

A New Macrourid Fish, *Coelorinchus biclinozonalis* from New Zealand, and Redescription of *C. australis* from Australia

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(Received July 10, 1981)

Abstract. *Coelorinchus biclinozonalis* sp. nov. is described on the basis of 75 type-specimens collected from off New Zealand. The new species has been confused with *C. australis* (Richardson, 1839) by previous workers, but is readily distinguishable from that species by differences in: shape of snout tip, squamation, and pigmentation on fins and body. The new species is known only from off New Zealand, whereas *C. australis* is from off Tasmania and Victoria, eastern South Australia.

During trawling cruises on the R/V "Kaiyo Maru" in 1977~78 (Suisancho, 1978) off the east coast of New Zealand, *Coelorinchus* specimens which fit Waite's (1911) description and illustration of *C. australis* were obtained. The first author compared them with *Coelorinchus australis* (Richardson, 1839) from eastern South Australia. Concurrently, the second author made a number of collections of macrourids around New Zealand by the R/Vs "James Cook" and "Wesermünde", and was studying the same subject for his M. Sc. thesis (McMillan, MS). It is concluded that the New Zealand specimens are distinct from *C. australis*, and are described here as *C. biclinozonalis* sp. nov. *C. australis* is redescribed, because Richardson's accounts (1839, 1841) did not cover many important features of the species.

Methods and materials

Measurements and counts were taken in accordance with the methods described by Hubbs and Lagler (1958) and Iwamoto (1970, 1978). Terminology for the head ridges follows Iwamoto (1978: fig. 2) and for the luminous organ follows Okamura (1970a).

Type-specimens of the new species and specimens of *C. australis* are deposited in the Auckland Institute and Museum (AIM); Australian Museum, Sydney (AMS); California Academy of Sciences, San Francisco (CAS); Canterbury Museum, Christchurch (CMC); Far Seas Fisheries Research Laboratory, Shimizu (FSFL); National Museum of New Zealand, Wellington

(NMNZ); National Science Museum, Tokyo (NSMT); and Queen Victoria Museum, Launceston (QVM). In the list of material examined, plus marks (+) with TL indicate that the given specimens have incomplete tails.

Coelorinchus biclinozonalis sp. nov. (Figs. 1, 2A, 3A)

Macrurus australis (not of Richardson, 1839): Hutton and Hector, 1872: 49, 116, pl. 8, fig. 78 (descr.; Wellington Harbour, New Zealand).

Macrurus (Coelorhynchus) australis (in part, not of Richardson, 1839): Günther, 1887: 127 (brief descr.; Cape Campbell, New Zealand).

Coelorhynchus australis (not of Richardson, 1839): Waite, 1911: 177, pl. 29, fig. 1 (descr.; Port Nicholson, Cloudy Bay and Pegasus Bay, New Zealand); Gilbert and Hubbs, 1920: 426 (in key after Waite, 1911); Phillipps, 1927: 126 (in key); Parrott, 1948: 155 (descr. on Waite's (1911) specimens); Munro, 1957: 61, fig. 431 (brief descr. after Waite, 1911); Scott, 1970: 43 (in key); McCann and McKnight, 1980: 72, figs. 54~57 (descr.; off Kaikoura, Bare Island, Flat Point, Greymouth and Bay of Plenty, New Zealand).

Coelorhynchus australis (not of Richardson, 1839): Scott, 1953: 150 (key and descr. after Waite, 1911).

Coelorinchus oliverianus (not of Phillipps, 1927): Graham, 1956: 161, fig. (descr. after Waite, 1911).

Coelorinchus sp. B: Suisancho, 1978: 99 (listed:

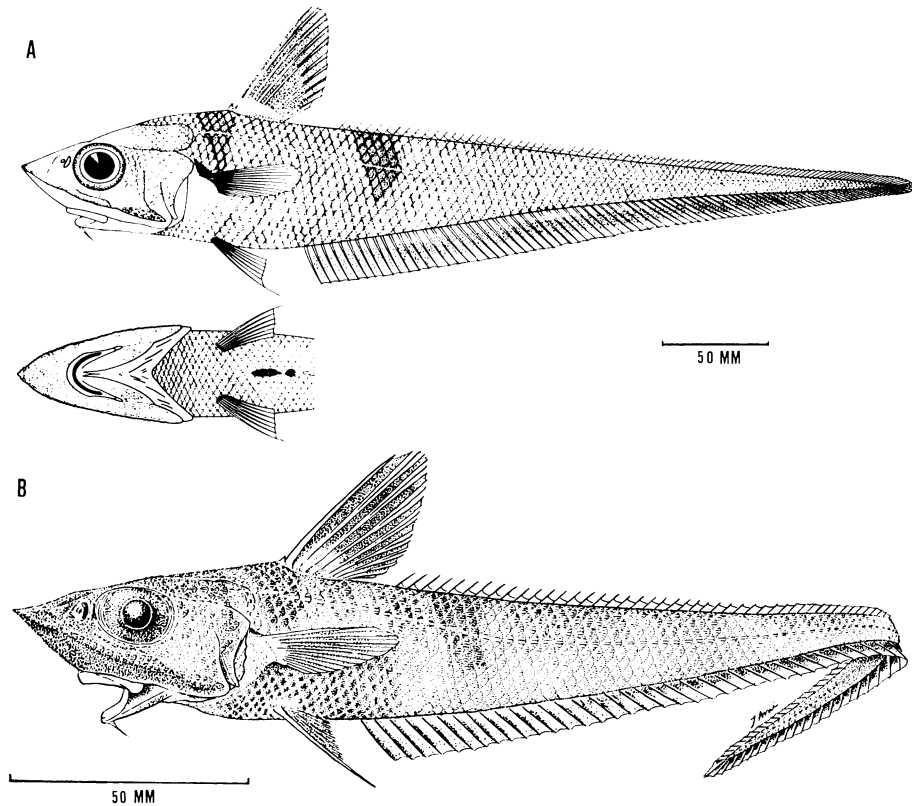


Fig. 1. *Coelorinchus biclinozonalis* sp. nov. A: Lateral and ventral view of holotype (NMNZ P. 9549, 89 mm HL, 418 mm TL) from Cloudy Bay, New Zealand, in 55~60 m. Drawn by P. J. McMillan. B: Lateral view of smaller paratype (FSFL EH411, 50 mm HL) which has additional faded saddle marks. Drawn by T. Arai.

Chatham Rise, New Zealand).

Diagnosis. A species of *Coelorinchus* with a large dermal window of the light organ situated just before anus; its length about 1.7~3.7 into orbit diameter. Naked areas dorsally behind anterolateral margin of snout confined to strips. Snout with a short, sharply pointed terminal scute; anterolateral edge of snout not supported by bone (median and lateral processes of nasal bones not united). Subopercle with an acute flap posteroventrally. Ventral surface of head mostly covered with scales; body scales with spinules arranged in subparallel rows without enlarged median ridge. Anus situated immediately before anal fin. Snout length 32~39% of HL, about 0.7~1.1 into orbit diameter. Two oblique dark bands on dorsal surface of body, anterior one before first dorsal fin and posterior one behind second dorsal origin; first dorsal fin dusky.

Description of the holotype (with comments on paratypes in parentheses). General features (Fig. 1): Head length about 4.6 (3.9~4.9) into total length. Orbit diameter about 1.2 (0.9~1.4) into snout length. Interorbital slightly greater than (equal to, in some paratypes) internasal space. Snout sharply pointed in dorsal and lateral views; median and lateral processes of nasal bones not united. Anterior edge of mouth below anterior nostril; upper jaw extending approximately to below posterior 1/3 of orbit. Barbel short, thin, about 2.8 (1.8~4.0) into orbit diameter. Suborbital space about 2.1 (1.6~3.0) into orbit diameter. Subopercle with an acute flap on posteroventral margin; its tip produced slightly beyond posterior margin of preopercle. Ridges on head very low, weak. Suborbital ridge forms a weak demarcation between ventral and dorsal surface of head. Anus situated just in front of anal fin.

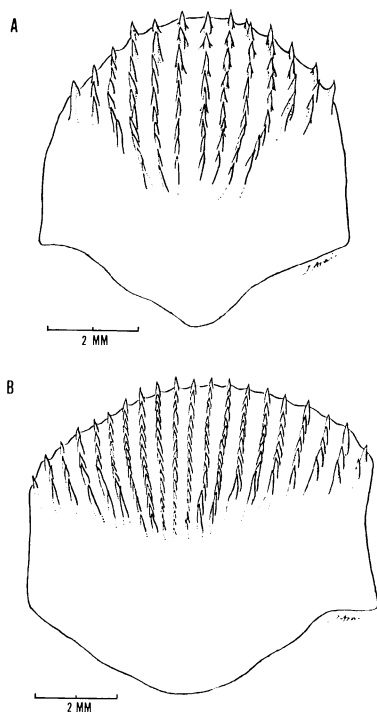


Fig. 2. Body scales of (A) *Coelorinchus biclinozonalis* sp. nov. (paratype NSMT-P 19732, 89 mm HL) and (B) *C. australis* (NSMT-P 19731, 90 mm HL). Taken from between 1st dorsal base and lateral line.

Scales on head armed with small, reclined spinules. About 16 (in paratypes, number increases with growth; see Fig. 5) close sub-parallel longitudinal spinule rows on largest trunk scales below first dorsal fin (Fig. 2A); no enlarged median keel-like ridges. Terminal scute of snout conical, armed with several longitudinal rows of small blunt spinules. Naked areas on dorsal surface of snout restricted to area around nostrils and very narrow lunate area behind anterolateral margin of snout. Ventral surface of head completely scaled except lips, gular part, branchiostegal membrane, and anterior third of mandible.

First dorsal fin base long; its height slightly less than postrostral length of head. Interspace of dorsals about 1.1 (0.8~1.6) into length of first dorsal base. Anal fin well developed; fourth ray slightly shorter than orbit diameter.

Large black oval dermal window, running

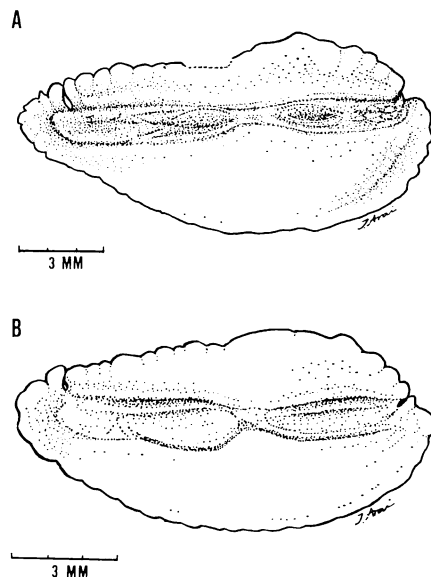


Fig. 3. Otoliths (left saggita) of (A) *Coelorinchus biclinozonalis* sp. nov. (NSMT-P 19736, ca. 89 mm HL) and (B) *C. australis* (NSMT-P 19730, 69 mm HL).

forward from in front of anus to a point about midway between anus and pelvic fin base (Fig. 1A); its length about 2.1 (1.7~3.7) into orbit diameter.

Colouration in isopropyl alcohol: dorsal surface of head brownish; dorsolateral surface of trunk and tail brownish with two oblique dark bands, one extending from nape to pectoral fin, another below anterior portion of second dorsal fin (in two paratypes, CMC 843, 38~51 mm HL, these two dark bands disappear after long preservation; in a 50 mm HL paratype (FSFL EH411), some additional faded dark bands present on dorsal surface (Fig. 1B)). First dorsal fin dusky except for pale base and margin. Anal with broad black stripe which runs medially along most part of the fin which meets the fin base posteriorly (Fig. 1). (Colouration in fresh 134 mm HL paratype: trunk and tail dark brownish-grey with two dark brown dorsal bands.)

Measurements and counts: Selected measurements are shown in Table 1. Counts: 1D. II, 10 (II, 9~11; usually II, 10); pectoral fin rays i16~i17 (i14~i18); pelvic fin rays 7 (7); inner gill rakers on first arch 2+7 (1~2+6~8; usually

2+6~7), on second arch 2+6 (1~2+6~8; usually 2+6); scales below 1D. 4 (4~7), below mid-1D. $3\frac{1}{2}$ ($3\frac{1}{2}$ ~ $4\frac{1}{2}$), below 2D. $4\frac{1}{2}$ ($3\frac{1}{2}$ ~ $4\frac{1}{2}$); usually $4\frac{1}{2}$; lateral line scales over distance equal to predorsal length 25~26 (23~30; usually 25~26); pyloric caeca (35~49).

Anatomical note on paratypes. Luminous gland of ventral light organ large, oblong, lacking a secondary duct.

Gas bladder consists of two large anterior lobes and one posterior lobe with a pointed posterior end. Males possess a band of muscle (thought to be involved in sound production, Marshall, 1965) on each anterior lobe; the muscles begin anteriorly at the tip of each lobe but posteriorly do not reach junction of anterior and posterior lobes. Retia-gas gland complex a large structure consisting of four partially fused units.

Intestinal coiling in 86 mm HL paratype

(NSMT-P 19735) similar to that of *Abyssicola macrochir* (Günther, 1877) as illustrated by Okamura (1970b: fig. 651). Pyloric caeca 35~49 (\bar{x} =42.9, n=20, specimens not retained (McMillan, MS)) moderately long, slender, unbranched, with lengths of about 1.4~1.6 into orbit diameter in 4 paratypes. Otolith shown in Fig. 3A.

Note on non-paratypes. Four juveniles (NMNZ P. 9548, 10~15 mm HL, 42+~69 mm TL) were examined. These show some features in contrast to those of adults: a vertical banding pattern is present along the length of the body and the two oblique bands which mentioned in colouration of holotype are only slightly more prominent than the others; eye size is large, 37~39% HL (cf. 26~36% HL in larger paratypes); scales mostly carry 3 spinule rows; three or four small denticles are present on the 2nd spinous ray of first dorsal fin (adult specimens

Table 1. Measurements from 75 type-specimens of *Coelorinchus biclinozonalis* sp. nov. from off New Zealand and 26 specimens of *C. australis* from eastern South Australia. Total length and head length in millimeters; other measurements in % of head length.

Character	<i>Coelorinchus biclinozonalis</i> sp. nov.				<i>C. australis</i>		
	Range	Holotype	Mean	N	Range	Mean	N
Total length	129~612	408		75	104+~412+		26
Head length	28~136	89		75	24~105		26
Body depth	60.3~86.0	68.0	67.17	75	67.4~87.3	77.10	23
Postrostral length	63.5~68.1	65.3	65.96	24	67.8~72.7	70.14	26
Snout length	32.1~39.0	36.4	36.16	75	31.7~36.6	33.41	26
Preoral length	28.6~39.4	36.5	33.71	74	26.4~32.8	28.97	25
Internasal space	21.3~25.6	22.5	23.10	75	23.4~28.7	25.21	24
Orbit diameter	27.3~39.3	30.2	32.44	75	30.1~37.1	33.77	25
Interorbital width	21.4~27.3	25.1	24.42	74	25.1~29.8	27.10	25
Postorbital length	25.4~36.1	27.1	30.35	75	31.6~38.8	34.44	26
Orbit to angle preop.*	31.7~41.2	36.6	35.56	75	35.1~41.5	38.99	26
Suborbital width	11.4~16.9	14.6	14.62	75	17.2~20.3	18.75	26
Upper jaw length	23.9~31.9	28.5	28.34	75	29.1~34.4	31.59	26
Barbel length	8.2~15.8	10.6	11.96	73	11.7~21.9	17.57	25
P ₂ insertion to A. origin	35.6~56.8	49.5	44.41	75	41.2~58.7	49.33	25
Isthmus to A. origin	63.5~93.2	81.0	76.47	75	72.6~97.4	85.97	24
Isthmus to anus	55.8~87.1	73.2	70.68	73	67.5~89.9	79.53	23
1D. base length	24.1~33.7	26.9	28.37	75	28.0~36.2	30.91	25
1D.-2D. interspace	17.6~34.9	29.4	24.78	75	15.1~25.1	19.73	24
Height first dorsal fin	56.5~84.6	67.6	68.79	62	61.1~79.3	67.93	14
Length pectoral fin	42.3~62.5	58.2	55.59	70	46.7~62.5	54.49	24
Length pelvic fin	38.8~58.0	44.5	47.49	74	39.4~67.9	50.79	25
length 1st gill-slit**	9.4~16.8	14.5	14.04	75	13.4~21.9	16.10	22

* Distance between posterior margin of orbit and posteroventral margin of preopercle.

** See Iwamoto 1970: fig. 3.

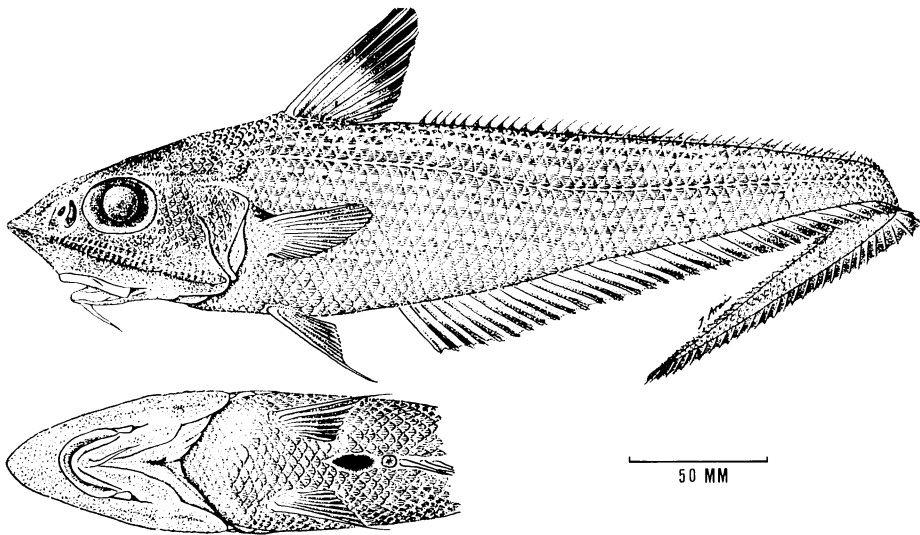


Fig. 4. *Coelorinchus australis* (Richardson, 1839). Lateral and ventral view of NSMT-P 19731 (90 mm HL, 437 mm TL) from off Tasmania. Drawn by T. Arai.

have smooth dorsal spine); no scales on ventral surface of head (larger specimens have completely scaled ventral surface of head); abdominal area dark; light organ appears to be well developed.

Distribution. *Coelorinchus biclinozonalis* is known from the continental shelf and upper continental slope around New Zealand (Fig. 7), taken between depths 4 and 549 m.

Etymology. The specific name *biclinozonalis* is derived from Latin words *bi* meaning two, *clino* meaning slant, and *zonalis* meaning of a belt, referring to the presence of two dark slanted belts on the body.

Material examined. 106 specimens from New Zealand waters. **Holotype:** NMNZ P. 9549 (89 mm HL, 418 mm TL); Cloudy Bay, 41°26'S, 174°16'E, 55~60 m, 28 Jan. 1979, in isopropyl alcohol. **Paratypes:** NMNZ P. 268 (1 specimen, 54 HL, 169+ TL); Nelson, 24 May 1922: NMNZ P. 269 (2, 63~65 HL, 259+~309 TL); Paraparaumu, 1918: NMNZ P. 1021 (1, 99 HL, 460 TL); South of Cape Campbell, 60~120 m, 13 Feb. 1952: NMNZ P. 1284 (2, 103~121 HL, 482~546+ TL); between Cape Campbell and Kaikoura, 30 Apr. 1953: NMNZ P. 1291 (1, 136 HL, 612 TL); Kaikoura coast, 20 May 1953: NMNZ P. 1642 (1, 39 HL, 187 TL); NMNZ P. 1647 (1, 77 HL, 347 TL); Palliser

Bay, 47°27'S, 175°03'E, 137~219 m, 6 Feb. 1955: NMNZ P. 1808 (2, 60~62 HL, 255~240+ TL); off Kaipara, 183 m, Aug. 1955: NMNZ P. 1982 (3, 57~66 HL, 258~285+ TL); off Plate Island, 128~183 m, 16 Aug. 1956: NMNZ P. 1992 (1, 90 HL, 376 TL); N.W. Mayor Island, 73~299 m, 19 Aug. 1956: NMNZ P. 2529 (1, 99 HL, 415 TL); off Motiti Island, 91 m, 12 Apr. 1958: NMNZ P. 2928 (1, 115 HL, 496+ TL); Shelly Bay, Wellington, on beach, 5 Feb. 1960: NMNZ P. 3546 (1, 52 HL, 216+ TL); between Alderman and Red Mercury Islands, 622 m, 26 Sep. 1962: NMNZ P. 3602 (2, 28~31 HL, 129~137+ TL); George Sound, 210 m, 16 Dec. 1962: NMNZ P. 3998 (1, 77 HL, 363 TL); off Farewell Spit, 73~91 m, Jul. 1964: NMNZ P. 4504 (1, 111 HL, 491 TL); Lowry Bay, Wellington, 4~5 m, 18 Sep. 1966: NMNZ P. 4531 (1, 83 HL, 372+ TL); Pukerua Bay, 4 m, 5 Jun. 1966: NMNZ P. 4663 (1, 119 HL, 552 TL); Palliser Bay, Feb. 1967: NMNZ P. 4787 (1, 39 HL, 193 TL); Palliser Bay, 41°26'30''S, 175°03'E, 64~82 m, 15 Feb. 1968: NMNZ P. 4906 (1, 64 HL, 286 TL); between Golden Bay and D'Urville Island, 40°41'S, 173°19'E, 53 m, 3 Aug. 1969: NMNZ P. 5251 (1, 109 HL, 459 TL); 35°37'S, 173°06'E, 260 m, 12 Jan. 1971: NMNZ P. 5347 (2, 53~63 HL, 240~276 TL); 40°38'S, 171°37'E, 247~274 m,

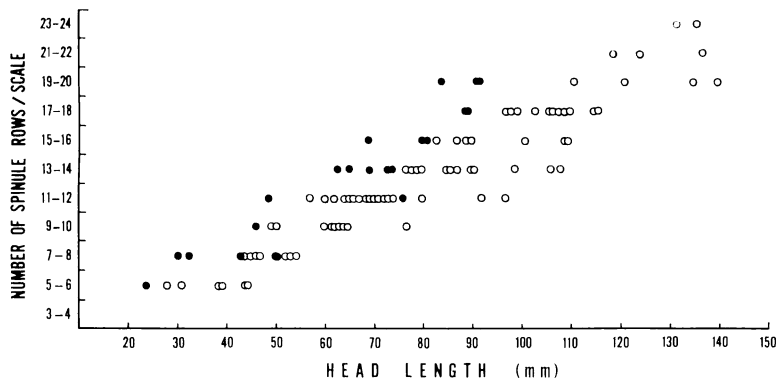


Fig. 5. Relationship of head length to number of spinule rows on largest scales of body for *Coelorinchus biclinozonalis* sp. nov. (circles) and *C. australis* (dots).

3 Mar. 1971: NMNZ P. 5962 (1, 50 HL, 205 + TL); 34°47'S, 174°17'E, 417~483 m, 24 Feb. 1974: NMNZ P. 6035 (1, 50 HL, 224 TL); 34°49'S, 174°17'E, 468~475 m, 24 Feb. 1974: NMNZ P. 6648 (1, 132 HL, 591 + TL); NMNZ P. 6663 (1, 98 HL, 434 TL); 43°16'S, 174°55'E, 298 m, 23 Jun. 1975: NMNZ P. 7076 (10, 60~124 HL, 252+~525 TL); Bay of Plenty, 37°37.5'S, 177°26.8'E, 168 m, 15 Nov. 1976: NMNZ P. 9550~9551 (2, 97~108 HL, 365+~448 + TL); taken with holotype: NMNZ P. 9552~9553 (5, 44~90 HL, 208~394 + TL); 43°45'S, 174°00'E, 232~269 m, 10 Mar. 1979: AIM 685 (2, 67~72 HL, 257+~300 TL); between North Plate and White Island, Bay of Plenty, 119~201 m, Ikatere K77/69, 9 Feb. 1969: AIM 1082 (1, 90 HL, 380 TL); off Alderman Island, 146 m, Ikatere, 20 Feb. 1968: AIM 1300 (1, 106 HL, 432 TL); N. E. Whangaruru, 35°14'~12'S, 174°53'~51'E, prawn trawl, 355~388 m, Ikatere K11/002/71, 14 Sep. 1971: AIM 1301 (1, 107 HL, 435 TL); N. E. Cavalli Island, 34°59'~35°01'S, 174°32'~33'E, prawn trawl, 388~456 m, Ikatere K11/004/71, 16 Sep. 1971: AIM 1302 (1, 70 HL, 313 TL); off Bay of Islands, 35°07'S, 174°44'E, prawn trawl, 421~439 m, Ikatere K442/71, 18 Dec. 1971: AIM 1304~1305 (2, 82~98 HL, 339~387 TL); N. of Poor Knights, 35°19'S, 175°02'E, prawn trawl, 375~549 m, Ikatere K 457/71, 17 Dec. 1971: AIM 1310~1311 (2, 92~108 HL, 386~428 TL); off Bay of Islands, 35°06'S, 174°46'E, prawn trawl, 439~476 m, Ikatere K444/71, 19 Dec. 1971: FSFL EH410~414, 419 (6, 50~99 HL, 222+~449 TL); AMS I. uncat. (1, 83 HL, 359 TL);

NSMT-P 19732~19733 (2, 89~134 HL, 409~567 + TL); Chatham Rise, 43°15.4'S, 174°53.0'E, 330~342 m, Kaiyo Maru sta. T-34, 25 Dec. 1977: CMC 843 (2, 38~51 HL, 181~231 TL); N.E. coast of the South Island or S. coast of the North Island, 18~70 m, Nora Niven Expedition, 3 Jul.~12 Aug. 1907: CAS 48310 (1, 74 HL, 323 TL); NSMT-P 19734~19735 (2, 62~86 HL, 291~338 + TL); locality unknown, Kaibun Maru, 9 Mar. 1975. **Non-type:** NMNZ P. 9548 (4, 10~15 HL, 42+~69 TL); Cloudy Bay, 112 m, 28 Jan. 1979: AIM 1303 (1, 97 HL, 339 + TL); off Bay of Islands, 35°07'S, 174°44'E, prawn trawl, 421~439 m, Ikatere K442/71, 18 Dec. 1971: AIM 1308 (1, 89 HL, 359 + TL); N.E. of Poor Knights, 35°14'S, 175°04'E, prawn trawl, 339~384 m, Ikatere K457/71, 17 Dec. 1971: FSFL EH006 (1, 138 HL, 601 TL); Chatham Rise, 43°17.8'S, 174°55.4'E, 257~301 m, Kaiyo Maru sta. T-1, 11 Dec. 1977: NSMT-P 19736 (3, ca. 73~ca. 94 HL, ca. 327~ca. 442 TL); locality unknown, Kaibun Maru, 9 Mar. 1975: 11 specimens, not preserved (43~137 HL, 185~618 TL); 43°45'S, 174°00'E, 223~269 m, 10 Mar. 1979: 6 specimens, not preserved (64~142 HL, 302~616 TL); 43°00'S, 175°19'E, 188~399 m, 12 Jun. 1979: 4 specimens, not preserved (49~135 HL, 220~599 TL); 43°26'S, 173°51'E, 180~220 m, 13 Jun. 1979.

Coelorinchus australis (Richardson, 1839)
(Figs. 2B, 3B, 4)

Lepidoleprus australis Richardson, 1839: 100
(original descr.; type locality Port Arthur,

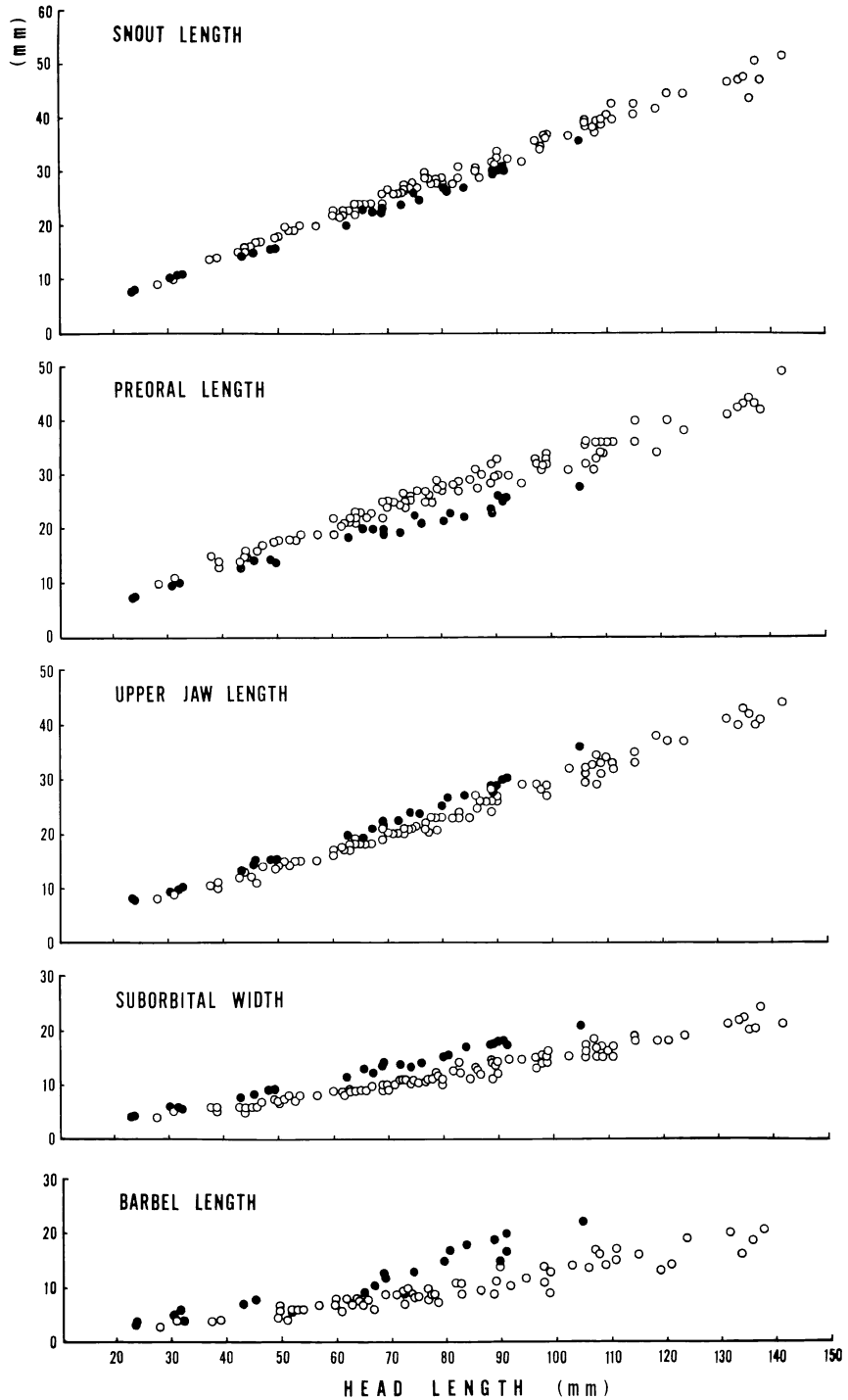


Fig. 6. Comparison of snout length, preoral length, upper jaw length, suborbital width and barbel length plotted against head length of *Coelorinchus biclinozonalis* sp. nov. (circles) and *C. australis* (dots).

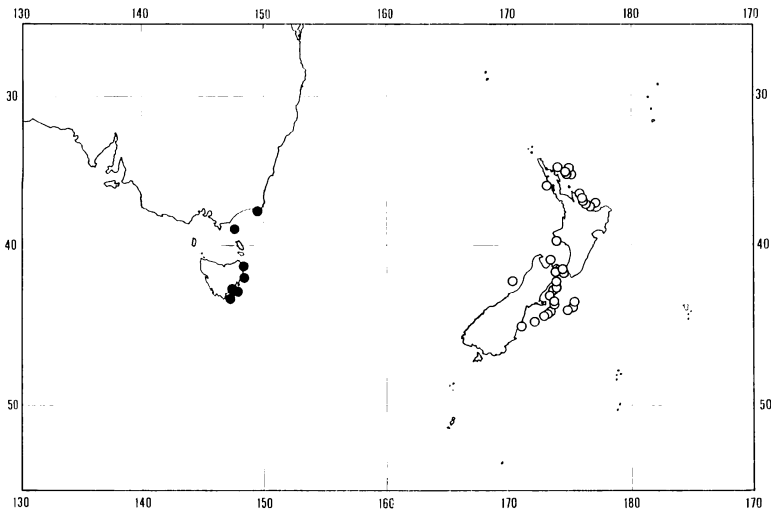


Fig. 7. Catching records of *Coelorinchus biclinozonalis* sp. nov. (circles) and *C. australis* (dots).

Tasmania); Richardson, 1841: 151, pl. 8, figs. 1~2 (redescr. illus. of holotype).

Macrurus australis: Günther, 1862: 391 (redescr. of holotype); Günther, 1880: figs. 256, 257 (figs. after Richardson, 1841); Günther, 1887: 127 (in part, brief descr.); Macleay, 1881: 122 (brief descr.).

Coelorhynchus mortoni Ogilby, 1897: 83 (original descr.; type locality, estuary of Derwent River, Tasmania); Scott, 1970: 38, fig. 1 (descr.; Bicheno, Pedra Branca and South West Cape, Tasmania).

Coelorhynchus australis: McCulloch, 1911: 38 (brief descr.; Storm Bay and Oyster Bay, Tasmania); Waite, 1916: 75 (brief descr.; east coast of Tasmania); McCulloch, 1926: 177 (brief descr.; Bass Strait, Tasmania); Harrison and Scott, 1969: 7 (listed; south of Bruny Island, Tasmania).

Coelorinchus mortoni: Scott, 1979: 104 (descr.; St. Helens, east coast of Tasmania).

Description. General shape is shown in Fig. 4. Head length about 4.6~5.1 into total length. Orbit of moderate size, diameter slightly shorter than or equal to snout length or postorbital length, about 0.9~1.1 into snout length. Interorbital width larger than internasal space. Snout blunt without sharp rostral spine; anterolateral edge of snout not supported by bone. Barbel well developed, thick, about 1.4~2.9

into orbit diameter. Suborbital width about 1.5~2.1 into orbit diameter. Head ridges very low, indistinguishable except suborbital ridge. No conspicuously modified or scute-like scales on any ridge. Subopercle with an acute flap posteroventrally. Length of first gill slit about 1.4~2.7 into orbit diameter.

Scales on head armed with very closely packed, erected spinules. Body scales armed with subparallel rows of small reclined spinules (Fig. 2B). Number of spinule rows per scale varies with size of specimen (Fig. 5). Naked areas on dorsal surface of snout restricted to margin of nostrils, very narrow lunate area behind anterolateral margin of snout, and just above suborbital ridge. Ventral surface of head completely scaled except lips, gular part and branchiostegal membrane and base and margin of mandible.

Ventral light organ with large dermal window, running forward from in front of anus to a point about midway between anus and pelvic fin bases; its length about half diameter of orbit. Pyloric caeca 31~34, unbranched, with lengths of about 0.9~1.5 into orbit diameter in 3 specimens. Gas bladder very large, consists of bilobes with sharply pointed tips and one posterior lobe with rounded end. Otolith shown in Fig. 3B. Stomach of 84 mm HL specimen filled with a 69 mm TL octopod, remains of fish vertebrae and some decapod ap-

pendages.

Colouration in formalin: dorsal surface of head dark brown with some pale spots on interorbital space. Trunk and tail dark brownish with about eight rows of pale narrow longitudinal stripes on dorsolateral surface. Distal half of first dorsal fin black; second dorsal fin blackish. Oral, branchial and abdominal cavities completely black. In old specimens preserved in alcohol: head and body dark brown with pale stripes on dorsolateral surface of body; upper half of first dorsal fin blackish; posterior half of anal fin with blackish stripe.

Two small specimens (AMS I. 10252, 23.7~23.8 mm HL) were examined. Some adult features are lacking: squamation on ventral surface of head not complete; second spinous ray of first dorsal fin with 3 or 4 long, slender spinules near tip.

Measurements and counts: Selected measurements are shown in Table 1. Counts: 1D. 11, 9~11 (usually 11, 10~11); pectoral fin rays i13~i18 (usually i15~i17); pelvic fin ray 7; inner gill rakers on first arch 1~2+6~7 (usually 2+6), on second arch 1~3+6~7 (usually 2+6); scales below 1D. $3\frac{1}{2}$ ~ $5\frac{1}{2}$, below mid-1D. $3\frac{1}{2}$ ~ $4\frac{1}{2}$ (usually $3\frac{1}{2}$), below 2D. $3\frac{1}{2}$ ~ $4\frac{1}{2}$; lateral line scales over distance equal to predorsal length 24~32; pyloric caeca 31~34 (\bar{x} =32.2, n =6).

Distribution. The species is known from off Tasmania, Victoria and Bass Strait, eastern South Australia between depths of 102 and 2340 m (Waite, 1916) (see Fig. 7). *C. australis* is common on the continental shelf and slope down to 150 fathoms (274 m) around Tasmania (Peter Last, personal communication).

Material examined. 26 specimens from eastern South Australia. AMS IA. 524 (1, 63 HL, 299+ TL); East of Tasmania, 137 m, Australasian Antarctic Expedition, probably 12 Dec. 1912, registered in Nov. 1921: AMS IA. 3969 (1, 65 HL, 332 TL); off Cape Everard, Victoria, 146~183 m, registered in July 1929; AMS E. 4551 (1, 105 HL, 412+ TL); East edge of Bass Strait between Gabo and Flinders Islands, Tasmania, over 183 m, Endeavour, registered in 1913: AMS I. 10230 (1, 67 HL, 331 TL); AMS I. 10232~10234 (3, 69~76 HL, 351~378 TL); AMS I. 10241~10242 (2, 49~50 HL, 236~239 TL); AMS I. 10244 (1, 46 HL,

218 TL); AMS I. 10246 (1, 32 HL, 159 TL); AMS I. 10248 (1, 30 HL, 151 TL); AMS I. 10250~10254 (6, 24~81 HL, 104+~362+ TL); off Storm Bay, Tasmania, 110 m, Endeavour, probably 1909: CAS 48311 (1, 91 HL, 415 TL); NSMT-P 19730 (5, 69~92 HL, 346+~436 TL); Hyppolyte Is., off Tasmania, 43°01'S, 148°04'E, 102 m, F.R.V. Challenger, 9 Oct. 1979: NSMT-P 19731 (1, 90 HL, 437 TL); off S. E. Tasmania, 110 m, Craigmin, Jan. 1979: QVM 1978/5/78 (1, 89 HL, 394+ TL); St. Helens Point, Tasmania, 110 m, 10 Jun. 1978.

Differential diagnosis of

C. biclinozonalis sp. nov.

Of the eleven nominal species of *Coelorinchus* reported to date from waters off New Zealand and southern Australia, only three, i.e. *C. biclinozonalis* sp. nov., *C. australis* and *C. aspercephalus* Waite, 1911, are characterized by ventral surface of head mostly covered with scales and a large dermal window of ventral light organ.

Similarities between the new species and *C. australis* are: large size, reaching in excess of 600 mm TL for the new species and 500 mm TL for *C. australis* (McCulloch, 1926); spinule rows on body scales subparallel; both appear to occupy water of the upper continental slope and have been recorded from inshore areas (Fig. 7). The two species are, however, easily distinguished by the terminal snout spine (no spines in *C. australis*), dusky first dorsal fin (distal half black in *C. australis*), two oblique dark bands on the body (some pale and dark longitudinal stripes in *C. australis*) and certain morphometric differences shown in Fig. 6.

The new species can be distinguished from sympatric *C. aspercephalus* by: the body markings (numerous pale and dark oblique and vertical stripes on body in *C. aspercephalus*); larger scales on body (usually 4~5 vs. 6~9 below mid-1D.); longer snout (33~39 vs. 8~22% HL); shorter barbel (9~15 vs. 15~20% HL). *C. aspercephalus* is probably confined to New Zealand's upper continental slope waters. *C. biclinozonalis* generally lives shallower on the slope than *C. aspercephalus* but the vertical distributions of the two species overlap.

Discussion

In all previous records, *Coelorinchus biclinozonalis* sp. nov. from New Zealand waters have been erroneously identified as *C. australis* (Richardson, 1839). The original description of *Lepidoleprus australis* Richardson, 1839, was based on a specimen from Port Arthur, Tasmania and reported with no illustrations, and gave few details of the holotype. Richardson's (1839) account was insufficient to distinguish *C. australis* from *C. biclinozonalis* and other related species of *Coelorinchus*. A more detailed description with illustrations was published later (Richardson, 1841), which are enough to identify *C. australis*, but was completely overlooked by later macrourid workers.

Günther's (1862) redescription of the holotype was also insufficient. Günther (1887) compared specimens of the New Zealand species with the type-specimen of *C. australis*, and noted that a large New Zealand specimen of 21 inches total length (ca. 533 mm) had a longer snout than the smaller (17 inches, ca. 432 mm, total length) holotype from Port Arthur, Tasmania. He attributed this difference to changes associated with growth, but as shown in Fig. 6, this is a specific rather than an age related difference. Günther's (1887: 128) specimen from Wellington, New Zealand is probably *C. biclinozonalis* judging from his measurements of snout and head length and the locality.

The colouration and markings of *C. mortoni* Ogilby, 1897, reported as "dark brown above, light brown below, all the darker scales with a whitish oblong spot at their base" (Ogilby, 1897: 84) are now known to be those of *C. australis*. McCulloch (1911, 1929) listed *C. mortoni* as a synonym of *C. australis*, but he still gave New Zealand as a locality for *C. australis* and made no comment about New Zealand specimens. Scott (1970, 1979) reinstated *C. mortoni* as a valid species, but Scott's (1979) specimen was examined by the first author and was found to be *C. australis*.

Waite's specimens from New Zealand taken in the "Nora Niven" Expedition (Waite, 1911) and from east coast of Tasmania in the Australasian Antarctic Expedition (Waite, 1916) were examined by the first author and the former

were *C. biclinozonalis* and the latter were *C. australis*.

During the authors' recent cruises on research vessels around New Zealand, no specimens of *C. australis* were observed in catches from over 200 trawling stations. Neither are there any specimens of *C. australis* in the collection of the National Museum of New Zealand and the Auckland Institute and Museum. In contrast, a number of specimens of *C. biclinozonalis* are preserved in those museums.

Acknowledgments

We are grateful to Dr. Tetsuya Sato and Mr. Tatsuki Nagai (FSFL), Mr. Peter Last (Tasmanian Fisheries Development Authority), Mr. Yoshitaka Yabumoto (Kitakyushu Natural History Museum), the members of the R/Vs "Kaiyo Maru", "James Cook" and "Wesermünde" and the staff of the Fisheries Research Division, Wellington, for obtaining the specimens to enable us to make this study. We would like to express our appreciation to Drs. John R. Paxton, Douglas F. Hoese and Ms. Helen K. Larson (AMS), Mr. A. B. Stephenson (AIM), Dr. G. A. Tunnicliffe and Mr. Robert Ogilbie (CMC) and Mr. Cris B. Tassell and Mr. Robert H. Green (QVM) for the loan of specimens; Dr. Graham S. Hardy (NMNZ) for permission to examine numerous specimens; Dr. Marinus Boeseman (Rijksmuseum van Natuurlijke Historie, Leiden), Mr. E.O.G. Scott (Launceston), Dr. Donald A. Robertson (Fisheries Research Division, Wellington) and Mr. A. P. Andrews (Tasmanian Museum, Hobart) for providing literature and information on specimens, Dr. Teruya Uyeno (NSMT) for encouragement throughout this study. Special thanks are due to Dr. Tomio Iwamoto of California Academy of Sciences for providing this joint work, literature and comments on the text, Dr. Osamu Okamura of Kochi University for information on the holotype of *C. australis* and critical review of the manuscript and Dr. Yosiaki Tominaga of University of Tokyo for giving valuable advice on improving the manuscript.

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ニュージーランド産ソコダラ科の1新種とオーストラリア産 *C. australis* の再記載

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新種 *Coelorinchus biclinozonalis* と *C. australis* は頭部下面に鱗があること、肛門直前に大きな発光器を備えること、体の鱗が大きいこと、大陸棚上に普通に見られる種類であることなどの共通点があるため、従来同種として扱われてきた。しかし、*C. biclinozonalis* は吻棘を備え、頭部変形鱗列が比較的発達し、胴部に明瞭な幅広い暗色斜走横帯がある (*C. australis* では約6条の狭い淡白色縦帯がある) などの点で区別できる。*C. biclinozonalis* はニュージーランド周辺の大陸棚上に、*C. australis* はオーストラリア南東部、特にタスマニア周辺に分布が限定されていると思われる。

(荒井: 140 東京都品川区西大井 6-18-21; McMillan: ニュージーランド)