pleonites more strongly produced.

Remarks. This species can easily be distinguished from *Norileca triangulata* by the larger size, twisted body shape, straight sided pleon, shorter uropods and shorter mandible palp article 3.

The pleopods of both females were damaged and fragile, and could not be dissected and described. Pleopods of females always have the folding on the lobes more developed than males. As can be seen the folding and lobes are already well developed in the male specimen and females will have similar pleopods but with more complex folding.

Hosts. *Selar crumenophthalmus* and *Herklotichthyes* sp. The specimen on *S. crumenophthalmus* was positioned ventrally in the gill cavity, cephalon to the anterior with the sternum facing out (i.e. laterally) (see fig. 1, Rokicki, 1982); three pereopods had their dactyli hooked around the gill operculum. The gill itself was considerable atrophied. Avdeev (1978) recorded *Atule melan* and *Rasteliger kanangurta*; Rokicki (1982) recorded *Selar crumenophthalmus*.

Distribution. Present material is all from the Arafura Sea, off the Northern Territory coast. Previous records Sumatra, Indonesia, Philippines and New Guinea (Trilles, 1976) and off Mozambique (Rokicki, 1982). Avdeev (1978) lists the species from north-western Australia.

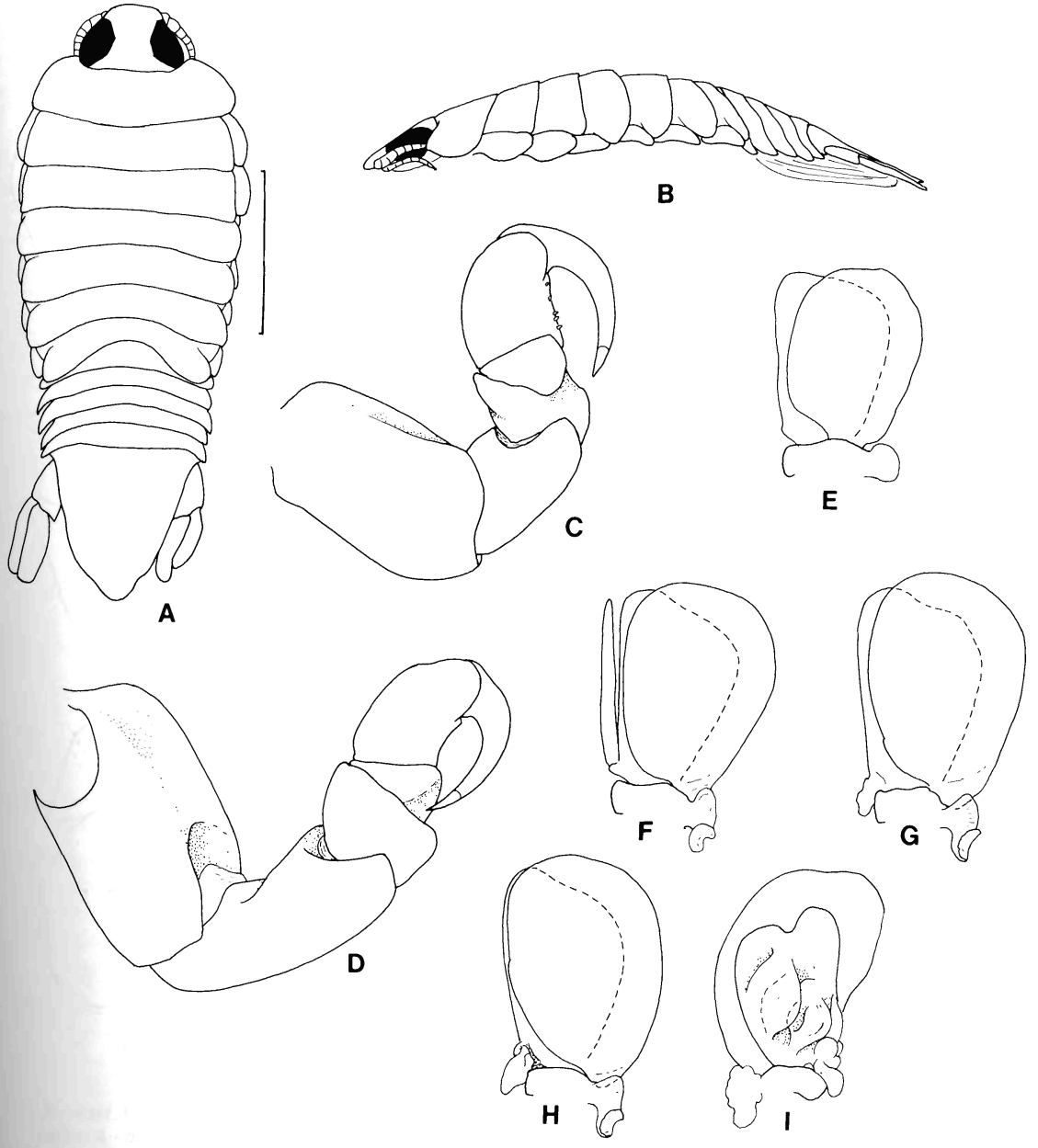

Fig.29. *Norileca indica*. All figs of male 11.0 mm, NTM Cr4051. A, dorsal view; B, lateral view; C, pereopod 1; D, pereopod 7; E–I, pleopods 1-5 respectively. Scale line represents 3.0 mm.

Norileca triangulata (Richardson) n.comb.

Figs 30, 31

Livoneca triangulata Richardson, 1910: 23, fig.22.– Nierstrasz, 1931: 143.

Material examined. Syntypes, 2 females (ovigerous 9.2, 9.5), male (9.0), Tanimdao Island, Philippine Islands, 25 Feb. 1908, anchorage, at night light, US Bureau of Fisheries Philippine Albatross Expedition 1907-8 (USNM 40915).

Australian material. Female (non-ovigerous 12.5), Eel Reef, Cape York, Qld, 12°32'S 143°32'E, 20 Feb. 1979, surface light over 55 m, gill of *Parexocoetus brachypterus* coll. AM-AIMS (AM P37759). Female (non-ovigerous 12.0), 2 males (7.5, 9.0), off Michaelmas Cay, Great Barrier Reef, 16°42'S 146°10'E, May-June 1926, on *Parexocoetus brachypterus* (Fish No. IA-2784, IA-2786), coll. T. Iredale & G.P. Whitley (AM P37737), P37758). Female (ovigerous 17.5), Mooloolabah, south-eastern Qld, 2 May 1985, on gills of *Sardinella gibbosa*, coll. C. Keenan (QM W13112).

Type locality. Tanimdao Island, Philippines (Richardson, 1910).

Description of Australian females. Body 2.2-2.5

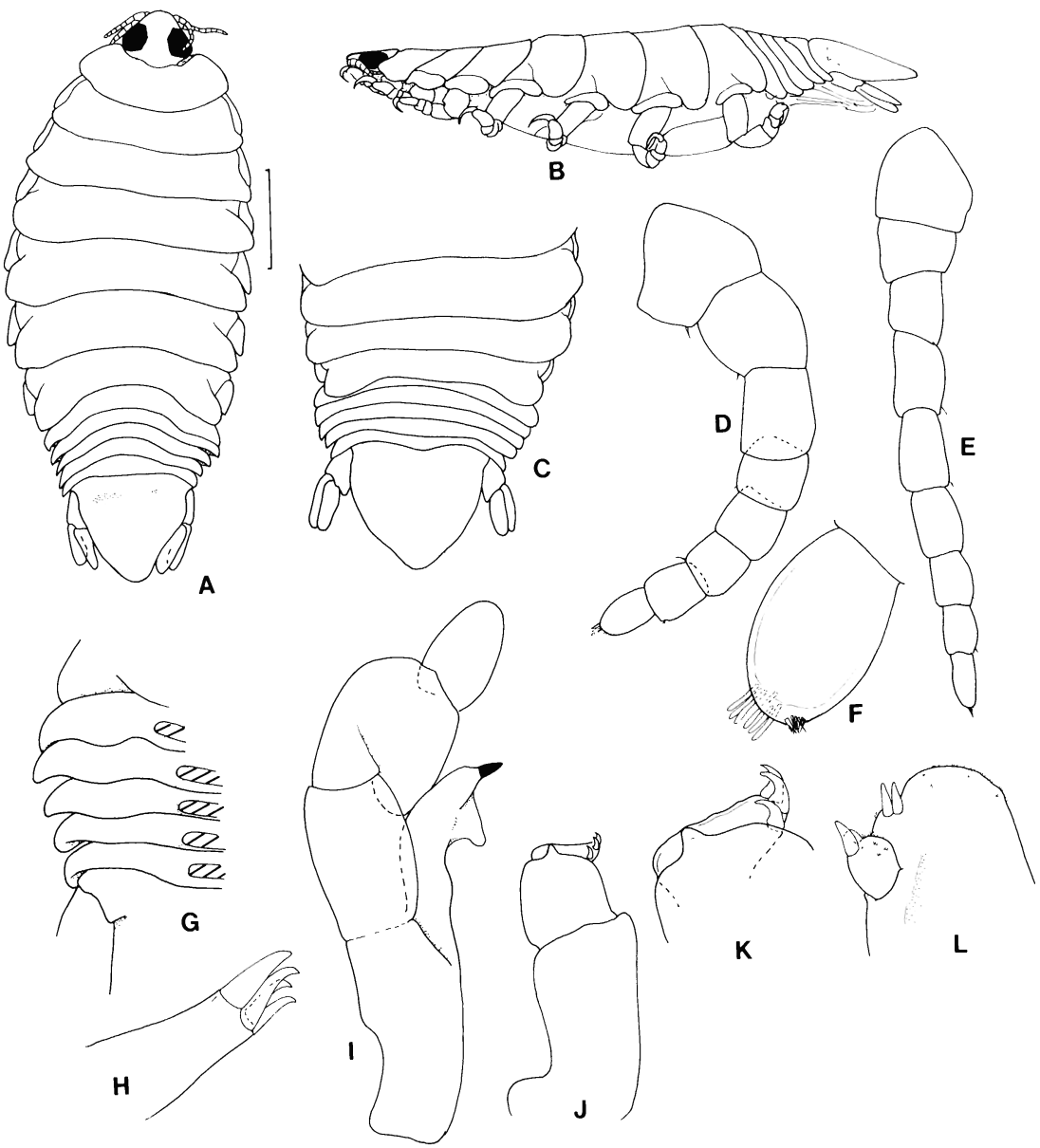

Fig.30. *Norileca triangulata*. All figures of female ex *Sardinella gibbosa*, except C. A, dorsal view; B, lateral view; C, posterior, female 12.5 mm Cape York; D, antennule; E, antenna; F, antennule terminal article; G, right pleonites, ventral view; H, maxillule apex; I, mandible; J, maxilliped; K, maxilliped article 3; L, maxilla apex. Scale line represents 3.0 mm.

times as long as wide, weakly twisted; widest at pereonite 4 or 5; dorsum weakly convex. Cephalon not deeply immersed in pereonite 2; eyes 0.6-0.7 width of cephalon; anterior margin smoothly rounded, not turned down. Coxae of pereonite 2 as long as segment; those of pereonites 3-4 shorter than respective segment. Coxae all narrow, from 0.46 as wide as long (pereonite 2) to 0.23 as wide as long (pereonites 4-6). Pereonite 7 posterior margin with moderate indentation. Pleonite 1 longest, as wide or slightly wider than pereonite 7; pleonite 5 distinctly narrower than 1 (0.75-0.83 or wider). Pleotelson triangular.

Antennule bases set widely apart; extends to pereonite 2, composed of 8 articles. Antenna slightly longer, with 9 articles. Mandible palp large, article 2 expanded; article 3 0.77 as long as article 2. Maxillule with 4 terminal spines. Maxilla with 2 spines each on medial and lateral lobes. Maxilliped with laminar lobes; article 3 with 3 large recurved spines.

Pereopod 1 with ischium 0.80 as long as basis; propodus with 5 spines on palm; dactylus abruptly angled at proximal 0.2, extending to merus. Pereopods 2 and 3 similar to 1, but pereopod 2 with 3 spines on propodal palm, and pereopod 3 without. Pereopods 4-7 similar to each other, all bases with distinct anterolateral carina. Pereopod 7 basis and ischium subequal in length; dactylus extending to posterior of carpus.

Pleopod 1 rami round, peduncle lateral lobe weakly developed; pleopods 2-5 with peduncle lateral lobe well developed. Pleopods 3-5 endopods with folded

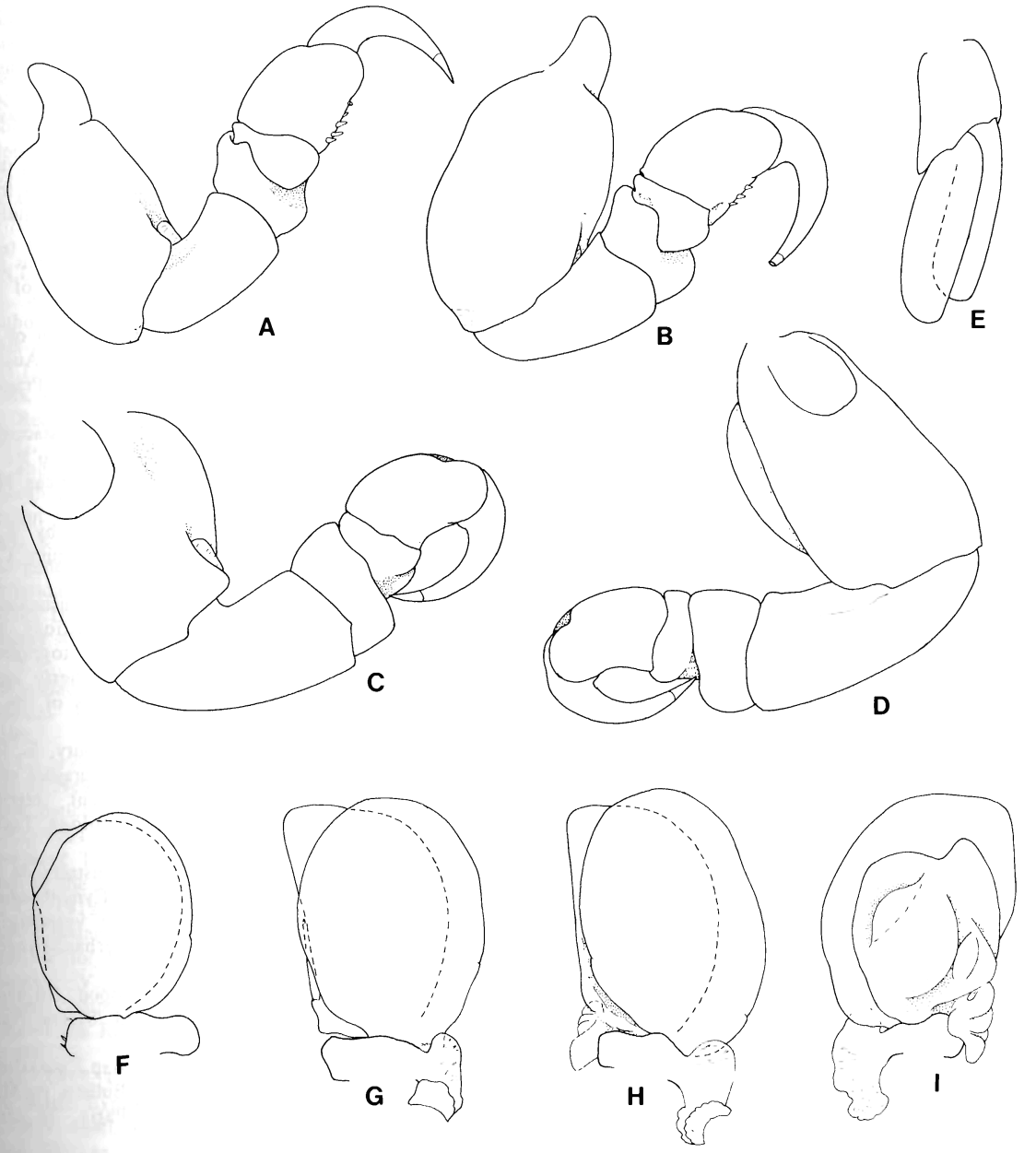

Fig.31. *Norileca triangulata*. All figs of female ex *Sardinella gibbosa*. A–D, pereopods 1, 2, 6, 7 respectively; E, uropod; F–I, pleopods 1, 2, 4, 5 respectively. Scale line represents 3.0 mm.

proximomedial lobe; pleopod 5 endopod posterior surface complexly folded. Uropods about 0.75 length of pleotelson, endopod slightly longer than exopod, both rami subequal in length.

Male. Both males (a pair from one host) are in very poor condition, but appendages do not differ significantly from those of the females.

Colour. Pale tan in alcohol, with chromatophores thinly spread on dorsal surfaces.

Size. Ovigerous females from 9.2-17.5 mm, males 7.5-9.0mm.

Remarks. This species is characterised by a nearly flat dorsum, large eyes, cephalon weakly immersed in pereonite 7, weakly twisted body, mandible palp article 2 greatly expanded, pleonite 5 narrower than 1 and triangular pleotelson.

Norileca triangulata can be distinguished from *N. indica* by several characters, the easiest to observe being the nearly straight body, larger eyes, pleonite 5 narrower than 1 and the proportionally longer uropods. Other characters are discussed under the 'Remarks' for *N. indica*. A further difference between the two species is that *N. triangulata* attaches with sternites innermost, while *N. indica* attaches with sternites outermost. Host and capture data indicate that both species occur on surface schooling fishes.

Hosts. Present material from *Parexocoetus brachypterus*, *Sardinella gibbosa*.

Distribution. Philippine Islands (Richardson, 1910); present material from Queensland — Eel Reef, Cape York; Michaelmas Cay, near Cairns; and Mooloobah, south-eastern Queensland.

ACKNOWLEDGMENTS. The research for study was undertaken while in receipt of a Queen Elizabeth II Fellowship in Marine Science, held at the Australian Museum. Additional funding to examine type material was received from a Queen's Fellowship Research Support Grant. This support is gratefully acknowledged as is the support and assistance given by the Australian Museum, and J.K. Lowry in the preparation of the manuscript.

I thank my international colleagues for their hospitality and assistance while visiting their institutions: Dr T.E. Bowman, Ms E. Harrison-Nelson, Ms M.J. Schotte (Smithsonian Institution), Dr K. Harrison (British Museum, Natural History) and Professor L.B. Holthuis (Rijksmuseum van Natuurhistorie, Leiden). The following individuals and institution loaned essential material: Dr A.J. Bruce (N.T.M.); Mr B. Ingram (Grafton, NSW); Mr W. Zeidler (S.A.M.); Mr P.J.F. Davie (QM); Dr R.J.G. Lester (Department of Parasitology, University of Queensland); Dr G. Morgan (W.A.M.); Dr Berndt Hauser (MHNG); Dr T.E. Bowman (USNM).

Additionally I thank Dr T.E. Bowman for assistance with obscure literature, Dr L.B. Holthuis for information on nomenclature, Dr N. Nunomura (Toyama Science Museum) for assistance in translating Japanese literature and Dr R.C. Brusca (San Diego Natural History Museum, San Diego) for his constructive criticisms of this manuscript.

References

(* not seen by author)

Ahmed, M.M., 1970. New Isopoda (Flabellifera) from Iraq and Arabian Gulf III. *Ichthyoxenus asymmetrica* sp.nov. Bulletin of the Iraqi Natural History Museum 4: 33–36.

Alperin, I.M., 1966. A new parasite of striped bass. New York Fish and Game Journal 13: 121–123.

Avdeev, V.V., 1975a. Two representatives of parasitic isopods of the genus *Lironeca* (Cymothoidae) from the region of Australia and New Zealand. Parasitologia 3: 247–251.

Avdeev, V.V., 1975b. A new parasite of the genus *Cterissa* (Crustacea: Cymothoidae) from the Sea of Timor. Biologia Morya 3: 69–73.

Avdeev, V.V., 1978. Notes on the distribution of marine Cymothoidae (Isopoda, Crustacea) in the Australian-New Zealand region. Folia Parasitologica (Prague) 25: 281–283.

Barnard, K.H., 1920. Contributions to the crustacean fauna of South Africa. No. 6.-Further additions to the list of marine Isopoda. Annals of the South African Museum 17: 319–438, pls 15–17.

Barnard, K.H., 1936. Isopods collected by R.I.M.S. *Investigator*. Records of the Indian Museum, Calcutta 38: 147–191.

Barnard, K.H., 1940. Contributions to the crustacean fauna of South Africa. XII. Further additions to the Tanaidacea, Isopoda and Amphipoda, together with keys for the identification of the hitherto recorded marine and freshwater species. Annals of the South African Museum 33: 381–543.

Beumer, J.P., L.D. Ashburner, M.E. Burbury, E. Jetté & D.J. Latham, 1982. A checklist of the parasites of fishes from Australia and its adjacent territories. Commonwealth Institute of Parasitology Technical Communication No. 48: i–vi, 1–99.

Bleeker, P., 1857. Recherches sur les Crustacés de L'Inde Archipélagique. II. Sur les Isopodes Cymothoadiens de L'Archipel Indien. Natuurkundige vereeniging in Nederlandsche-Indie, Batavia. Verhandelingen 2: 20–49, pls 1,2.

Boone, P.L., 1921. A new chinese isopod, *Ichthyoxenus geei*. Proceedings of the United States National Museum 57: 497–502, pls 40,41.

Borcea, I., 1933. *Lironeca pontica* n.sp., parasites des Aloses et sardines de la Mer Noir. Bulletin du Muséum Nationale d'Histoire Naturelle, Paris, 3é série 5: 128–129.

Bosc, L.A.G., 1830. Des Cymothoé. pp. 139–146, 1 pl. In Manuel de l'Histoire Naturelle des Crustacés contenent

leur Description et Leurs Moers. Édition musée au nivau des conaissances actuelles par M.A.G. Desmarest, Paris, Vol. 2.

Bowman, T.E., 1962. Description and notes on the biology of *Lironeca puhi* n.sp. (Isopoda: Cymothoidae), parasite of the Hawaiian moray eel, *Gymnothorax surostus* (Abbot). Crustaceana 1: 84–91, pl.1.

Bowman, T.E. & C. Diaz-Ungria, 1957. Isopodos quimotoideos parasitos de peces de las aguas Venezolans. Memorias de la Sociedad de Ciencias Naturales "La Salle" 17: 112–124.

Bowman, T.E. & I.V. Tareen, 1983. Cymothoidae from fishes of Kuwait (Arabian Gulf) (Crustacea: Isopoda). Smithsonian Contributions to Zoology 382: i–iii, 1–30.

Brian, A. & E. Darteville, 1949. Contribution a l'étude des isopodes marins et fluviatiles du Congo. Annals du Musée du Congo Belge. C. Zoologie, série III, 1: 77–208.

Briggs, J.C., 1970. Records of parasitic isopods from Great South Bay, New York. New York Fish and Game Journal 17: 55–57.

Bruce, N.L., 1982. Species of *Argathona* Stebbing, 1905 (Isopoda, Corrallanidae) new to Australia, with description of two new species. Crustaceana 42: 12–25.

Bruce, N.L., 1986. Revision of the isopod crustacean genus *Mothocya* Costa, in Hope, 1851 (Cymothoidae: Flabellifera), parasitic on marine fishes. Journal of Natural History 20: 1089–1192.

Bruce, N.L., 1987a. Australian *Pleopodias* Richardson, 1910 and *Anilocra* Leach, 1818 (Isopoda: Cymothoidae), crustacean parasites of marine fishes. Records of the Australian Museum 39: 85–130.

Bruce, N.L., 1987b. Australian *Renocila* Miers, 1880 (Isopoda, Cymothoidae), crustacean parasites of marine fishes. Records of the Australian Museum 39: 169–182.

Bruce, N.L., 1987c. Australian species of *Nerocila* Leach, 1818, and *Creniola* n.gen. (Isopoda, Cymothoidae), crustacean parasites of marine fishes. Records of the Australian Museum 39: 355–412.

Bruce, N.L. & T.E. Bowman, 1989. Species of the parasitic isopod genera *Ceratothoa* and *Glossobius* (Crustacea: Cymothoidae) from the mouths of flying fishes and halfbeaks (Beloniformes). Smithsonian Contributions to Zoology 489: i–iii, 1–28.

Brusca, R.C., 1981. A monograph on the Isopoda Cymothoidae (Crustacea) of the eastern Pacific. Zoological Journal of the Linnean Society 73: 117–199.

Chilton, C., 1909. The Crustacea of the subantarctic Islands of New Zealand. Subantarctic Islands of New Zealand, Article 26: 601–671.

Chilton, C., 1911. Scientific Results of the New Zealand Government Trawling Expedition, 1907. Crustacea. Records of the Canterbury Museum 1: 285–312, pl.58.

Chilton, C., 1912. Miscellaneous notes on some New Zealand Crustacea. Transactions of the New Zealand Institute 44 (for 1911): 128–135.

*Czerniavsky, V., 1868. Materiala ad zoographiam Ponticam comparatum. Transactions of the First Meeting of the Russian Naturalists in Saint Petersburg, 1868: 19–136.

Dana, J.D., 1853. Crustacea, Part II. pp. 689–1618. **In** United States Exploring Expedition during the Years 1838, 1839, 1840, 1841, 1842, under the Command of Charles Wilkes, U.S.N. Vol. 14, C. Sherman, Philadelphia.

Darteville, E., 1939. *Ichtyoxenus expansus* isopode parasite dulcaquicole. Revue de Zoologie et de Botanique Africaine 33: 16–17.

Desmarest, A.G., 1825. Considération générales sur la classe des Crustacés. Paris. pp. xix + 446, pls 1–56.

de Kay, J.E., 1844. Zoology of New York or the New York Fauna. Part 6. Crustacea. Albany, New York (State) Natural History Survey. 65 pp, pls 1–13.

Ellis, J., 1981. Some type specimens of Isopoda (*Flabellifera*) in the British Museum (Natural History) and the isopods in the Linnaean collection. Bulletin of the British Museum of Natural History (Zoology) 40: 121–128.

Filhol, H., 1885. Considerations relative à la faune des Crustacés de la Nouvelle Zélande. Bibliotheque de l'École des Hautes à études, Section des Sciences naturelles, Paris 30(2): 1–60.

Fryer, G., 1965. A new isopod of the genus *Lironeca* parasitic on a cichlid fish of Lake Tanganyika. Revue Zoologique et Botanique Africaine 71: 376–384.

Fryer, G., 1968. A new parasitic isopod of the family Cymothoidae from clupeid fishes of Lake Tanganyika - a further Lake Tanganyika enigma. Journal of Zoology, London 156: 35–43.

Gaillat Airoldi, A., 1942. Di un nuovo genere di Cymothoidea parassita di *Pomatomus telescopus* (*Livonectus pomatomi*). Bolletino degli Instituti di Zoologia e Anatomia Compavata della R. Universita' di Genova (2 série) 20: 1–4, 1 pl.

Gersfeldt, G., 1858. Über einige zum Theil neue Arten platodea, Anneliden, Myriapodan und Crustacean Sibirien's namentlich seines östlichen Theiles und den Amurgebeiten. Saint Petersburg Mem. Savans Etrang (for 1857) 8: 291–296.

Gerstaccker, A., 1882. Sechste Ordnung. Isopoda Asseln [Part], pp. 97–278. **In** Dr H.G. Bronn (ed.). Klassen und Ordnung des Thier-Reichs, wissenschaftlich dargestellt in Wort und Bild. Fünfter Band II. Abtheilung. Gliederfussler: Arthropoda. Crustacea (Zweite Hälfte: Malacostraca) 4, 5, 6, 7, 8. Leiferung.

Gourret, P., 1892. Les lemipodes et les isopodes du Golfe de Marseille. Annales du Musée d'Histoire Naturelle de Marseille 6: 1–44.

Gurjanova, E.F., 1936. Fauna de l'URRS. Crustacées. Vol. 7, no.3. Isopodes des Mers Orientales. Institute Zoologique de l'Academie des Sciences de l'URRS. Nouvelle Série 6, pp. xii+ 278.

Hale, H.M., 1926. Review of Australian isopods of the Cymothoid group. Part II. Transactions of the Royal Society of South Australia 50: 201–234, pls 26, 27.

Hale, H.M., 1929. The Crustaceans of South Australia. Part 2. pp. 201–380. Handbooks of the Fauna and Flora of South Australia. Adelaide: British Science Guild (South Australian Branch).

Hale, H.M., 1940. Report on the cymothoid Isopoda obtained by the F.I.S. *Endeavour* on the coasts of Queensland, New South Wales, Victoria, Tasmania and South Australia. Transactions of the Royal Society of South Australia 64: 288–304, pl.18.

Haller, G. von, 1880. Über einige neue Cymothöinen. Archiv fur Naturgeschichte, Berlin, Jarhbusch 46: 375–395, pl.18.

Hansen, H.J., 1897. Reports on the dredging operations off the west coast of central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U.S.

Fish Commission Steamer *Albatross*, during 1891, Lieut. Commander Z.L. Tanner, U.S.N., commanding. Bulletin of the Museum of Comparative Zoology at Harvard College 31: 95–129, pls 1–7.

Harada, I., 1930. Studies on the freshwater fauna of Formosa. III. Note on a new *Ichthyoxenus* parasitic on *Carassius duratus* L. Journal of the Society of Tropical Agriculture, Taiwan 2: 264–269.

Harger, O., 1873. Isopoda. pp. 567–573. **In** A.E., Verrill, S.I. Smith & Oscar Harger, Catalogue of the Marine Invertebrate Animals of the Southern Coast of New England and Adjacent Waters, pp. 537–747. **In** A.E. Verrill (ed.). Report upon the Invertebrate Animals of Vineyard Sound and Adjacent Waters with an Account of the Physical Characters of the Region. Report of the United States Commissioner of Fish and Fisheries for 1871–1872: 295–778, pl.1–38.

Harger, O., 1880a. Notes on New England Isopoda. Proceedings of the United States National Museum 2 (for 1879): 157–164.

Harger, O., 1880b. Descriptions of new genera and species of Isopoda from New England and adjacent waters. United States Commission for Fish and Fisheries. Part VI. Report to the Commission, for 1878: 297–462, pls 1–13.

Heller, C., 1868. Zur naheron Kenntniss der in den sussen Gewassen des sudlichen Europa vorkommenden Meerescrustaceen. Zeitschrifft fur wissensch Zool 19: 156–162.

Herklots, J.A., 1870. Deux nouveaux genres de Crustacés vivant en parasites sur des poissons. *Epichthyes* et *Ichthyoxenos*, Archiv Neerlandaise, Sciences exact et naturelle, 5: 120–137, pl.5.

Hurley, D.E., 1961. A checklist and key to the Crustacean Isopoda of New Zealand and Subantarctic Is. Transactions of the Royal Society of New Zealand (Zoology) 1: 239–292.

Hutton, R.F., 1964. A second list of parasites from marine and coastal animals of Florida. Transactions of the American Microscopical Society 83: 439–447.

Ishii, S., 1916. On a new *Ichthyoxenus* (*I. opisthopteryguim* sp. nov.) from Lake Biwa. Annotationes Zoological Japonenses, Tokyo 9: 125–131.

Kensley, B., 1978. Guide to the marine isopods of southern Africa. South African Museum, Cape Town. 173 pp.

Koelbel, K., 1878. Über einige neue Cymothoiden. Sitzungsberichte der Mathematisch — Naturwiss enschaftlichen Klasse der Kaiserlichen Akadamie der Wissenschaften 78(1): 401–416, pls 1,2.

Krauss, F., 1843. Die Südafrikanischen Crustaceen. Eine Zusammenstellung aller bekannten Malacostraca, Bemerkungen über deren Lebensweise und geographische Verbreitung, nebst Beschreibung und Abbildung mehrer neuen Arten. Stuttgart: 1–68, pls 1–4.

Kussakin, O.G., 1979. Marine and Brackish Water Isopod Crustacea. Suborder Flabellifera. Akademy of Science, U.S.S.R. Leningrad. 470 pp. (in Russian).

Leach, W.E., 1818. Cymothoidées. pp. 338–354. **In** F. Cuvier (ed.). Dictionnaire des Sciences Naturelle. Vol.12. Paris and Strasbourg.

Light, V.E., 1937. The parasitic isopod, *Livoneca ovalis* (Say). Proceedings of the Pennsylvania Academy of Science 11: 71–73.

Lucas, H., 1850. Histoire naturelle des animaux articulees. Explorations scientifique de l'Algerie pendent les annees 1840, 1841, 1842. Zoologie I: 59–88. Paris.

Mañé-Garzón, F., 1979. Una nueve especie del genero *Lironeca* Leach, 1818 (Isopoda Cymothoidae) de la costa oceanica del Uruguay. Revista de Biologia del Uruguay 12: 11–22.

Menzies, R.J., 1962. The zoogeography, ecology, and systematics of the Chilian marine isopods. The Lund University Chile Expedition, 1948–49, No. 42. Lunds Universitets Arskrifftеr, 2, Bund 57: 1–162.

Menzies, R.J. & D. Frankenberg, 1966. Handbook on the common marine isopod Crustacea of Georgia. University of Georgia Press, Athens, vii + 93 pp.

Menzies, R.J. & P.W. Glynn, 1968. The common marine isopod Crustacea of Puerto Rico. A handbook for marine biologists. Uitgaven Natuurwetenschappelijke Studiekring voor Suriname en de Nederlandse Antillen 51: 1–133.

Menzies, R.J. & W.L. Kruczynski, 1983. Isopoda Crustacea (exclusive of Epicaridae). Memoirs of the *Hourglass* Cruises 6: 1–126.

Miers, E.J., 1874. Descriptions of some new species of Crustacea, chiefly from New Zealand. Annals and Magazine of Natural History, series 4, 17: 218–229.

Miers, E.J., 1876. Catalogue of the stalk and sessile-eyed Crustacea of New Zealand. Colonial Museum and Geological Department of New Zealand, National History Publication 10: i–xii, 1–133.

Miers, E.J., 1877. On a collection of Crustacea, Decapoda and Isopoda, chiefly from South America, with descriptions of new species. Proceedings of the Zoological Society, London 43: 653–679, pls 66–69.

Miers, E.J., 1880. On a collection of Crustacea from the Malaysian Region — Part IV. Penaeidae, Stomatopoda, Isopoda, Suctoria and Xiphosura. Annals and Magazine of Natural History, series 5, 5: 457–467.

Miers, E.J., 1881. Crustacea. pp. 61–79. **In** Account of the Zoological Collection made during the Survey of H.M.S. *Alert* in the Straits of Magellan and on the Coast of Patagonia. Proceedings of the Zoological Society of London for the year 1881.

Milne-Edwards, H., 1839. Les Crustacés. **In** F. Cuvier, Règne Animal (Atlas), pls 1–80.

Milne-Edwards, H., 1840. Histoire naturelle des Crustacés comprenent l'anatomie la physiologie et la classification de ces animaux. III, 605 pp.

Miner, R.W., 1950. Field Book of Seashore Life. New York, Putnam & Sons, iv + 188 pp., 251 pls.

Monod, T., 1931. Sur quelques crustacés aquatiques d'Afrique (Cameroun et Congo). Revue de Zoologie et de Botanique Africaine 21: 1–36.

Moreira, P.S. & V. Sadowsky, 1929. An annotated bibliography of parasitic Isopoda (Crustacea) of Chondrichthyes. Boletim do Instituto Oceanográfico, São Paulo 27: 95–152.

Nierstrasz, H.F., 1915. Die Isopoden-Sammlung im Naturhistorischen Reichsmuseum zu Leiden. -I. Cymothoidae. Zoologische Mededeelingen, Rijksmuseum van Natuurlijke Historie te Leiden I: 71–108, pls 3,4.

Nierstrasz, H.F., 1917. Die Isopoden-Sammlung im Naturhistorischen Reichsmuseum zu Leiden. -II. Cymothoidae, Sphaeromidae, Serolidae, Anthuridae, Idotheidae, Asellidae, Janiridae, Munnopsidae. Zoologische Mededeelingen, Rijksmuseum van Natuurlijke Historie te Leiden 3: 87–119, pls 13,14.

Nierstrasz, H.F., 1918. Alte und neue Isopoden.

Zoologische Mededeelingen, Rijksmuseum van Natuurlijke Historie te Leiden 4: 103–142, pls 9,10.
Nierstrasz, H.F., 1931. Die Isopoden der *Siboga*-Expedition. 3. Isopoda Genuina. 2. Flabellifera. *Siboga*-Expeditie 32c: 123–233, pls 10,11.
Overstreet, R.M., 1978. Marine Maladies? Worms, Germs, and other symbionts from the Northern Gulf of Mexico. Mississippi — Alabama Sea Grant Consortium and R.M. Overstreet, 140 pp.
Pearse, A.S., 1921. Crustacea from Lake Valencia, Venezuela. Proceedings of the United States National Museum 59: 459–462.
Pearse, A.S., 1952. Parasitic Crustacea from the Texas coast. Institute of Marine Science Bulletin 2: 5–42.
Pillai, N.K., 1954. A preliminary note on the Tanaidacea and Isopoda of Travancore. Bulletin of the Central Research Institute, University of Travancore, Trivandrum 3C: 1–21.
Pillai, N.K., 1964. Parasitic isopods of the family Cymothoidae from South Indian fishes. Parasitology 54: 211–223.
Poore, G.C.B., 1981. Marine Isopoda of the Snares islands, New Zealand — 7. Gnathiidea, Valvifera, Anthuridea, and Flabellifera. New Zealand Journal of Zoology 8: 331–348.
Powell, A.W.B., 1959. Native Animals of New Zealand. Auckland Museum Handbook of Zoology, 96 pp.
Rathbun, M.J., 1905. Fauna of New Zealand. 5. List of Crustacea. Occasional Papers of the Boston Society of Natural History 7: 1–117.
Richardson, H., 1900. Synopses of North-American Invertebrates. VIII. The Isopoda. American Naturalist 34: 207–230, 295–309.
Richardson, H., 1901. Key to the isopods of Atlantic coast of North America with descriptions of new and little known species. Proceedings of the United States National Museum 23: 493–579.
Richardson, H., 1904. Contribution to the natural history of the Isopoda. Proceedings of the United States National Museum 27: 1–89.
Richardson, H., 1905a. Description of a new species of *Livoneca* from the coast of Panama. Proceedings of the United States National Museum 29: 445–446.
Richardson, H., 1905b. A monograph on the isopods of North America. Bulletin of the United States National Museum 54: i–liii, 1–727.
Richardson, H., 1909. Isopods collected in the northwestern Pacific by the U.S. Bureau of Fisheries Steamer "*Albatross*" in 1906. Proceedings of the United States National Museum 37: 75–129.
Richardson, H., 1910. Marine isopods collected in the Philippines by U.S. Fisheries steamer *Albatross* in 1907–1908. Department of Commerce and Labor, Bureau of Fisheries Document 736: 1–44.
Richardson, H., 1911. Les crustacés isopodes du *Travailleur* et du *Talisman*; formes nouvelles. Bulletin du Muséum National Histoire Naturelle, Paris 17: 518–534.
Richardson, H., 1912. Description of a new isopod Crustacea belonging to the genus *Livoneca* from the Atlantic coast of Panama. Proceedings of the United States National Museum 42: 173–174.
Richardson, H., 1913. The isopod genus *Ichthyoxenus* Herklots, with description of a new species from Japan. Proceedings of the United States National Museum 45: 559–562.
Risso, A., 1816. Histoire Naturelle des Crustacés des Environs de Nice. pp 1–175, pls 1–3. Paris.
Rokicki, J., 1982. *Livoneca indica* Edwards, 1840 (Crustacea, Isopoda) from *Selar crumenophthalmus* (Bloch). Wiadomosci Parazitologiczne 38: 205–206, 2 pls.
Say, T., 1818. An account of the Crustacea of the United States. Journal of the Academy of Natural Sciences, Philadelphia 1: 393–401, 423–433.
Schiödte, J.C. & F.R. Meinert, 1881. Symbolae ad monographium cymothoarum crustaceorum isopodom familiae. II. Anilocridae. Naturhistorisk Tidsskrift, Series III, 13: 1–166, pls 1–10.
Schiödte, J.C. & F.R. Meinert, 1883. Symbolae ad monographium cymothoarum crustaceorum familiae. III. Saophridae. IV. Ceratothoinae. Naturhistorisk Tidsskrift, Series III, 13: 281–378, pls 11–16.
Schiödte, J.C. & F.R. Meinert, 1884. Symbolae ad monographium cymothoarum crustaceorum isopodum familiae. IV. Cymothoidae Trib. II. Cymothoinae. Trib. III. Livonecinae. Naturhistorisk Tidsskrift, Series III, 14: 221–454, pls 6–13.
Schultz, G.A., 1969. How to know the Marine Isopod Crustaceans. Dubuque, Iowa: Wm. C. Brown, pp. vii + 359.
Shen, C.J., 1936. The freshwater isopods of Peiping. Bulletin of the Fan Memorial Institute of Biology 7: 1–31.
Shiino, S.M., 1951. On the cymothoid Isopoda parasitic on Japanese fishes. Bulletin of the Japanese Society of Scientific Fisheries 16: 81–89.
*Shiino, S.M., 1965. New Illustrated Encyclopedia of the Fauna of Japan. Hokuryukan (cited from Nunomura, 1981).
Sivertsen, E., & L.B. Holthuis, 1980. The marine isopod Crustacea of the Tristan da Cunha Archipelago. Gunneria 33: 1–128.
Stebbing, T.R.R., 1893. A History of Crustacea. Recent Malacostraca. Kegan, Paul and Trench, London. pp. vxii + 466.
Stebbing, T.R.R., 1905. Report on the Isopods collected by Professor Herdman at Ceylon, in 1902. pp. 1–64. **In** W.A. Herdman (ed.). Report to the Government of Ceylon on the Pearl Oyster Fisheries in the Gulf of Manaar. Vol. 4, Supplements report 23.
Stebbing, T.R.R., 1910. General catalogue of South African Crustacea Part V of S.A. Crustacea, for the Marine Investigations in South Africa. Annals of the South African Museum 6(4): 281–599.
Stephenson, A.B., 1969. *Irona melanosticta* (Isopoda: Cymothoidae), a new record for New Zealand waters, with description of male, female and larval states. Records of the Auckland Institute and Museum 6: 427–433.
Stephenson, A.B., 1987. Additional notes on *Livoneca neocyttus* (Isopoda: Cymothoidae). Records of the Auckland Institute and Museum 24: 135–142.
Stimpson, W., 1857. The Crustacea and Echinodermata of the Pacific shores of North America. Boston Journal of Natural History 6: 503–513.
Sumner, F.B., R.C. Osborn & L.J. Cole, 1913. A biological survey of the waters of Woods Hole and vicinity. Section 3. A catalogue of the marine fauna of Woods Hole and vicinity. Department of Commerce and Labor, Bulletin of the Bureau of Fisheries 31(for 1911): 549–794.

Tiwari, K.K., 1952. On a new species of the rare cymothoid genus *Agarna* Schi. & Mein., parasitic on the clupeid fish *Nematalosa nasus* (Bl.) in the Bay of Bengal. Records of the Indian Museum 50: 295–300, pl.6.

Thielemann, M., 1910. Beiträge zur Naturgeschichte Ostasiens. Herausgegeben von F. Doflein. Band II, No. 9. Beitrage zu Kenntnis der isopodenfauna Ostasiens. Abhandlungen der Mathematisch-Naturwissenschaftlichen Klasse der K. Bayer. Akademia der Wissenschaften (suppl.), vol. 2, Abhandlung 3: 1–109, pls 1,2.

Thomson, G.M. & C. Chilton, 1886. Critical list of the Crustacea Malacostraca of New Zealand. Transactions of the New Zealand Institute 18: 141–159.

Trilles, J.-P., 1976a. Les Cymothoidae (Isopoda, Flabellifera) des collections du Muséum National d'Histoire Naturelle de Paris. IV. Les Lironecinae Schiödte et Meinert, 1884. Bulletin du Muséum National d'Histoire Naturelle, Paris, 3-série, no. 390, Zoologie 272: 773–800.

Trilles, J.-P., 1976b. Les Cymothoidae (Isopoda, Flabellifera) des côtes Francaises. III. Les Lironecinae Schiödte et Meinert, 1884. Bulletin du Muséum National d'Histoire Naturelle, Paris, 3-série, no. 392, Zoologie 272: 801–820.

Trilles, J.-P., 1979. Les Cymothoidae (Isopoda, Flabellifera; parasites de poissons) du Rijksmuseum van Natuurlijke Histoire de Leiden II. Afrique, Amériques er Régions Indo-Ouest-Pacifiques. Zoologische Mededelingen, Leiden 54: 245–275.

Trilles, J.-P., 1981. Les Cymothoidae (Isopoda, Flabellifera; parasites des poissions) des Antilles. Bulletin du Muséum National d'Histoire Naturelle, Paris, 4-série, section A, 2: 583–602.

Uljanin, V.N., 1872. Data on the fauna of the Black Sea. Izvestiya Moskovskogo Obshchestva Lyubitelei Estestvoznaniya, Antropoligii i Etnografii 9: 79–132.

Van Name, W.G., 1920. Isopods collected by the American Museum Congo Expedition. Bulletin of the American Museum of Natural History 43: 42–108.

Van Name, W.G., 1925. The Isopods of Kartabo, Bartica district, British Guiana. Zoologica 6: 461–503, pls 7–26.

Van Name, W.G., 1936. The American Land and Freshwater Isopod Crustacea. Bulletin of the American Museum of Natural History, 71: 1–535.

White, A. & E. Doubleday, 1843. **In** E. Dieffenbach. Travels in New Zealand; with Contributions to the Geography, Geology, Botany and Natural History of that Country. Vol. II, pp. iv + 396. John Murray, London.

Whitelegge, T., 1902. Crustacea. Part II. Isopoda. Part I. pp. 201-246. **In** Scientific Results of the Trawling Expedition of HMCS *Thetis*, Vol. I. Memoirs of the Australian Museum 4: 201–246.

Williams, E.H. & Williams, L.B., 1979. Cymothoid isopods of some marine fishes from the northern Gulf of Mexico. Northeast Gulf Science 2 (for 1978): 122–124.

Williams, E.H. Jr & L.B. Williams, 1980. Four new species of *Renocila* (Isopoda: Cymothoidae), the first reported from the New World. Proceedings of the Biological Society of Washington 93: 573–592.

Williams, E.H. Jr & L.B. Williams, 1981. Nine new species of *Anilocra* (Crustacea: Isopoda: Cymothoidae) external parasites of West Indian coral reef fishes. Proceedings of the Biological Society of Washington 94: 1005–1047.

Williams, E.H. Jr & L.B. Williams, 1986. The first *Anilocra* and *Pleopodias* isopods (Crustacea: Cymothoidae) parasitic on Japanese fishes, with three new species. Proceedings of the Biological Society of Washington 99: 647–657.

Williams, L.B. & E.H. Williams, 1987. Three new species of *Renocila* (Crustacea: Isopoda: Cymothoidae), external parasites of coral reef fishes from the Ryukyu Islands of Japan. Proceedings of the Biological Society of Washington 100: 417–432.

Young, M.W., 1926. Marine biological notes No. 2. Fecundity of *Livoneca raynaudii* Milne-Edw. (synonym: *Livoneca novae-zeelandiae* Miers). New Zealand Journal of Science and Technology 8: 282–286.

Yü, S.C., 1935. Notes on the Chinese *Ichthyoxenus* (Parasitic Isopoda) with the description of a new species. Bulletin of the Fan Memorial Institute of Biology (Zoology) 6: 71–80.

Accepted 17 April 1990