounds into a 'southwestern' assemblage (*G. gracilipes* and a second, undescribed taxon from the vicinity of Bunbury) and a 'northwestern' assemblage [the remaining listed taxa, all of which belong to Greer's (1990) *G. isolepis* species group]. Greer (1989: 160) flags the possible close relationship between *G. gracilipes* and the genus *Hemiergis*.

[60] We accept the arguments of Cogger *et al.* (1983) concerning the non-availability of *Lygosoma australis* Gray, 1839. The southwestern species was known formerly as *Sphenomorphus australis* (e.g., Storr *et al.*, 1981) and *Sphenomorphus gracilipes* (e.g., Cogger *et al.*, 1983). A second, larger-bodied member of this group is known only from the vicinity of Bunbury (Aplin and Dell, *submitted*).

[61] *Hemiergis peronii* displays structured geographic variation in digit number, with distinct, uniformly four and three digit populations. Storr (1975) originally recognised these populations as subspecies, but later abandoned this usage without comment (Storr *et al.*, 1981). We reintroduce the subspecies of *peronii* as a means of drawing attention to this neglected taxonomic issue.

At the northern end of its range, three-digit *H. p. peronii* overlaps broadly in range with *H. peronii quadrilineata* (*sensu* Storr, 1975; Storr *et al.*, 1981) and the two taxa have been collected in direct syntopy in the vicinity of Bunbury. Following Choquenot and Greer (1989) and Storr *et al.* (1999), we treat *H. quadrilineata* as a full species.

[62] Attempts to subdivide this huge genus into meaningful species-groups (e.g., Storr, 1971; Storr *et al.*, 1981, 1999; Greer, 1986; Kendrick, 1991) have been somewhat more successful than for the comparably speciose genus *Ctenotus*. This is due in part to the more extensive anatomical transformations that have occurred towards increasing fossoriality within *Lerista*, but also to the availability of several genetic datasets representing approximately half of the described taxa (Kendrick, 1991; Aplin *et al.* submitted; Donnellan and Adams, unpublished). The most recent arrangement of Western Australian species by Storr *et al.* (1999: 175-181) is overly subdivided and contains some polyphyletic groups; it can be amended in the light of the genetic data as follows:

1. '*Lerista bipes* group' (*L. apoda, L. bipes, L. griffini, L. ips, L. labialis*; possibly also *L. greeri, L. praefrontalis, L. robusta, L. simillima, L. vermicularis*).
2. '*Lerista nichollsi* group' (*L. connivens, L.gascoynensis, L. humphriesi, L. kendricki, L. kennedyensis, L. lineopunctulata, L. onsloviana, L. nichollsi, L. petersoni, L. planiventralis, L. praepedita, L. uniduo, L. varia*; possibly also *L. yuna*).
3. '*Lerista elegans* group' (*L. distinguenda, L. dorsalis, L. elegans, L. microtis*; possibly also *L. arenicola, L. christinae, L. lineata, L. viduata*).
4. '*Lerista muelleri* group' (*L. allochira, L. muelleri, L. separanda, L. xanthura*; possibly also *L. haroldi, L. orientalis, L. taeniata*).
5. '*Lerista frosti* group' (*L. stictopleura, L. zietzi*; possibly also *L. quadrivincula*).
6. '*Lerista macropisthopus* group' (*L. macropisthopus, L. baynesi, L. desertorum, L. gerrardii, L. neander, L. picturata*; possibly also *L. axillaris, L. bunglebungle, L. eupoda, L. puncticauda*).
7. '*Lerista walkeri* group' (*L. walkeri*; possibly also *L. borealis, L. kalumburu*).
8. '*Lerista terdigitata* group' (*L tridactyla* only in W.A.).

[63] *Lerista lineopunctulata* is morphologically polytypic but shows only limited genetic variation across its geographic range (Hammond, 1998; Aplin *et al.*, submitted). The geographic pattern of morphological variation includes several sharp boundaries that might be used to delimit species or subspecies. Several species-level names are available for use, should sibling species or subspecies be warranted.

[64] Storr last reviewed *Lerista muelleri* in 1972, at which time he remarked on a number of regionally distinctive populations. Subsequently, Storr (1983) and Kendrick (1989) described related taxa with restricted ranges, but without tackling the broader issues of geographic variation in *L. muelleri*. Aplin *et al.* (submitted) identified four morphotypes of *L. muelleri* in the Carnarvon Basin region alone, and documented fixed genetic differences between representative, allopatric populations.

Work is currently underway by Smith towards a major revision of the group across its wider geographic range.

[65] Following Aplin *et al.* (*submitted*) we treat *Lerista talpina* Storr, 1991 as a probable junior synonym of *L. petersoni* Storr, 1976.

[66] Maryan and Robinson (1997) postulate that this species might be based on an aberrant individual of *L. griffini*. This suggestion derives from their inability to capture additional specimens of *L. praefrontalis* on King Hall Island, the discovery of *L. griffini* at the type locality, and the close morphological similarity between the two taxa. The case for synonymy is strong, but we retain *praefrontalis* for the present on account of its concordant features of unusual head scalation and reduced phalangeal formula. Further collecting is required to explore the stability of these features in the insular population of *L. griffini*.

[67] Shea (1991b) proposed *L. quadrivincula* as a replacement name for *Lerista concolor* Storr, 1990 [junior homonym of *Lygosoma (Rhodona) bipes concolor* Werner, 1910].

[68] Following Aplin *et al.* (*submitted*) we treat *Lerista maculosa* Storr, 1991 as a probable junior synonym of *L. uniduo* 1984.

[69] *Lerista zietzi* Wells and Wellington minimally satisfies the requirements of the Code for availability and, provided nominal dates of publication are accepted (1.iii.1985 *vs* 30.viii.1985), then it predates and has priority over *L. chalybura* Storr 1985. However, Shea and Sadlier (1999: 38) have noted that copies of the *Australian Journal of Herpetology*, Supplementary Series No. 1 were not generally sighted until considerably later (September 1985; Storr receieved a copy at the W.A. Museum on 18.xi.1985). Shea and Sadlier (1999) advocate continue use of the Storr name until such time as the priority of these names is more firmly established. We disagree on the grounds that the the March 1985 date of publication of Wells and Wellington (1985) should be accepted until such time as proven erroneous.

[70] Recent genetic studies of the genus *Menetia* have revealed extensive genetic diversity within a *M. greyii* 'complex', with instances of sympatry, hybridization, chromosomal polyploidy and probable parthenogenesis (Aplin *et al. submitted*; Adams, Donnellan and Aplin unpublished). These studies also suggest the enigmatic holotype of *Menetia amaura* Storr, collected at False Entrance Well, Shark Bay, is very likely an aberrant specimen of a locally abundant and geographically widespread member of the *M. greyii* 'complex'. Because the paralectotypes of *M. greyii* Gray were probably collected in the vicinity of Perth (Aplin *et al. submitted*), there is a good possibility that *amaura* is strictly synonymous with true *greyii*. Further molecular and taxonomic work is underway to resolve these issues.

[71] The subspecies of *M. surda* are morphologically quite distinct but only weakly differentiated genetically (Aplin and Adams, 1998). The subspecific identity of several populations (e.g., North West Cape) is currently uncertain.

[72] Greer (1989) and Horner (1991) treated *ornatus* and *wotjulum* as full species, the latter on account of their sympatry on Groote Island, Northern Territory. In W.A., the situation appears more complex, with geographic variation in body pattern within *N. o. wotjulum* apparently blurring the distinction between the taxa (Storr *et al.*, 1999: 264). Pending further studies of the W.A. populations, taxonomic change is unwarranted.

[73] The potentially earlier name *Scincus tropisurus* Péron 1807 (type locality probably Bernier Island) was declared a *nomen oblitum* by Douglas and Ride (1961) and hence is unavailable for use. The name was inappropriately reintroduced by Wilson and Knowles (1988: 203) for the distinctive mid-western population of *T. rugosa*. This population was formally described by Shea (2000) as *T. r. palarra*. *Tiliqua r. konowi* from Rottnest Island is of dubious taxonomic significance in view of the recency of separation of this population from those on the adjacent mainland, but is maintained as a diagnosibily distinct entity.

[74] Shea (1993) has put a convincing case that ascribes authorship of *Lacerta scincoides*. to the anatomist John Hunter (1728-1793), and not to John White as previously thought (e.g., Cogger *et al.* 1983).

[75] Storr (1983) noted that Pilbara populations referred to *V. caudolineatus* are similar in some respects to *V. gilleni*. These populations represent a distinct species that will shortly be described as new (Aplin and King, *in prep.*).

[76] Böhme (1991) pointed out that the lectotype of *Hydrosaurus gouldii* Gray is a specimen of the taxon described by Storr (1980) as *Varanus panoptes*, rather than of the more widepread taxon usually associated with the name *gouldii*. The International Commission on Zoological Nomenclature (2000: 63-65) recently invoked its plenary power under Opinion 1948 to preserve current taxaonomic usage by designating a neotype of *V. gouldii* Gray (BMNH 1997.1 in the Natural History Museum, London, collected from Karrakatta, Perth by G. Thompson on 29.ix.1997).

Following Storr (1980), we acknowledge the presence of considerable interpopulational variation within *V. gouldii*, some of which may be of taxonomic significance. *Varanus g. flavirufus* Mertens, 1958 is sometimes used for the smaller, often brightly patterned populations found in the arid inland.

[77] The taxonomy of Australian typhlopids is in its infancy. Important benchmarks were set by Waite's (1918) inaugural taxonomic revision, Robb's (1960, 1966a,b) seminal studies of internal and reproductive anatomy, and Greer's (1997: 21) preliminary study of cranial variation. Apart from some limited pilot studies by Aplin and Donnellan (1993; unpublished data on *R. australis* group), there has been no assessement of genetic diversity. The genus *Ramphotyphlops* itself is defined on features of male reproductive anatomy (Robb, 1966b). These features have been confirmed for many, but by no means all, included species (Robb, 1966b; McDowell, 1974; Aplin and Donnellan, 1993), hence some species are placed in *Ramphotyphlops* solely on the basis of geographic considerations.

The spate of new species descriptions over the last decade highlights the fact that the typhlopid fauna of many areas remains poorly sampled (e.g., Aplin, 1998). Several, newly collected and highly distinctive taxa await description, including one from Exmouth on North West Cape and another from Augustus Island off the Kimberley Coast. Furthermore, it appears that several of the common, widespread 'species' within *Ramphotyphlops* contain one or more cryptic taxa (e.g., *R. australis*, *R. grypus*).

[78] Recent collections made by Dr P. Kendrick of Dept C.A.L.M. show that *R. ammodytes* and *R. diversus*, formerly treated as subspecies, occur in regional sympatry in the hinterland of the Eighty Mile Beach. These taxa also differ in several features of external anatomy and clearly warrant specific separation.

[79] Coate (1997) reported specimens of this widespread parthenogenetic exotic from the Kimberley region. Subsequently, specimens have been obtained from several major towns on the Pilbara coast.

[80] The generic classification of Australian boids has been highly changeable. A recent classification by Kluge (1993), based on a morphological cladistic analysis, has gained wide acceptance, and is followed here. To date there has been no broad molecular systematic investigation of the group.

[81] *Antaresia saxacola* Wells and Wellington 1985: 41 is a *nomen nudum* on account of the fact that it is not diagnosed other than by reference to geographic origin and unspecified features in previously published photographs. The species account otherwise consists of basic body measurements (snout to vent, tail length) and a reference to "its essentially rock-dwelling habits". The proposed type specimen is a paratype of *A. stimsoni orientalis* Smith, 1985. The date of publication of Smith (1985) is 30.ix.1985; that of Wells and Wellington (1985) is nominally earlier (1.iii.1985), but see comments under *Lerista zeitzi*.

[82] Hoser (2000) proposed a number of new Australian python taxa, among them, two subspecies of the Woma (*Aspidites ramsayi panoptes* and *A. r. richardjonesii* and two subspecies of the Black-headed Python (*Aspidites melanocephalus adelynensis* and *A. m. davieii*) from Western Australia. The name *A. r. panoptes* is available for the southwest Western Australian Womas as the description does diagnose that population. The name *A. r. richardjonesii* proposed for the Womas of the western Great Sandy Desert is a *nomina nuda* as it is diagnosed solely on geographic grounds. Molecular data indicate that *A. ramsayi* is monotypic and the recognition of subspecies is not warranted (S. Donnellan *personal communication*). In the case of the two subspecific names proposed for Western Australian *Aspidites melanocephalus* the 'diagnoses' for both *A. m. adelynensis* and *A. m. davieii* are effectively the same. Their descriptions relate to the population in Queensland and "the northern third" of the Northern Territory (which Hoser considers the nominate subspecies). Although there do seem to be consistent morphological differences between eastern and western Black-headed Pythons, the critical contact between the two forms has not been investigated, nor is there any molecular data on which to assess reciprocal monophyly and/or levels of divergence. We suggest subspecies not be recognised until the species has been more thoroughly investigated. If such investigations indicate an eastern and western form of the Black-headed Python we propose, on the grounds of page priority, that *adelynensis* be considered available for the western form and *davieii* a *nomina nuda*.

[83] The question of whether the Australian Water Python (sometimes distinguished as *L. fusca*, Peters, 1874) is conspecific with true *mackloti* from the Lesser Sunda Islands still begs resolution. McDowell (1975)

noted some differences in colour and patterning between the two regional forms but examined too few specimens to attempt any more detailed analysis of geographic variation. Other recent workers have variously followed McDowell's taxonomy (e.g., Smith, 1981; Storr *et al.*, 1986), or recognized *L. fusca* but without providing any formal diagnosis or justification (e.g., Cogger *et al.* 1983; Cogger, 2000). Barker and Barker (1994: 30) have argued for recognition of separate species on the grounds that they can readily distinguish captive, wild-caught Water Pythons from various populations. Unfortunately, they provide no indication of exactly what features they are using to distinguish the various forms, hence their remarks do not progress beyond McDowell's (1975: 37) conclusion that the interpopulatonal difference "seems no greater than might be expected as a result of geographical variation with a single species".

We maintain the water pythons as a single species, but acknowledge the apparent geographic variation through recognition of subspecies for the Australopapuan *vs* Lesser Sundan populations.

[84] The Caenophidia or clade of 'advanced snakes' (Rieppel, 1988; Cundall *et al.*, 1993) contains two major groups, the Acrochordidae (File Snakes) and the Colubroidea (glyphodont or 'fanged' snakes), the latter with at least four families (Atractaspididae, Elapidae, Colubridae, Viperidae). The traditional view based on morphological evidence, holds that colubroids are monophyletic to the exclusion of *Acrochordus* (e.g., Underwood, 1967; Groombridge, 1984; Rieppel, 1988; Kluge, 1991). This view has received some support from molecular evidence (e.g., Heise *et al.*, 1995), but is challenged by other molecular studies that points to a possible link between *Acrochordus* and the southeast Asian colubrid subfamily Xenoderminae (Kraus and Brown, 1998). We retain the traditional classification pending more comprehensive assessment of this issue.

[85] We follow McDowell (1979) in recognizing a single genus for the three extant species of Achrochordidae. Storr *et al.* (1986) placed *granulatus* in *Chersydrus* Cuvier, following the taxonomy of Smith (1939).

[86] The Colubridae is an enormously heterogeneous assemblage of approximately 1500 species distributed across all major regions of the world. Ten or more subfamilial groups are usually recognised (e.g., McDowell, 1987), three of which are represented in tropical Australasia, namely Colubrinae, Natricinae and Homalopsinae. Australian herpetologists have tended to treat the last-mentioned of these groups as a distinct family on account of their specialised aquatic habitus (e.g., Storr *et al.*, 1986; Greer, 1997). However, this is a parochial view that finds no support from either broader morphological studies (e.g., McDowell, 1987; Zaher, 1998) or molecular analyses (Kraus and Brown, 1998; Dowling *et al.*, 1996).

[87] The Western Australian populations of *Boiga* belong to a strongly banded 'morph' [the name *Dipsas ornata* (Macleay) is available] that ranges from the Kimberley region of W.A., east into the Northern Territory and Gulf country of Queensland (Storr *et al.*, 1986; Wilson and Knowles, 1988). A less boldly marked 'morph' [the name *Dendrophis fuscus* (Gray) is available] occurs east into Queensland and then down the eastern seaboard. Relatively plain populations are also encountered in the New Guinea region and into the Indonesian archipelago. Storr *et al.* (1986: 52-53) treated the Australian populations as an endemic species with two subspecies, *B. fusca fusca* in Eastern Australia and *B. f. ornata* in the west, but this action was based on limited study of related forms. In contrast, Cogger and others (e.g., McDowell, 1979; Cogger, 2000; Cogger *et al.*, 1983; Greer, 1997) include the Australian populations within the more widely distributed *B. irregularis*.

Whittier *et al.* (2000) have documented non-concordant patterns of geographic variation in several meristic characters within *B. irregularis*, and further shown that the the Northern Territory 'banded' population is meristically more similar to 'unbanded' populations in eastern Australia than it is to other 'banded' populations in the Kimberley. Although Whittier *et al.* (2000) concluded from their analysis that two subspecies can be distinguished within *B. irregularis*, based on the single character of colour pattern, we prefer to forego subspecies nomenclature until such time as historical relationships among the various populations are better understood. Given the complex nature of geographic morphological variation within the taxon, this understanding will probably only come with the application of molecular systematic methods. Nomenclatural issues within the group are complicated by the fact that the type specimen of *Coluber irregularis* is presumed lost, and the type locality unspecified.

[88] Gyi (1970) distinguished *C. australis* of northern Australia from *C. rynchops* (Schneider) of southern and southeast Asia to New Guinea. Cogger (in Cogger *et al.*, 1983) and Storr *et al.* (1986) included *australis* within *rynchops* (the latter authors listed *australis* as a subspecies), but in neither case was any justification provided. We follow the arrangement of Gyi, who cited multiple features of scalation and patterning that distinguish the Australian populations from *rynchops*.

[89] Malnate and Underwood (1988) revived this generic name for a suite of species formerly included in either *Styporhynchus* Peters or *Amphiesma* Malnate, and distributed between the Philippine Islands, Melanesia and northern Australia. Although they give the distribution of *T. m. mairi* as northern Australia east of Darwin, the W.A. Museum collection includes numerous specimens from the Kimberley region, some collected as early as 1958 (see Storr *et al.*, 1986 for details of distribution).

[90] It has been customary to separate the sea snakes at familial level from the terrestrial Elapidae, either as one or as two families (Hydrophiidae, Laticaudidae). Although some workers continue to favour this arrangement (e.g., Cogger, 1995, 2000; Greer, 1997), it obscures the close phyletic links between both groups of sea-snakes and the Australo-Papuan radiation of terrestrial elapids. This relationship is demonstrated by a wealth of anatomical (e.g., McDowell, 1970), immunological (Schwaner *et al.*, 1985) and molecular (Slowinski *et al.*, 1997; Keogh, 1998) evidence, with further indications that the live-bearing *'Hydrophis* group' of sea-snakes may be derived from among the suite of viviparous 'terrestrial hydrophiines' (Shine, 1985; Schwaner *et al.*, 1985; Greer, 1997; Slovinski *et al.*, 1997; Keogh *et al.*, 1999; Greer's "*Pseudechis* Subgroup", 1997: 184-193). We include all Western Australian front-fanged snakes in the elapid subfamily Hydrophiinae (following Smith *et al.*, 1977; Golay *et al.*, 1993), but maintain an informal distinction in the list between the 'terrestrial hydrophiines' and the *'Hydrophis* group' sea-snakes. A third hydrophiine group, the *'Laticauda* group' sea-snakes or 'sea-kraits', are not recorded in Western Australia despite being present in adjacent regions.

[91] The status of various species-level names proposed within *Acanthophis* by Wells and Wellington (1985) and Hoser (1998) has been discussed elsewhere (Aplin and Donnellan, 1998; Aplin, 1999). *Acanthophis schistos* Wells and Wellington, *A. armstrongi* Wells and Wellington, and *A. lancasteri* Wells and Wellington are *nomina nuda* on the grounds that they are not diagnosed other than by reference to geographic origin and unspecified features in previously published photographs and descriptive accounts. In contrast, several of the species-level names proposed by Hoser (1998) are nomenclaturally available, but it is unclear whether any of them can be applied to diagnosibly distinct taxa. A morphological study of *Acanthophis* across its range is currently underway by Smith, while studies of *Acanthophis* venom composition by Brian Fry and his co-workers are also contributing to an understanding of speciation in this group.

[92] Spelling of name emended from *wellsei* by Aplin and Donnellan (1998).

[93] The generic classification of the small, fossorial elapids was a major point of divergence between the classications of Storr and those of various Eastern States based herpetologists. Storr (e.g., Storr *et al.*, 1986) placed all of these taxa in one genus (*Vermicella*), while Cogger (1985) and others (e.g., Shine, 1984; Wallach, 1985; Scanlon and Shine, 1988; Hutchinson, 1990; Greer, 1997; Keogh and Smith, 1998; Keogh, 1999) who have divided them into two or more genera. Greer (1997) grouped all of these taxa within a monophyletic *Vermicella* Subgroup of his *Furina* Group, but recognised five distinct genera, namely *Antaioserpens* Wells and Wellington, *Vermicella*, *Simoselaps*, *Brachyurophis* and *Neelaps*. All but the first of these are represented in Western Australia and each is supported by shared-derived morphological characters and molecular sequence data, albeit with some contrary indications in regard to the monophyly of *'Neelaps'* (Keogh *et al.*, 1998). Here we follow Greer (1997) and recognise four genera including the controversial *Neelaps* for *bimaculatus* and *calonotos*, on account of their common possession of uniquely-derived temporal scalation (Greer, 1997: Fig. 7.22), and essentially similar derived hemipenial anatomy (Keogh, 1999; Aplin, unpublished observation of *N. calonotos*) and feeding ecology (Shine, 1984).

[94] Shea (1998) clarified the identity of the black whip snakes of Northern Australia and New Guinea. *Demansia vestigiata* is the taxon previously recorded in W.A. as *D. atra* (Storr, 1978; Storr *et al.*, 1986). Shea also referred all Papuan specimens examined to *vestigiata*, thus challenging the basis for Storr's (1978) description of *melaena* as an Australian subspecies of *papuensis*. Finally, Shea was able to demonstrate the presence of clinal geographic variation within both *D. papuensis* and *D. vestigiata*.

[95] The genus *Elapognathus* has either been treated as monotypic (e.g., Cogger, 1985, 2000; Hutchinson, 1990; Greer, 1997) or else subsumed within a broadly-conceived *Notechis* (e.g., Storr *et al.*, 1986). Inclusion of *coronatus* in *Elapognathus* follows Keogh and Scanlon (2000) who

have provided morphological and molecular data to support this action. The latter species has more commonly been placed in *Drysdalia* Worrell based on its presumed sibling relationship with *D. coronoides* (Günther) of southeastern Australia (e.g., Coventry and Rawlinson, 1980). Wells and Wellington (1985) included the species of *Drysdalia* within an expanded *Elapognathus*, thus partly anticipating the results of Keogh and Scanlon.

[96] The taxonomy of the Tiger Snakes is contentious. Schwaner (1985) suggested that all populations be placed under a single species, *N. scutatus*, based mainly on low levels of genetic differentiation across southern Australia. However, as documented most thoroughly by Rawlinson (1991), there are a number of morphologically distinct forms that remain consistent across broad geographic regions, and these might be usefully distinguished at species or subspecies level. Under this scenario, Western Australian populations might be included within *ater* Krefft (Type locality: Port Lincoln, S.A.) or distinguished as a separate taxon (the name *occidentalis* Glauert is available). Our present inclination is to recognise a single species without subspecies, until such time as the major evolutionary units are more clearly identified.

[97] The species *atriceps* has defied classification ever since its discovery. Storr's (1980) original placement of the species with *Echiopsis curta* (both formerly in *Brachyapsis* Boulenger) was adopted by Cogger (1985, 2000), however Storr himself subsequently abandoned this view to place *atriceps* in *Denisonia* (e.g., Storr *et al.*, 1986). Hutchinson (1990) suggested a possible relationship with *Suta* (including *Parasuta*) while Greer (1997) listed the taxon as *'Echiopsis' atriceps*. We follow Keogh *et al.* (2000) who recognise a monotypic genus (*Paraplocephalus*) for *atriceps*, based on morphological and molecular evidence for a sister group relationship to *Hoplocephalus* of eastern Australia.

[98] Wells and Wellington (1988) described *Cannia weigeli* from 2 km upstream of Mitchell Falls (Type: WAM R23995). Although this name is nomenclaturally available, it is unclear whether this or any of the other recently proposed species of the *P. australis* group represent valid taxa.

[99] *Pseudonaja a. exilis* from Rottnest Island and *P. a. tanneri* from Boxer and Figure Eight Islands in the Archipelago are of dubious taxonomic significance in view of the recency of separation of these populations from those on the adjacent mainland. However, they are listed here pending a more detailed study of variation across the range of *affinis* and in knowledge of the occurrence of small, superficially *tanneri* like dugites from the southeastern coastal region.

[100] This undoubted species complex ranges across most of arid, semiarid and tropical Australia. Members of the group are highly variable in body patterning and colouration (Gillam, 1979; Mengden, 1985) and also shows considerable diversity in both chromosome number and morphology, with some karyomorphs differing in ways that imply genetic incompatibility (Mengden, 1985). The limited genetic data presented by Mengden demonstrate significant genetic divergence within the group but include no critical tests of sympatry between different colour forms or karyomorphs. An unpublished electrophoretic study by M. Adams of material from South Australia suggests the presence of several distinct species in that area.

[101] Recognition of *snelli* as a full species follows Keogh and Smith (1996).

[102] Some of the species listed by Storr *et al.* (1986) under *Hydrophis* are now distinguished as *Disteira*, accepting the recommendation of McDowell (1972).

[103] The amended spelling of the species name follows Shea (1996).

[104] Rassmussen and Smith (1999) showed that *Hydrophis geometricus* L.A. Smith, 1986 is a junior synonym of *Hydrophis czeblukovi* (Kharin, 1984). The species listed as *Hydrophis 'melanocephala'* by Storr *et al.* (1986) is *Hydrophis coggeri* Kharin, 1984.

[105] Wells and Wellington (1985) suggestion that northern Australia hosts three or more species of crocodile has not been critically assessed. However, it should be noted that recent studies of New Guinean and Philippine crocodilians have lead to the recognition of higher species diversity in these regions. *Crocodylus johnstoni*, in particular, might be expected to show geographic segregation parallel to that documented within the Australian freshwater turtle fauna.

INDEX OF FAMILIES