

New Deep-water Fish Records from the Great Barrier Reef, Australia¹

STEVEN H. KRAMER,^{2,3} SHARON H. KRAMER,^{2,4} AND STEPHEN J. NEWMAN²

ABSTRACT: Eighteen new fish records for the Great Barrier Reef, including seven new records for Australia, are reported from line-fishing surveys in deeper waters (> 60 m) off the central and northern sections of Australia's Great Barrier Reef. The following 18 species represent new records for the Great Barrier Reef region, with the seven for Australia noted with an asterisk (*): the serranids **Epinephelus magniscuttis* Postel et al., *E. morrhua* (Valenciennes), *E. octofasciatus* Griffin, *E. radiatus* (Day), and **Saloptia powelli* Smith; the branchiostegid *Branchiostegus wardi* Whitley; the lutjanids *Etelis carbunculus* Cuvier, *E. coruscans* Valenciennes, *E. radius* Anderson, *Paracaesio kusakarii* Abe, **P. stonei* Raj & Seeto, **Pristipomoides argyrogrammicus* (Valenciennes), **P. auricilla* (Jordon et al.), *P. filamentosus* (Valenciennes), **P. flavipinnis* Shinohara, *P. multidentis* (Day), and **P. zonatus* (Valenciennes); and the lethrinid *Wattsia mossambica* (Smith). Further exploratory fishing effort along the Great Barrier Reef and in the Coral Sea is likely to result in discovery of more deep-water fish of Indo-Pacific distribution.

THE GREAT BARRIER REEF (GBR) extends 2300 km from Lady Elliot Island in the south to Papua New Guinea in the north and is composed of numerous reefs, shoals, and islands. In the south, the outer barrier reefs are found as much as 260 km offshore. Proceeding north, the outer reef is much closer in and can be found within 40 km of the coast. The continental shelf area protected by the GBR is rarely greater than 60 m deep. The fish fauna in these shallower waters has been well documented, with over 1111 species recorded (Randall et al. 1990). The commercial and recreational demersal fisheries in these waters usually target coral trout (*Plectropomus* sp.) and other groupers, snappers, and emperors. Deeper waters (>60 m) outside the outer barrier reefs and in channels between them have not received as much attention and are relatively unexplored.

A survey sponsored by the Australian

Commonwealth Government's Fisheries Development Trust Account investigated an alternative fishery for small trawlers in 1986, off Townsville, Australia, in the vicinity of Myrmidon Reef (18° 16' S lat., 147° 24' E long.) (Anonymous 1986). Equipment consisted of droplines with baited circle hooks suspended from floats. Catches were low, with a total of 32 fish composed of 11 different species from two survey trips. The only deep-water snapper species reported were four rosy jobfish, *Pristipomoides filamentosus* (Valenciennes), identified in the study as *Aprion microlepis* Bleeker following Grant (1982).

In January 1992, a retail seafood market in Townsville, Queensland, donated three specimens (*Pristipomoides filamentosus*, *P. multidentis* (Day), and *Epinephelus morrhua* [Valenciennes]) that were being marketed as rosy jobfish (Lutjanidae) and as deep-water cod (Serranidae). The fish were reportedly caught northwest of Myrmidon Reef in 75 to 150 m of water using hydraulic-powered handline reels equipped with circle hooks and baited with squid or fish (J. Thomas, F.V. Kelgar, pers. comm.). The presence of these previously unrecorded species in the local market prompted our exploratory bottom fish surveys to investigate the potential fishery. Here

¹ Manuscript accepted 3 February 1993.

² Australian Institute of Marine Science, P.M.B. No. 3, Townsville, MC, Queensland 4810, Australia.

³ Current address: 3605 Amigos Ct., Oceanside CA 92056.

⁴ Current address: Southwest Regional Marine Research Program, 9500 Gilman Dr. Dept. 0232, La Jolla CA 92093-0232.

we report new fish records from three deep-water (>60 m) surveys on the continental slope of the outer GBR.

MATERIALS AND METHODS

Three surveys were conducted off the GBR in 1992 totaling 57.8 hr of fishing effort or 115.6 total handline hr. The first and third surveys (16–21 April and 26–31 December) were in the vicinity of Myrmidon Reef in the central section of the GBR (Figure 1). The second survey (19–29 June) was conducted at No. 9 and No. 10 Ribbon Reefs, Lizard Island area, in the northern section of the GBR (14° 40' S lat., 145° 41' E long.) (Figure 1).

Hawaiian-style deep-water handlines were used to survey depths ranging from 40 to 340 m. Handline rigs consisted of two hand-powered Alvey "Reef Queen" reels (Alvey Australia Propriety Ltd., Brisbane) containing ca. 365 m of braided, prestretched, 120-kg test, dacron line. Terminal gear consisted of four 12/0 mustad circle hooks on 45-kg monofilament leaders attached to a 68-kg monofilament mainline with swivels and a 2-kg weight. Cut squid and Western Australian pilchard [*Sardinops neopilchardus* (Steindachner)] were used as bait.

Fishing operations were conducted during the day. The vessel drifted over bottom features such as ledges, pinnacles, and drop-offs on the outer slope of the continental shelf that were located using a depth sounder. The rate of drift was controlled by using the engines to keep the bow of the vessel at a quartering angle into the dominant wind, sea, or current.

At capture, fish considered new records for the area were photographed next to a 30-cm rule, weighed, measured for standard length (SL) in mm, and frozen. One specimen of each species was deposited in the Western Australian Museum (WAM) for identification and cataloguing.

NEW RECORDS

Family SERRANIDAE Subfamily EPINEPHELINAE

Epinephelus magniscuttis Postel, Fourmanoir & Guézé

WAM P.30510-007, Plate IA.

This is a new record for Australia. A single specimen (448 mm SL) was taken in the handline survey at 290 m. Color was light brown with rows of dark spots along the back and mid-sides of the body. The species is distributed in the Indo-Pacific Ocean, with records reported from Africa, Réunion, Mauritius, Papua New Guinea, Fiji, New Caledonia, and the Philippines (Randall 1987, Randall and Heemstra 1991). *Epinephelus magniscuttis* as reported by Gloerfelt-Tarp and Kailola (1984) is actually *E. epistictus* (Randall and Heemstra 1991).

Epinephelus morrhua (Valenciennes)

WAM P.30509-005, Plate IB.

A single specimen (312 mm SL) was obtained from the fish market. Twenty individuals (325–555 mm SL) were captured on handlines in depths ranging from 90 to 208 m. This was the most abundant serranid species taken in our surveys. Color was pale brown with five narrow dark brown bands: one from the upper orbit to the posterior nape; one from the upper edge of the opercle to the base of the fifth to ninth dorsal spines; one from the orbit to the midside of the body, where it bifurcates to an upper branch that ends at the base of the anterior soft portion of the dorsal fin and a second branch that ends at the posterior base of the dorsal fin; the fourth running from the lower edge of the orbit through the upper base of the pectoral fin, continuing as a broken band to the upper caudal peduncle; and a last broad band from the upper edge of the maxillary groove to the corner of the preopercle. This species is reported from southern Japan to the western Indian Ocean, including the Red Sea, and in Australia from Melville Island (Northern Territory), southern Queensland, and northern New South Wales (Randall 1987, Randall and Heemstra 1991). *Epinephelus morrhua* has been confused with *E. radiatus* (Day) (Randall 1987, Randall and Heemstra 1991); *E. cometae* Tanaka is a synonym (Masuda et al. 1984, Randall 1987).

Epinephelus octofasciatus Griffin

WAM P.30509-007, Plate IC.

Four specimens (730–1140 mm SL) were

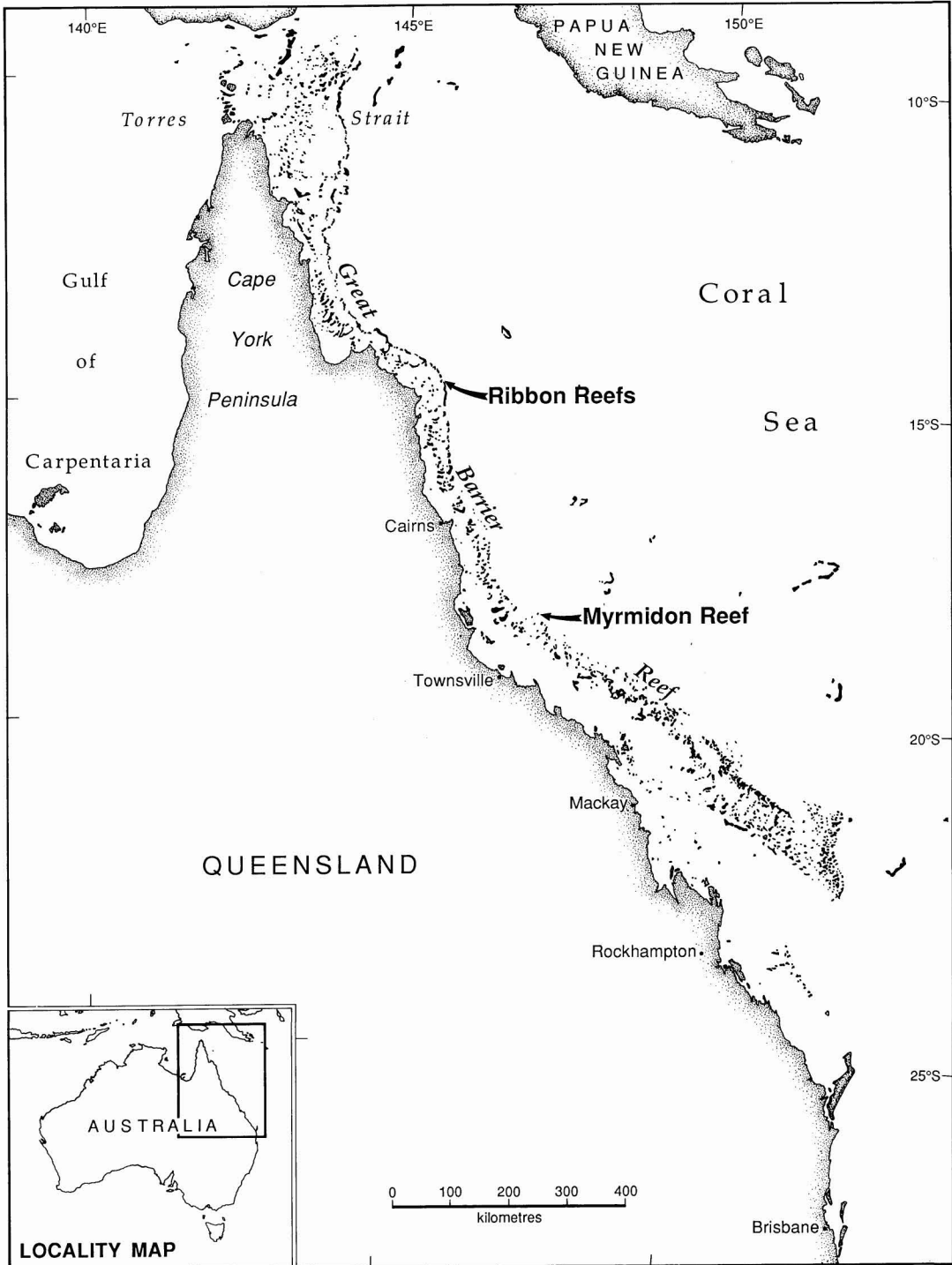
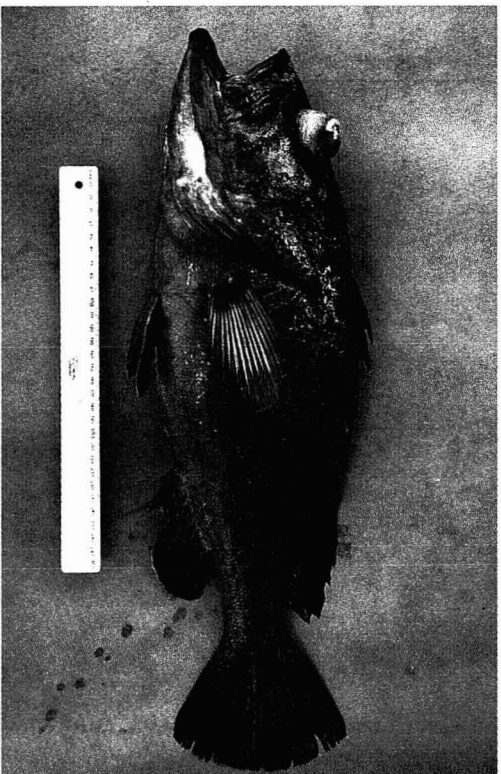
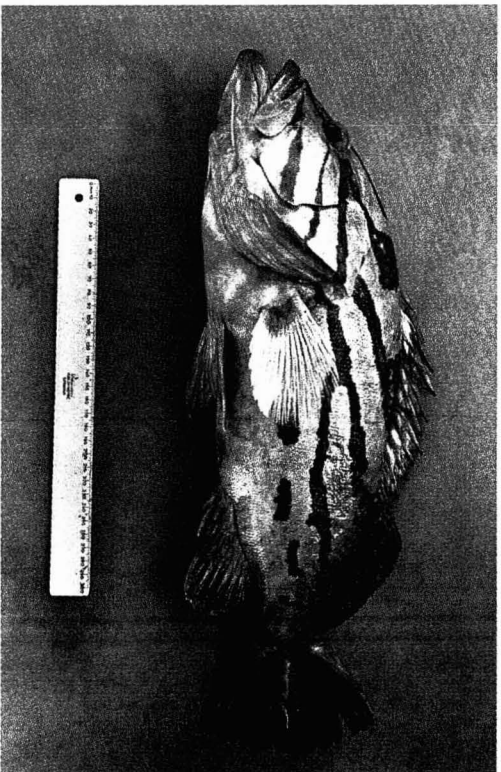


FIGURE 1. Location of the 1992 deep-water fisheries surveys.



A. Epinephelus magniscutis.



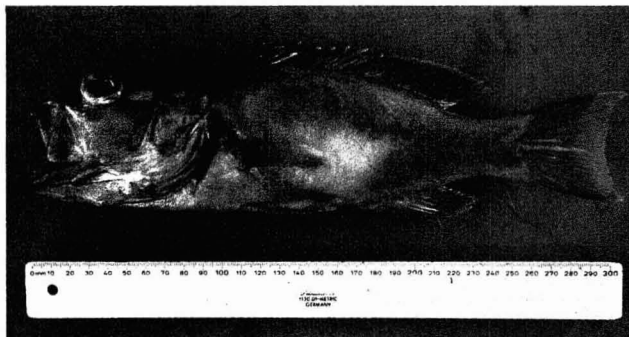
B. Epinephelus morrhua.



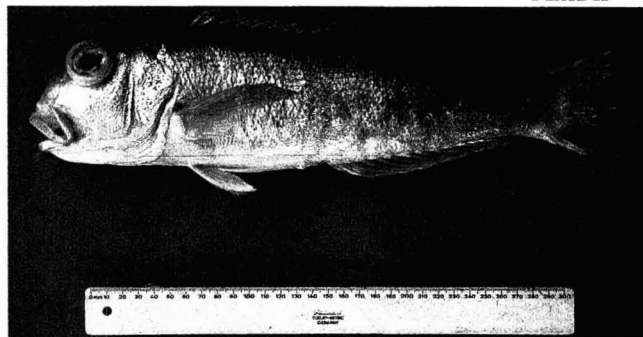
C. Epinephelus octofasciatus.



D. Epinephelus radiatus.



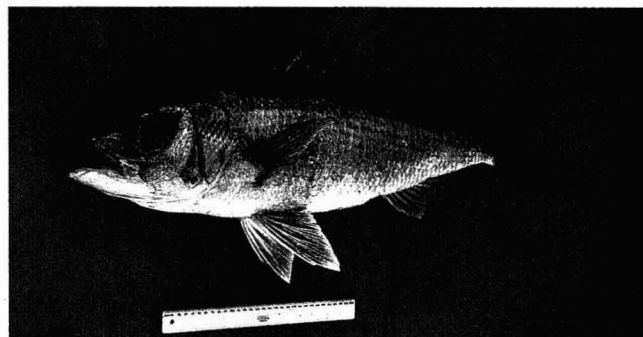
A. Saloptia powelli.



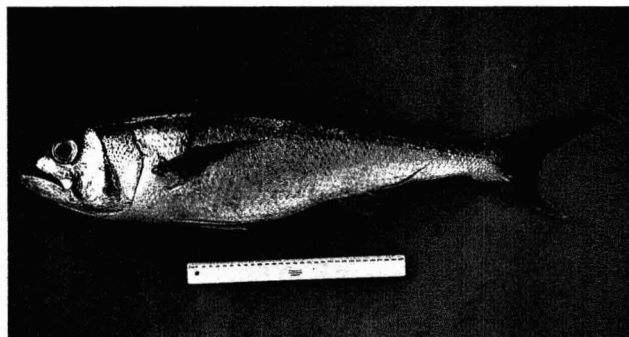
B. Branchiostegus wardi.



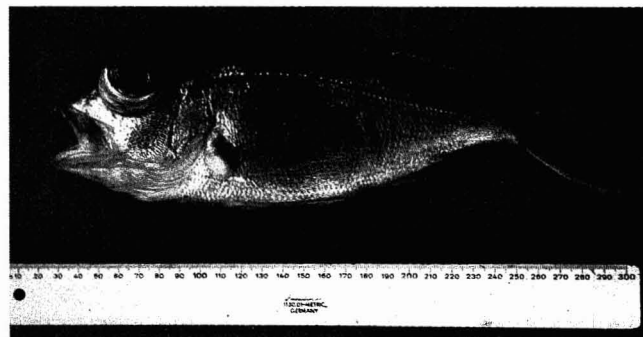
C. Etelis carbunculus.



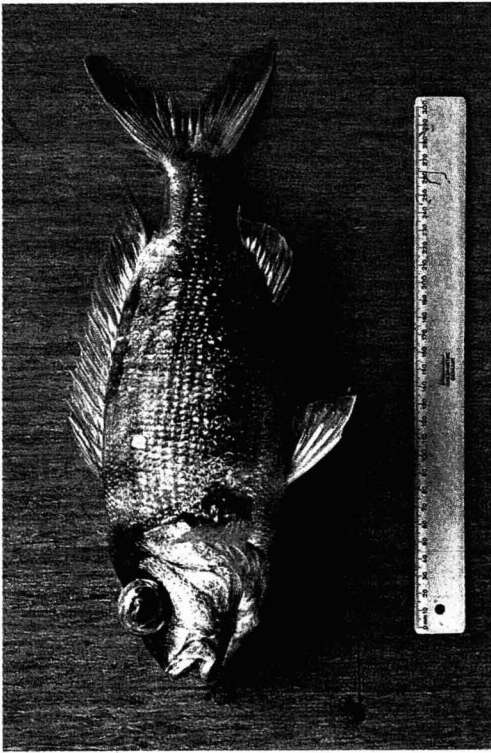
D. Etelis coruscans.



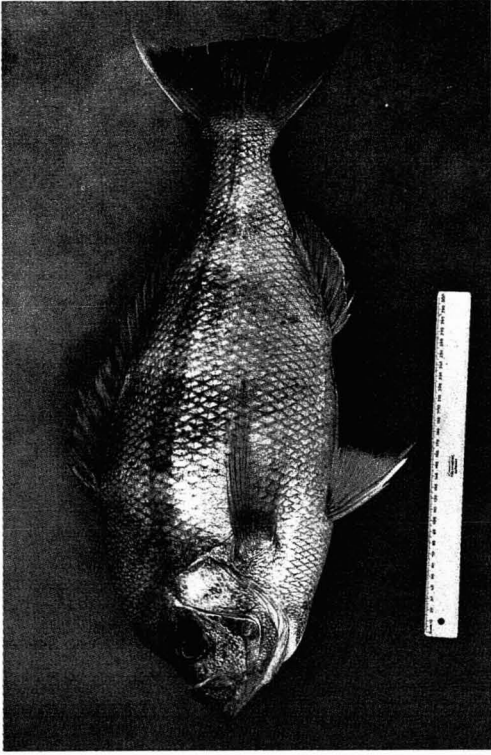
E. Etelis radiosus.



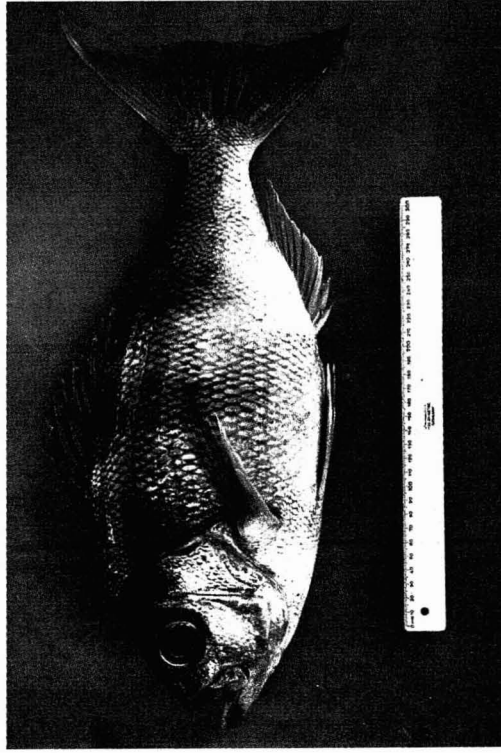
F. Pristipomoides argyrogrammicus.



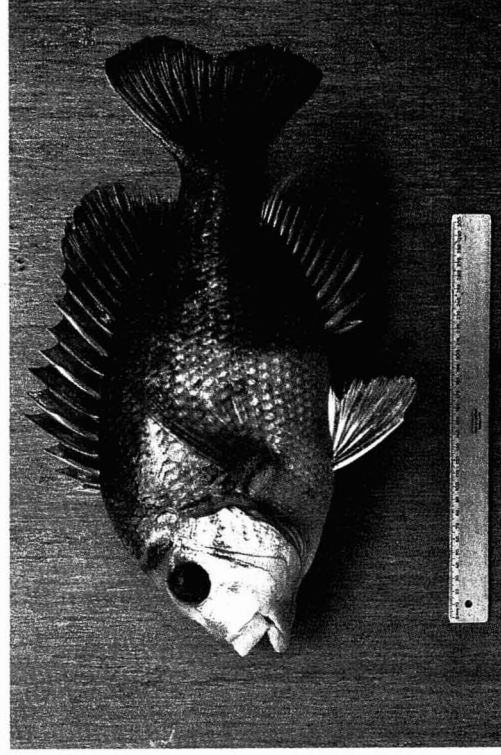
A. *Pristipomoides zonatus*.



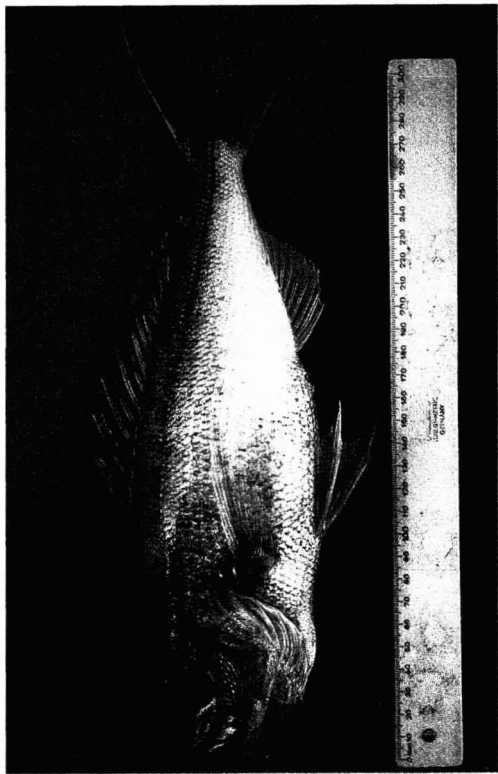
B. *Paracaesio kusakarui*.



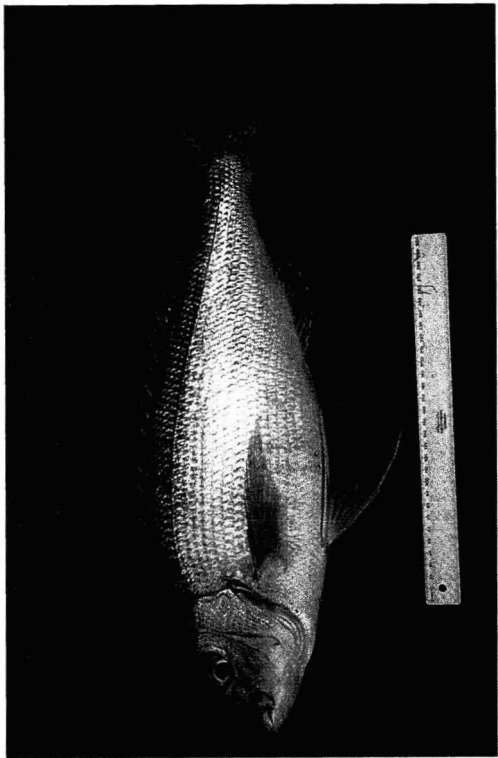
C. *Paracaesio stonei*.



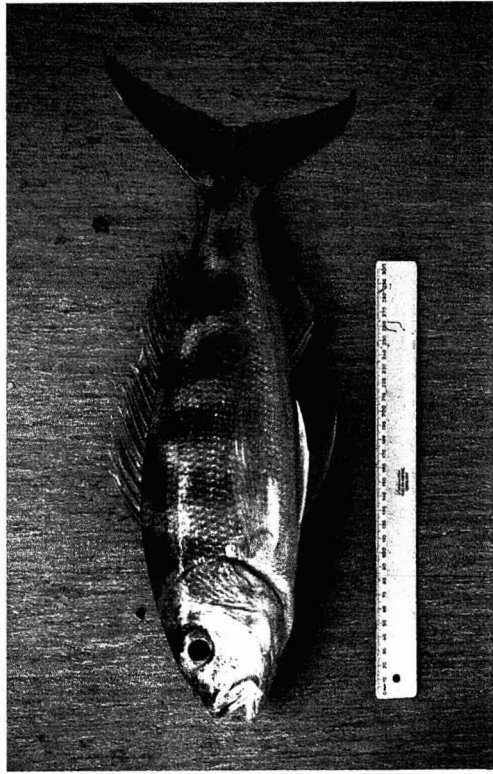
D. *Wattisia mossambica*.



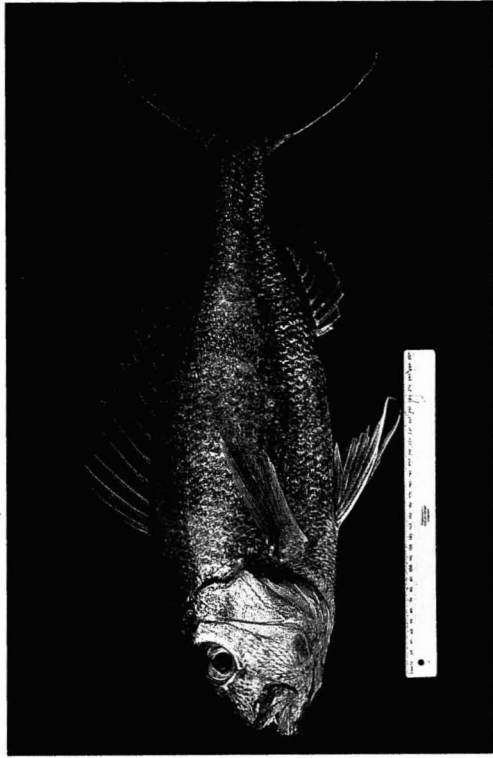
A. *Pristipomoides auricilla*.



B. *Pristipomoides filamentosus*.



C. *Pristipomoides flavipinnis*.



D. *Pristipomoides multidentis*.

taken in the handline survey at depths ranging from 150 to 230 m. Color was gray with seven broad dark brown bars from the nape to the caudal peduncle, extending from the dorsal fin and passing ventrally. *Epinephelus octofasciatus* has often been identified as *E. septemfasciatus* (Thunberg) (Randall and Heemstra 1991). However, *E. septemfasciatus* is known only from Japan and China. *Epinephelus octofasciatus* is found from East Africa to French Polynesia and from Japan to Western Australia (Masuda et al. 1984, Randall 1987, Randall and Heemstra 1991).

Epinephelus radiatus (Day)

WAM P.30509-006, Plate ID.

Five specimens (416–550 mm SL) were taken by handline at depths ranging from 190 to 275 m. Color was light brown with five broad dark brown bands: one from the nape to the eye; one from the spinous dorsal fin to the top of the opercle; one that originates from the posterior spinous dorsal and anterior soft dorsal fin that passes downward and branches; one from the soft dorsal fin that also passes ventrally and branches; and the last on the caudal peduncle. Our specimens had dark brown spots in one or more rows between the dark bands. This species is distributed in the Indo-West Pacific Ocean (Randall 1987, Randall and Heemstra 1991) and is recorded from the northwestern shelf of Australia (Gloerfelt-Tarp and Kailola 1984, Sainsbury et al. 1985, Allen and Swainston 1988).

Saloptia powelli Smith

WAM P.30510-008, Plate IIA.

This is a new record for Australia. One specimen (252 mm SL) was taken in the June handline survey at 200 m. Color was yellow dorsally, shading to pink ventrally. This species is known from the West Pacific Ocean to the South China Sea (Randall 1987, Randall and Heemstra 1991).

•Family BRANCHIOSTEGIDAE

Branchiostegus wardi Whitley

WAM P.30510-009, Plate IIB.

A single specimen (322 mm SL) was taken in the handline survey at 315 m. Color was

brownish green dorsally and silver ventrally, with a purple snout. The caudal fin had two parallel yellow bands, with the dorsal lobe yellowish and the ventral lobe with a black triangle. This species is known in Australia from southern Queensland to Sydney, from Papua New Guinea, and from New Caledonia and Vanuatu (Dooley 1978, Sundberg and Richards 1984, Brouard and Grandperrin 1985).

Family LUTJANIDAE

Subfamily ETELINAE

Etelis carbunculus Cuvier

WAM P.30510-001, Plate IIC.

Nine individuals (190–652 mm SL) were caught on handlines in depths ranging from 150 to 318 m. Color was bright red, becoming paler ventrally. This species is commercially valuable in Guam, Hawaii, New Caledonia, and other areas of the Indo-Pacific Ocean (Masuda et al. 1984, Allen 1985, Polovina 1987, Anonyme 1989, Dalzell and Preston 1992). It is reported from northwestern Australia (Gloerfelt-Tarp and Kailola 1984, Sainsbury et al. 1985, Allen and Swainston 1988) and Papua New Guinea (Sundberg and Richards 1984).

Etelis coruscans Valenciennes

WAM P.30510-002, Plate IID.

Sixteen individuals (329–837 mm SL) were taken by handline in depths ranging from 215 to 335 m. They were the largest lutjanids taken in our survey. Color was bright red, becoming silvery pink ventrally, with long, reddish caudal fin lobes. This species is important in commercial fisheries of several Indo-Pacific areas (Masuda et al. 1984, Allen 1985, Polovina 1987, Anonyme 1989, Dalzell and Preston 1992). Grant (1991) reported the species from southern Queensland and northern New South Wales.

Etelis radiosus Anderson

WAM P.30510-003, Plate IIE.

Three individuals (338–778 mm SL) were caught on handlines at depths from 185 to 275 m. Coloration on the back and upper sides was reddish to dark red and lighter ventrally.

This species is taken in commercial handline catches in many areas of the Indo-West Pacific (Masuda et al. 1984, Allen 1985, Dalzell and Preston 1992). It is reported from northwestern Australia (Gloerfelt-Tarp and Kailola 1984, Allen and Swainston 1988) and Papua New Guinea (Sundberg and Richards 1984).

Pristipomoides argyrogrammicus
(Valenciennes)

WAM P.30510-004, Plate IIF.

This is a new record for Australia. Seven individuals (196–251 mm SL) were taken on handlines; they were the smallest of the *Pristipomoides* species taken and were caught at the greatest depths (250–335 m). Color was pinkish on body and yellow dorsally with bright blue spots. The dorsal and caudal fins were yellow. This species is widespread in the Indo-West Pacific Ocean (Allen 1985).

Pristipomoides auricilla (Jordan, Evermann & Tanaka)

WAM P.30596-001, Plate IIIA.

This is a new record for Australia. One specimen (277 mm SL) was taken by handline at 150 m during the December survey in the Myrmidon Reef area. Color was purplish brown with yellow spots on the sides. The upper lobe of the caudal fin and the dorsal fin were yellow. This species is widespread in the tropical Indo-Pacific Ocean from Hawaii to the Andaman Sea and northward to Japan (Allen 1985) and from New Caledonia (Brouard and Grandperrin 1985) and Papua New Guinea (Sundberg and Richards 1984).

Pristipomoides filamentosus (Valenciennes)

WAM P.30509-001, Plate IIIB.

We obtained two specimens (305 and 310 mm SL) from the fish market. Fifty-two individuals (210–562 mm SL) were caught at depths between 95 and 210 m. This was the most abundant species in our survey. Color was pale lavender or pinkish dorsally, shading to a silvery hue ventrally. A convoluted network of narrow yellow lines on a lavender snout was typical of our specimens. The dorsal fin was clear with yellow spots turning to orange spots posteriorly. This species is known from the tropical Indo-Pacific Ocean

from Hawaii to East Africa, extending northward to southern Japan (Allen 1985). Australian records include the northwest shelf (Gloerfelt-Tarp and Kailola 1984, Sainsbury et al. 1985, Allen and Swainston 1988), southern Queensland, northern New South Wales (Grant 1991), and Norfolk Island (Francis 1991). It is a commercially important handline species in Hawaii (Polovina 1987) and other areas of the West Pacific (Dalzell and Preston 1992).

Pristipomoides flavipinnis Shinohara

WAM P.30509-002, Plate IIIC.

This is a new record for Australia. Forty-seven individuals (281–420 mm SL) were caught at depths of 115–240 m. This was the second most abundant species in our survey. Color was pale lavender or pinkish dorsally, shading to a silvery hue ventrally. Pectoral fins were yellow, with a network of dark spots on the head and a lavender snout. Found throughout the tropical West Pacific Ocean, this is a commercially important species in some areas (Allen 1985, Polovina 1987, Anonyme 1989, Dalzell and Preston 1992).

Pristipomoides multidens (Day)

WAM P.30509-003, Plate IIID.

We obtained one specimen (SL 305 mm) from the fish market. Eight individuals (478–580 mm SL) were captured from depths ranging from 77 to 245 m. Color was yellowish to rosy, with about six broken golden stripes on the sides. The side of the snout and cheek had two golden stripes bordered with blue, and the top of the head had a series of chevron-shaped yellow bands with apices directed anteriorly. The dorsal fin had yellowish rows of spots. This species is widely distributed in the tropical Indo-Pacific Ocean from Samoa to the Red and Arabian seas and from southern Japan southward to northwestern Australia (Gloerfelt-Tarp and Kailola 1984, Allen 1985, Sainsbury et al. 1985, Allen and Swainston 1988).

Pristipomoides zonatus (Valenciennes)

WAM P.30509-004, Plate IVA.

This is a new record for Australia. Fourteen individuals (279–372 mm SL) were captured

at depths between 120 and 295 m. Color was pink, with four broad oblique yellow bars on the sides and with yellow dorsal and caudal fins. This species is widespread in the Indo-Pacific Ocean and is a commercially important fish in many areas (Allen 1985, Polovina 1987, Anonyme 1989, Dalzell and Preston 1992).

Subfamily APSILINAE

Paracaesio kusakarii Abe

WAM P.30510-005, Plate IVB.

Fifteen specimens (324–615 mm SL) were caught at depths between 110 and 310 m. Color was gray to light brown dorsally and white ventrally, with four brown vertical bars on the body and gray to yellowish fins. This species may have potential for commercial fisheries (Allen 1985). It is distributed in the western Pacific (Masuda et al. 1984, Allen 1985) and is reported from the northwestern shelf of Australia (Gloerfelt-Tarp and Kailola 1984).

Paracaesio stonei Raj & Seeto

WAM P.30510-006, Plate IVC.

This is a new record for Australia. Twelve specimens (379–456 mm SL) were caught at depths between 200 and 318 m. Color was gray to light brown dorsally and white ventrally, with five vertical brown bars on the body and grayish fins with the caudal fin more yellow. This species is known from the Ryukyu Islands, Fiji, and Vanuatu (Raj and Seeto 1983, Masuda et al. 1984, Allen 1985, Brouard and Grandperrin 1985).

Family LETHRINIDAE

Subfamily MONOTAXINAE

Wattsia mossambica (Smith)

WAM P.30509-008, Plate IVD.

Nineteen specimens (256–512 mm SL) were caught at depths between 105 and 290 m. Color was yellowish gray with indistinct dark blotches on the body and yellowish fins. This species is known from the Indian and West Pacific oceans (Masuda et al. 1984, Carpenter and Allen 1989) and has been taken in trawl

fisheries on the northwestern Australian shelf (Gloerfelt-Tarp and Kailola 1984).

DISCUSSION

Most species found in our survey are widely distributed in the Indo-Pacific, but some have more limited ranges (Allen 1985, Randall and Heemstra 1991). Nine species from our survey have broad Indo-Pacific distributions: *Epinephelus octofasciatus*, *E. magniscuttis*, *E. morrhua*, *Etelis coruscans*, *E. carbunculus*, *Pristipomoides auricilla*, *P. filamentosus*, *P. multidentis*, and *P. zonatus*. Four species have Indo-West Pacific distributions: *Epinephelus radiatus*, *Etelis radiosus*, *Pristipomoides argyrogrammicus*, and *Wattsia mossambica*. Four species have a central to western Pacific Ocean distribution: *Pristipomoides flavipinnis*, *Paracaesio kusakarii*, *P. stonei*, and *Saloptia powelli*. Only one, *Branchiostegus wardi*, is restricted to a specific subprovince (eastern Australia, New Caledonia, Vanuatu, and Papua New Guinea).

Records of deep-water snappers and groupers from nearby areas including New Caledonia (Fourmanoir and Laboute 1976, Anonyme 1989), Vanuatu (Brouard and Grandperrin 1985), Norfolk Island (Francis 1991), Papua New Guinea (Sundberg and Richards 1984, Dalzell and Preston 1992), and northwestern Australia (Gloerfelt-Tarp and Kailola 1984, Sainsbury et al. 1985, Allen and Swainston 1988) suggested their probable presence on the GBR. However, there are deep-water fish from our survey of the GBR that have not been reported from the northwestern shelf of Australia, including members of the lutjanid, serranid, and branchiostegid families (Dooley 1978, Gloerfelt-Tarp and Kailola 1984, Sainsbury et al. 1985, Randall and Heemstra 1991). Lutjanids from our survey on the GBR not reported from the northwestern shelf include four *Pristipomoides* species (*P. auricilla*, *P. argyrogrammicus*, *P. flavipinnis*, and *P. zonatus*), *Etelis coruscans*, and *Paracaesio stonei*. Serranids not reported from the northwestern shelf include *E. magniscuttis* and *Saloptia powelli*. *Branchiostegus wardi* is not reported from the northwestern

TABLE 1
NUMBER, LENGTH, AND DEPTH RANGES OF NEW FISH RECORDS FROM MYRMIDON AND RIBBON REEFS AREAS

SPECIES	MYRMIDON REEF (APRIL)			RIBBON REEFS (JUNE)			MYRMIDON REEF (DECEMBER)		
	<i>n</i>	SL (mm) min.–max.	DEPTH (m) min.–max.	<i>n</i>	SL (mm) min.–max.	DEPTH (m) min.–max.	<i>n</i>	SL (mm) min.–max.	DEPTH (m) min.–max.
<i>Epinephelus magniscuttis</i>	0			1	448–448	290–290	0		
<i>E. morrhua</i>	6	343–510	146–208	3	420–505	90–190	11	325–555	140–180
<i>E. octofasciatus</i>	1	760–760	216–216	0			3	730–1140	150–230
<i>E. radiatus</i>	1	416–416	198–198	1	490–490	275–275	3	455–550	190–245
<i>Saloptia powelli</i>	0			1	252–252	200–200	0		
<i>Branchiostegus wardi</i>	0			1	322–322	315–315	0		
<i>Etelis carbunculus</i>	0			8	278–652	190–318	1	190–190	150–150
<i>E. coruscans</i>	0			13	329–837	215–335	3	510–725	230–260
<i>E. radiosus</i>	0			2	338–662	210–275	1	778–778	185–185
<i>Pristipomoides argyrogrammicus</i>	0			6	196–251	280–335	1	207–207	250–250
<i>P. auricilla</i>	0			0			1	277–277	150–150
<i>P. filamentosus</i>	45	210–562	95–210	7	268–422	135–205	0		
<i>P. flavipinnis</i>	13	281–400	128–190	8	307–358	115–240	26	258–420	125–190
<i>P. multidentis</i>	3	478–545	77–245	0			5	493–580	145–165
<i>P. zonatus</i>	3	287–372	137–198	10	279–332	120–295	1	316–316	190–190
<i>Paracaesio kusakarii</i>	0			8	420–536	110–310	7	324–615	150–180
<i>P. stonei</i>	0			12	379–456	200–318	0		
<i>Wattsia mossambica</i>	5	256–366	150–198	11	314–391	105–290	3	304–512	140–150
Total	77			92			66		

shelf. The differences in species composition may be due to bottom topography, gear selectivity, seasonal variation, or actual differences in distribution patterns of certain species.

Epinephelus octofasciatus has a very broad Indo-Pacific distribution, but was not known from eastern Australia until our survey. *Epinephelus octofasciatus* may be closely related to and confused with *E. ergastularius* Whitley, a serranid found only off the eastern coast of Australia (Randall and Heemstra 1991, Randall et al. in press).

The depth distribution of species from our survey compares favorably with those of species in studies from other areas (Table 1) (Sundberg and Richards 1984, Allen 1985, Brouard and Grandperrin 1985, Anonyme 1989, Haight 1989, Randall and Heemstra 1991, Dalzell and Preston 1992). Snappers of the genus *Pristipomoides* tended to be shallower (mean capture depth, 159 m), whereas those of the genus *Etelis* were captured at greater depths (mean capture depth, 251 m). *Paracaesio stonei* appeared to be restricted to greater depths (mean capture depth, 260 m) than *Paracaesio kusakarii* (mean capture depth, 178 m). The serranids, lethriniid, and branchiostegid also conformed to previously reported depth distributions.

The deeper-residing snappers of the genera *Etelis* or *Paracaesio* were not captured during our April survey in the Myrmidon Reef area despite fishing depths as great as 275 m (Table 1). However, *Etelis* species and *Paracaesio kusakarii* were captured in the December survey to the southeast of Myrmidon Reef. In addition, *Pristipomoides filamentosus* was not captured in the December survey, but in the April survey it composed the largest number of any fish species caught, which suggests that there may be seasonal variation in relative abundance or catchability. Differences in species composition of the catch may also be caused by the variations in bathymetry or fish habitat of the areas surveyed. The bottom at Myrmidon Reef and to the northwest (surveyed in April) drops precipitously to ca. 180 m, after which it becomes a gradual featureless slope. Off of the Ribbon Reefs (surveyed in June) the bottom continues to drop

rapidly to >1000 m. Southeast of Myrmidon Reef (surveyed in December) the bottom drops steeply to >300 m with high relief consisting of ledges, small peaks, and channels.

Many of the specimens from our survey were of a large size for their species, which is typical of unexploited fish stocks (Table 1) (Dalzell and Preston 1992). Eteline snappers and deep-water groupers have not been fished until recently in waters off the GBR and in the Coral Sea. Interest in commercial exploitation of this potential resource exists, with recent openings of two fisheries for deep-water species in eastern Australia. A Queensland drop-line fishery targeting the continental slope off of the GBR and a Commonwealth North Eastern Demersal Line Fishery (NEDLF) targeting the Coral Sea were opened in 1991. Current knowledge on size, age, distribution, and species composition of the targeted fish stocks is almost nonexistent. Deep-water bottom fish stocks appear to be very sensitive to exploitation pressure (Ralston et al. 1986). It is therefore imperative that additional research be conducted promptly on these unexploited fish stocks to ensure proper management.

ACKNOWLEDGMENTS

We thank the Australian Institute of Marine Science and the officers and crews of R.V. *Lady Basten* and R.V. *The Harry Messel*. Jesse, Sheila, and Gregg Brunskill; Rebecca Quinones; Tim Dejager; and Terry Garzotto ably assisted in the field. Technical assistance was provided by Robert Humphreys of the National Marine Fisheries Service, Honolulu Laboratory. We thank Five Star Seafoods, Townsville, for providing specimens. Gerald Allen (Western Australian Museum) kindly reviewed our manuscript and confirmed our species identifications, and John Randall (Bernice P. Bishop Museum) confirmed the identification of two serranids. Peter Doherty, Tony Fowler, and David Williams provided useful comments on our manuscript. This is AIMS contribution no. 626.

LITERATURE CITED

- ALLEN, G. R. 1985. FAO species catalogue. Vol. 6. Snappers of the world. An annotated and illustrated catalogue of lutjanid species known to date. FAO Fish. Synop. (125).
- ALLEN, G. R., and R. SWAINSTON. 1988. The marine fishes of northwestern Australia. A field guide for anglers and divers. Western Australian Museum, Perth, Australia.
- ANONYME. 1989. Essais de peche aux casiers sur la pente recifale externe de Nouvelle-Caledonie. Service territorial de la marine marchande et des peches maritimes, Territoire de Nouvelle Caledonie. July.
- ANONYMOUS. 1986. Droplining off Townsville—potential alternative fishery? Aust. Fish. 9:2–5.
- BROUARD, F., and R. GRANDPERRIN. 1985. Deep-bottom fishes of the outer reef slope in Vanuatu, South Pacific. *In* Proceedings, 17th Regional Technical Meeting on Fisheries, Noumea, New Caledonia, 5–9 August 1985. South Pacific Commission, ORSTOM, New Caledonia [English translation].
- CARPENTER, K. E., and G. R. ALLEN. 1989. FAO species catalogue. Vol. 9. Emperor fishes and large-eye breams of the world. An annotated and illustrated catalogue of lethriniid species known to date. FAO Fish. Synop. (125).
- DALZELL, P., and G. L. PRESTON. 1992. Deep reef slope fishery resources of the South Pacific. A summary and analysis of the dropline fishing survey data generated by the activities of the SPC Fisheries Programme between 1974 and 1988. Inshore Fish. Res. Proj. Tech. Doc. 2, South Pacific Commission, New Caledonia.
- DOOLEY, J. K. 1978. Systematics and biology of the tilefishes (Perciformes: Branchiostegidae and Malacanthidae), with descriptions of two new species. NOAA (Nat. Oceanic Atmos. Adm.) Tech. Rep. NMFS (Nat. Mar. Fish. Serv.) Circ. 411.
- FOURMANOIR, P., and P. LABOUTE. 1976. Poissons de Nouvelle Caledonie et des Nouvelles Hebrides. Les Editions du Pacifique, Papeete, Tahiti.
- FRANCIS, M. P. 1991. Additions to the fish faunas of Lord Howe, Norfolk, and Kermadec islands, Southwest Pacific Ocean. Pac. Sci. 45:204–220.
- GLOERFELT-TARP, T., and P. J. KAILOLA. 1984. Trawled fishes of southern Indonesia and northwestern Australia. Australian Development Assistance Bureau (ADAB), Australia; Directorate General of Fisheries, Indonesia; German Agency for Technical Cooperation, Federal Republic of Germany.
- GRANT, E. M. 1982. Guide to fishes. Queensland Department of Harbours and Marine, Brisbane, Australia.
- . 1991. Fishes of Australia. E.M. Grant Pty., Ltd., Queensland, Australia.
- HAIGHT, W. R. 1989. Trophic relationships, density and habitat associations of deep-water snappers (Lutjanidae) from Penguin Bank, Hawaii. M.S. thesis, University of Hawaii at Manoa, Honolulu.
- MASUDA, H., K. AMAOKA, C. ARAGA, T. UYENO, and T. YOSHINO, EDS. 1984. The fishes of the Japanese Archipelago. Tokai University Press, Tokyo.
- MUNRO, J. L. 1987. Workshop synthesis and directions for future research. Pages 639–659 *in* J. J. Polovina and S. Ralston, eds. Tropical snappers and groupers: Biology and fisheries management. Westview Press, Boulder, Colorado.
- POLOVINA, J. J. 1987. Assessment and management of deepwater bottom fishes in Hawaii and the Marianas. Pages 505–532 *in* J. J. Polovina and S. Ralston, eds. Tropical snappers and groupers: Biology and fisheries management. Westview Press, Boulder, Colorado.
- RAJ, U., and J. SEETO. 1983. A new species of *Paracaesio* (Pisces: Lutjanidae) from the Fiji Islands. Copeia 1983:450–453.
- RALSTON, S., R. M. GOODING, and G. M. LUDWIG. 1986. An ecological survey and comparison of bottom fish resource assessments (submersible versus handline fishing) at Johnston Atoll. U.S. Fish Wildl. Serv. Fish. Bull. 84:141–155.
- RANDALL, J. E. 1987. A preliminary synopsis of the groupers (Perciformes: Serranidae: Epinephelinae) of the Indo-Pacific Region.

- Pages 89–188 in J. J. Polovina and S. Ralston, eds. *Tropical snappers and groupers: Biology and fisheries management*. Westview Press, Boulder, Colorado.
- RANDALL, J. E., and P. C. HEEMSTRA. 1991. Revision of Indo-Pacific groupers (Perciformes: Serranidae: Epinephelinae), with descriptions of five new species. *Indo-Pac. Fishes* 20: 1–332.
- RANDALL, J. E., G. R. ALLEN, and R. C. STEENE. 1990. *The complete divers' and fishermen's guide to fishes of the Great Barrier Reef and Coral Sea*. Crawford House Press, Bathurst, Australia.
- RANDALL, J. E., D. F. HOESE, and P. LAST. (in press.) On the status of the Australian serranid fishes *Epinephelus ergastularius* Whitley and *E. thompsoni* Whitley. *Rec. Aust. Mus.*
- SAINSBURY, K. J., P. J. KAILOLA, and G. G. LEYLAND. 1985. *Continental shelf fishes of northern and northwestern Australia*. Clouston & Hall and Peter Pownall Fisheries Information Service, Canberra, Australia.
- SUNDBERG, P., and A. RICHARDS. 1984. Deep-sea bottom handline fishing in Papua New Guinea: A pilot study. *Papua New Guinea J. Agric. For. Fish.* 33: 55–62.

ADDENDUM

The range of several species of the deep-water fish community found off the GBR extends as far south as Lord Howe Island (LHI) (31.5° S). The lutjanids *Etelis coruscans*, *Pristipomoides filamentosus*, and *P. zonatus* were caught during exploratory fishing efforts off Lord Howe Island in 1992 (photographs provided by Paul Beaumont, F.V. *Capella III*). Equipment consisted of baited circle hooks attached to droplines suspended from floats. Depths of capture corresponded with those of our survey (P. Beaumont, F.V. *Capella III*, pers. comm.).

LHI is in subtropical latitudes, but has an essentially tropical fauna and the Pacific's southernmost coral reef (Francis 1991). The East Australian Current flows southward along the GBR and may transport larvae to LHI. Thus, the occurrence of species from the GBR deep-water fish community at the southern latitudes of LHI is expected.