

A GUIDE TO THE REEF FISHES  
OF PALMERSTON AND SUWARROW  
ATOLLS, COOK ISLANDS



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## ABSTRACT

Eighty-eight coral-reef fish species are recorded from Palmerston and Suvarrow atolls, from underwater observations and photographs. Habitat preferences, relative abundances, and observed depth ranges are given, along with a short description and underwater photograph of each.

## INTRODUCTION

An opportunity was taken during the New Zealand Oceanographic Institute—Royal Society of London Cook Islands Expedition in September 1981 to record and photograph as many reef fishes as possible from Palmerston and Suvarrow Atolls. The fish fauna of these atolls has not been recorded previously, although a checklist is available for another atoll in the northern Cook Islands, Manihiki Atoll (Bullivant and McCann, 1974).

This paper presents habitat and descriptive data of 88 species from 29 families and was compiled from notes and underwater photographs made during 20 dives at Palmerston and 7 at Suvarrow, representing approximately 65 man-hours underwater. The compilation is highly biased towards larger, easily approached species and includes only those that could be positively identified from underwater colour photographs, as collection of specimens was kept to a minimum. Although several species illustrated here have also been previously illustrated in popular books, e.g., Bagnis *et al.* (1974), Steene (1978), and Allen (1979), this present guide brings together those species likely to be encountered underwater, along with relative abundances and habitat descriptions, at the Cook Islands, which have a different fauna from other

southwestern Pacific reefs. As such, it should provide a useful guide for divers and visitors to these islands.

The major reference works used for identifications were Fowler (1928 *et seq.*), Munro (1967), Bagnis *et al.* (1974), Allen *et al.* (1976), Carcasson (1977), Grant (1978), Steene (1978), Allen (1979), and Garrick (1982). In addition, one of us (RJS) spent several days in August 1982 at the Australian Museum, Sydney, where our identifications were checked by Dr John Paxton and his colleagues.

The higher classification follows Munro (1967) and Carcasson (1977), and the numerical sequence of the species descriptions corresponds to the photographs at the end of the text.

The total of 88 species recorded here (Table 1) compares well with the 103 species recorded by Bullivant (Bullivant and McCann, 1974) who spent 85 days at Manihiki compared to our 13 at Palmerston and 3 at Suvarrow. The dominant families recorded by Bullivant and McCann (1974) were Holocentridae and Mullidae (each with eight species), whereas the present list shows Chaetodontidae, Acanthuridae, and Labridae to be numerically abundant; this reflects the sampling bias of scuba observations compared to nets, lines, and poisons as used by Bullivant. Scuba observations reflect more accurately those species likely to be encountered at various underwater habitats on the coral reef.

The inhabitants of Palmerston Atoll rely heavily on fish as their main protein source. A large variety of fish is eaten and most are speared on the reef crest during low tide. Occasionally, gill nets are placed across the smaller reef passages, and trevally, tuna, or the prized castor-oil fish, *Ruvettus prometheus*, are sometimes fished for with lines outside the reef at night. The principal food fishes are the parrotfishes *Scarus gibbus* and *Scarus chlorodon* and the surgeonfishes *Ctenochaetus striatus* and *Acanthurus triostegus*.

## SPECIES LIST

Family **GALEORHINIDAE**  
(Dogfishes)

1. *Triaenodon obesus* (Rüppell, 1835).  
White-tip Lagoon Shark.

Maximum observed length 1.5 m. Common throughout Palmerston lagoon at 2–20 m depth, but rare outside the reef. Not recorded from Suwarrow. Pale grey, with white tips to dorsal and caudal fins.

Family **SYNODONTIDAE**  
(Lizardfishes)

3. *Synodus* sp.  
Lizardfish.

A common species in shallow water (1–3 m depth) in Suwarrow lagoon, often among green algae. White, with brown and red blotches arranged in five distinct bands encircling the body. Average length 10 cm.

5. *Gymnothorax flavimarginatus* (Rüppell, 1828).  
Leopard Moray.

A large species, up to 2 m long, and seen occasionally only in Palmerston lagoon. The body is brown with dark brown to black spots over the side, decreasing in size towards the ventral surface. There is a conspicuous dark patch around the gill opening.

Family **HOLOCENTRIDAE**  
(Squirrelfishes)

7. *Adioryx spinifer* (Forskål, 1775).  
Spiny Squirrelfish.

Length 25 cm. Common both in the lagoon and outside the reef at Palmerston, 3–10 m depth. Not seen at Suwarrow. Bright red to orange, with yellow fins and red dorsal fin. It has a long preopercular spine which extends back to the gill opening.

Family **CARCHARHINIDAE**  
(Typical Sharks)

2. *Carcharhinus amblyrhynchos* (Bleeker, 1856).  
Grey Shark.

Maximum observed length 2.0 m. Common in the lagoon at Palmerston at 5–22 m depth, and frequent on the outer reef slope at 5–15 m. Common outside Suwarrow reef but not seen inside, although this may be unusual. Dark grey, with black posterior edges to paired and caudal fins, but dorsal fin plain grey. See Garrick (1982) for descriptions of the confused identifications generally of grey sharks.

Family **MURAENIDAE**  
(Moray Eels)

4. *Echidna leucotaenia* Schultz, 1943.  
Grey Moray.

Length 30 cm. Only three specimens observed in shallow pools at night on the reef crest during low tide, Palmerston. Pale grey, with dark grey small spots over the entire dorsal surface of the body.

Family **BOTHIDAE**  
(Left-handed Flounders)

6. *Bothus mancus* (Broussonet, 1782).  
Leopard Flounder.

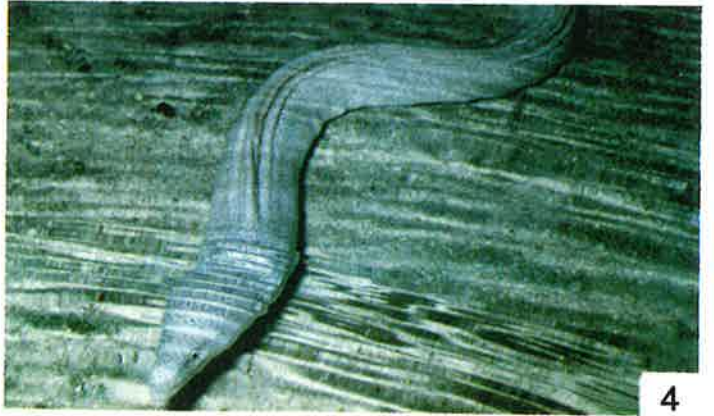
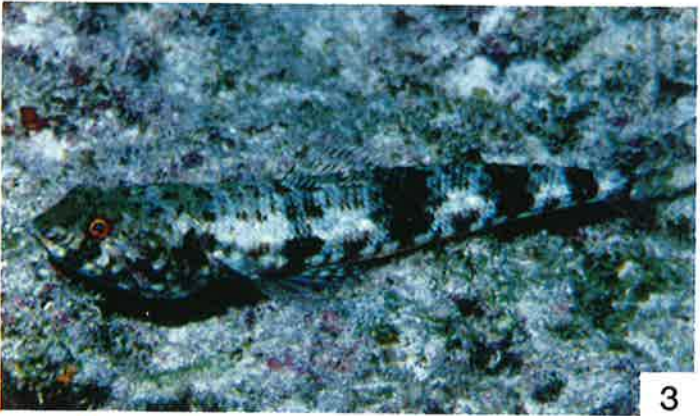
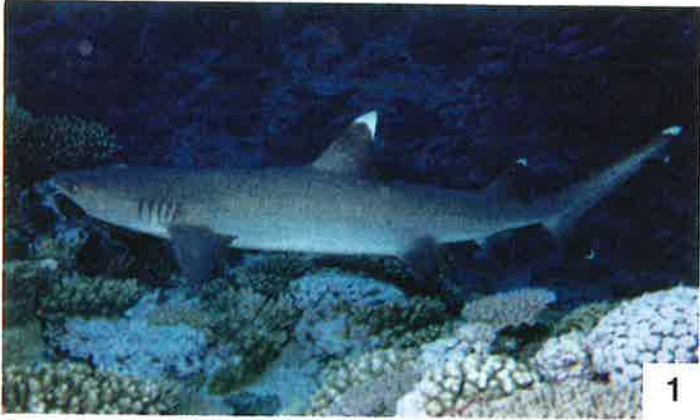
Length 30 cm. Only one specimen speared, in shallow water in Palmerston lagoon. The pale body is marked with lavender-blue blotches, each outlined with a dark blue edge. Fins edged with black.

Family **AULOSTOMIDAE**  
(Flutemouths, Trumpetfishes)

8. *Aulostoma chinensis* (Linnaeus, 1766).  
Trumpetfish.

Length 60 cm. At least one individual seen on most dives in and outside the reef at Palmerston between 3 and 6 m depth. Usually bright yellow, with black spots on the caudal peduncle, but able to change colour to brown or grey, especially at night.





Family **FISTULARIIDAE**  
(Cornetfishes)

9. *Fistularia petimba* Lacépède, 1803.  
Smooth Cornetfish.

Length 75 cm. Only one specimen seen, at night, in Palmerston lagoon at 5 m depth. Silver-green, with very elongated snout and long tail filament.

Family **CARANGIDAE**  
(Trevally, Jacks)

Several species were seen, but could not be identified positively without specimens. However, the following three species were recognised.

11. *Caranx lugubris* Poey, 1861.  
Black Jack.

Length 70 cm. Common outside Suwarrow reef, around 10 m depth. Dark blue, with almost black fins and tail.

13. *Gnathanodon speciosus* (Forskål, 1775).  
Golden Trevally.

Length 60 cm. Common in Palmerston lagoon around large coral heads, 5–10 m depth. Most specimens seen were small, probably juveniles. Bright silvery-gold, with yellow fins and 5–6 dark bands down the sides of the body.

15. *Epinephelus fasciatus* (Forskål, 1775).  
Black-tipped Rock-cod.

Length 25 cm. One juvenile seen outside Palmerston reef at 20 m depth in a small cave. Head and anterior third of dorsal body yellow-brown, rest of body white. Fins white, edged with yellow, except spiny dorsal fin which is brown and edged in black.

Family **SCOMBEROMORIDAE**  
(Spanish Mackerel)

10. *Scomberomorus* sp.

Length 80 cm. Occasionally seen outside the reefs at Palmerston and Suwarrow, often below 20 m depth. Silver, with green-blue fins, but difficult to identify from photographs.

12. *Caranx melampygus* Cuvier & Valenciennes, 1833.  
Blue Jack.

Length 90 cm. Common outside Palmerston and Suwarrow reefs down to 50 m depth. A paler blue-green than *C. lugubris* and often speckled with fine brown spots over the head and dorsal body.

Family **SERRANIDAE**  
(Groupers, Rock-cod, Coral-trout)

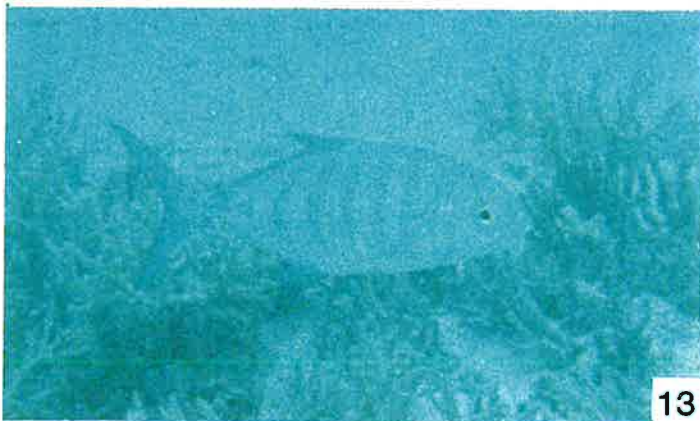
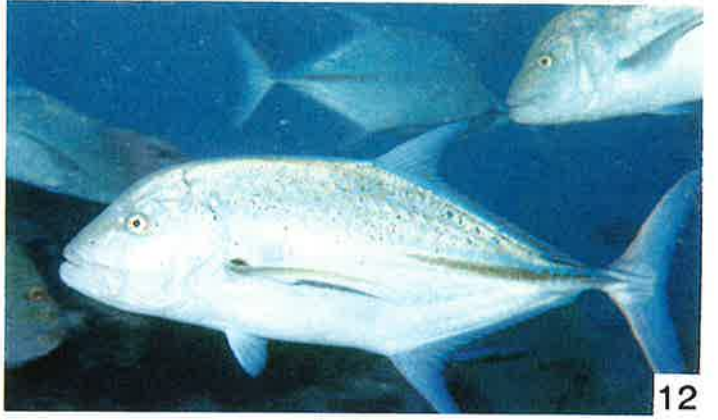
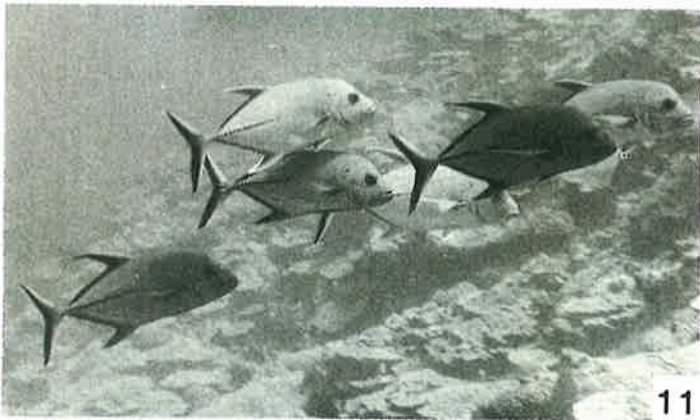
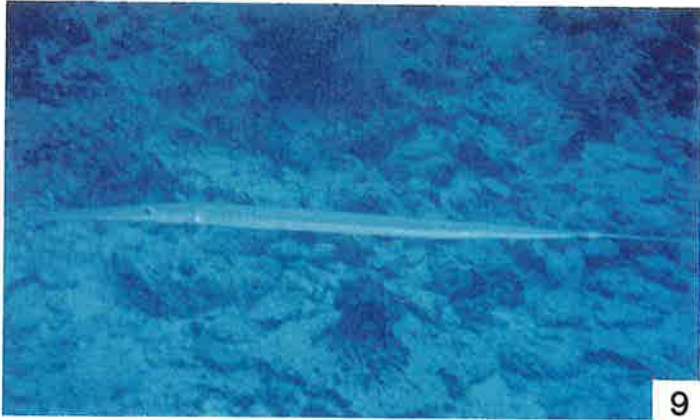
14. *Cephalopholis argus* Bloch & Schneider, 1801.  
Blue-spot Grouper.

Length 40 cm. Palmerston lagoon and outer reef slope. Common between 4 and 10 m depth, usually under coral overhangs. Reddish-brown with entire body and fins covered in circular blue spots ringed with black. Most specimens have bright blue edges to all fins.

16. *Epinephelus merra* Bloch, 1793.  
Honeycomb Rock-cod.

Length 45 cm. Common under ledges between 3 and 10 m depth in Palmerston lagoon and outside the reef. Body pale fawn, but honeycombed with dark and light brown patches which cover the entire body and fins.





17. *Plectropomus maculatus* (Bloch, 1790).  
Coral-trout.

Length 90 cm. Common outside Palmerston and Suwarrow reefs, and one specimen observed in Suwarrow lagoon. Occurs from 8–30 m depth, but commoner below 20 m. Body dark brown and covered with blue spots, and usually one or more lighter saddles around mid-body. Tail emarginate, which readily distinguishes this species from *Cephalopholis argus* which has a rounded tail.

19. *Lutjanus monostigma* (Cuvier & Valenciennes, 1828).

Black-spot Snapper.

Length 60 cm. Common, often in schools of 8–10 individuals, in Palmerston lagoon and on the outer reef slope from the surface to around 10 m depth. Body pale yellow with a small black spot on the side bisected by the lateral line. The fins are bright yellow.

21. *Pterocaesio tile* (Cuvier & Valenciennes, 1830).  
Tricolored Fusilier.

Length 20 cm. Large schools observed outside Palmerston reef and in Suwarrow lagoon. Dorsal half of body bright blue, the underside pale pink, and there is a yellow line from the eye to the tail. The fins are pink but the deeply forked caudal fin has black stripes.

23. *Parupeneus trifasciatus* (Lacépède, 1802).  
Three-saddle Goatfish.

Length 25 cm. Occasionally observed in Palmerston lagoon searching in sand for food, often in shallow water (2–4 m depth). The body is slightly redder than in *P. bifasciatus* but has three dark brown saddles across the back and on the caudal peduncle. The barbels are white.

Family LUTJANIDAE  
(Snappers, Sea Perch)

18. *Lutjanus bohar* (Forskål, 1775).  
Red Snapper.

Length 75 cm. Occasional below 15 m depth outside Palmerston reef, and several individuals were seen at 10 m on one dive in Suwarrow lagoon. Body very dark red along the back and slightly paler below. A poisonous species, known to cause ciguatera.

20. *Gnathodentex aureolineatus* (Lacépède, 1802).  
Gold-lined Sea-bream.

Length 20 cm. Common in schools in Palmerston lagoon between 1 and 8 m depth. Silver, with longitudinal stripes of golden-yellow, and yellow lips. The fins are trimmed with pink and there is a large bright yellow spot below the end of the dorsal fin.

Family MULLIDAE  
(Goatfishes, Red Mullet)

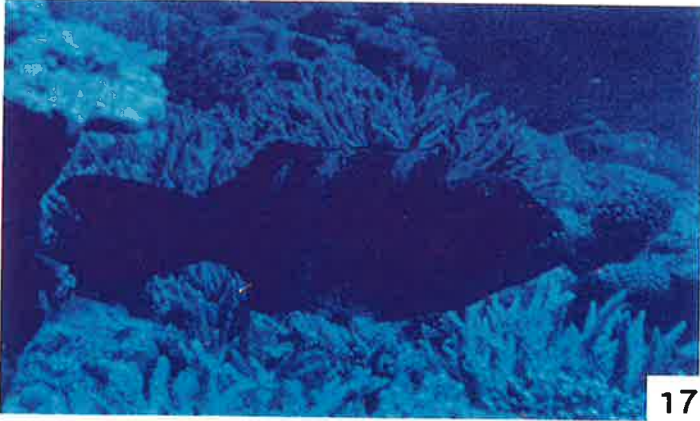
22. *Parupeneus bifasciatus* (Lacépède, 1802).  
Two-saddle Goatfish.

Length 30 cm. Seen only outside Palmerston reef, where it was common at 10–15 m depth. Body and head grey-pink with two wide yellow bands separated by two black saddles across the back.

24. *Mulloidichthys samoensis* (Günther, 1874).  
Samoan Goatfish.

Length 25 cm. Rarely seen in Palmerston lagoon (around 5 m depth). Body silvery-white with a yellow stripe from the eye to the base of the tail; the stripe interrupted by a conspicuous but diffuse black spot below the first dorsal fin. Fins pale yellow or pink.





Family **CHAETODONTIDAE**

(Butterflyfishes, Coralfishes, Angelfishes)

25. *Chaetodon auriga* Forskål, 1775.  
Threadfin Coralfish.

Length 20 cm. Abundant in Palmerston lagoon, usually shallower than 8 m depth, but rare at Suwarrow and not seen outside the lagoons. The anterior body is white with oblique dusky lines that are directed upwards and backwards to meet a similar set directed downwards and backwards at about mid-body. The hind body and the dorsal and caudal fins are yellow. The dorsal fin has a large black ocellus and a long filament in adults. A wide black bar extends from the top of the head down through the eye to the chin.

27. *Chaetodon citrinellus* Cuvier & Valenciennes, 1831.  
Speckled Butterflyfish.

Length 12 cm. Observed quite commonly at Palmerston and Suwarrow, both in the lagoons and on the outer reef slopes between 1 and 8 m depth. Body and fins pale yellow, covered with small violet spots which grade to yellow on the tail. Anal and dorsal fins edged with black and there is a black band down the head and through the eye.

29. *Chaetodon flavirostris* Günther, 1874.  
Black Butterflyfish.

Length 15 cm. Not common, but a few pairs were observed outside the reef at Palmerston, at around 8 m depth. Body dark blue-black with bright yellow dorsal, caudal, and anal fins, all of which have an orange stripe. The snout is white with a yellow band in front of the eye.

31. *Chaetodon pelewensis* Kner, 1868.  
Dot-and-dash Butterflyfish.

Length 12 cm. Found at Palmerston and Suwarrow, but only on the outer reef slopes between 5 and 10 m depth. The body is silver-grey grading into yellow towards the tail. The anterior half is covered from the head backwards with small black spots but the posterior and dorsal body has six oblique black bands. The caudal peduncle is bright yellow and there is a yellow stripe, edged with black, down the head and through the eye.

26. *Chaetodon bennetti* Cuvier & Valenciennes, 1831.  
Bennett's Butterflyfish.

Length 15 cm. Seen occasionally only on the outer reef at Palmerston, between 3 and 6 m depth. Body bright yellow, as are all fins. There is a large black ocellus mid-dorsally, edged in white. Two blue oblique bands extend down from the head to the belly and there is a wide black band edged with blue running down the head and through the eye.

28. *Chaetodon ephippium* Cuvier & Valenciennes, 1831.  
Saddled Butterflyfish.

Length 20 cm. Very common in Palmerston and Suwarrow lagoons at depths less than 5 m. The body is variously covered with yellow-green on the back fading to white around the abdomen. Much of the dorsal body and posterior dorsal side have a black patch outlined in white on the anterior edge, and orange, red, and blue on the posterior edge. The chin is yellow and there is a blue-grey stripe on the operculum. Tail clear but orange on the peduncle.

30. *Chaetodon ornatissimus* Cuvier & Valenciennes, 1831.

Ornate Butterflyfish.

Length 20 cm. Common outside the reefs at Palmerston and Suwarrow, but uncommon in Palmerston lagoon. Usually seen between 8 and 12 m depth. Body blue-white, with 6-7 oblique yellow stripes which point upwards and backwards from the operculum. There are 3-4 black vertical stripes down the head and another down the tail, and the base of the entire dorsal fin is edged in black.

32. *Chaetodon quadrimaculatus* Gray, 1831.  
Fourspot Butterflyfish.

Length 15 cm. Common outside Palmerston reef between 8 and 12 m depth, often in pairs. The body is yellow ventrally and black dorsally with two white patches, and two yellow-white vertical bars down the head, edged in blue. The dorsal and anal fins have a pale blue stripe running along their lengths.







**33.** *Chaetodon reticulatus* Cuvier & Valenciennes, 1831.

Reticulated Butterflyfish.

Length 15 cm. Very common at Palmerston, both in the lagoon and outside the reef, and reasonably common on the outer reef slope of Suvarrow, between 2 and 15 m depth. The body is black, but densely reticulated with large white spots which become closer and larger towards the dorsal surface. There is a white vertical band behind the head and the dorsal fin is white. The head is grey-black with a black band through the eye. The caudal peduncle is black and the tail pale blue with black and yellow stripes towards its edge. A bright orange patch at the posterior base of the anal fin is present at maturity.

**35.** *Chaetodon ulietensis* Cuvier & Valenciennes, 1831.  
Double-saddle Butterflyfish.

Length 15 cm. Abundant in Palmerston lagoon between 2 and 8 m depth. Body and head white, with two black saddles below the dorsal fin and a black vertical stripe down the head and through the eye. The posterior third of the body and the dorsal, anal, and caudal fins are bright yellow and there is a black patch on the caudal peduncle. There are 18–19 fine black vertical stripes on the body.

**37.** *Forcipiger longirostris* (Broussonet, 1782).  
Long-nosed Butterflyfish.

Length 12 cm. Common on the outer reef slopes of both Palmerston and Suvarrow, usually in pairs, between 6 and 15 m depth. Body bright yellow with black head and upper snout. Lower jaw and chin white. The posterior edge of the dorsal and anal fins is pale blue and a black spot is present at the posterior base of the anal fin.

**39.** *Heniochus chrysostomus* Cuvier & Valenciennes, 1831.

Pennant Bannerfish.

Length 15 cm. Common in Palmerston lagoon, and on the outer reef slope down to 15 m depth. The white body has a wide black transverse band behind the head, a wide dark brown transverse band down the mid-body and dorsal and anal fins, and another across the caudal peduncle. The dorsal edge of the snout is yellow.

**34.** *Chaetodon trifasciatus* Park, 1797.  
Red-fin Butterflyfish.

Length 15 cm. Widespread in the lagoons and outside the reefs of Palmerston and Suvarrow in shallow water, 2–8 m deep. The body is pale yellow with oblique violet stripes and yellow, black, and white vertical stripes down the head. The caudal peduncle is purple and the caudal fin is yellow-, then white- and black-striped. The dorsal fin is white with a red edge and purple and yellow bands at the base. There is a black spot at the posterior base of the dorsal fin and a black band along the base of the anal fin. The remainder of the anal fin is dark red with a yellow border.

**36.** *Chaetodon unimaculatus* Bloch, 1787.  
Teardrop Butterflyfish.

Length 20 cm. Very uncommon, but a few pairs seen on the outer reef slope of Palmerston at around 15 m depth. Body white with vertical yellow stripes and a large black ocellus below the dorsal fin which is elongated down the body side like a teardrop. The ocellus may be ringed in blue. There is a vertical black band down the head and through the eye, and another down the posterior edge of the dorsal fin, across the peduncle and down the posterior edge of the anal fin.

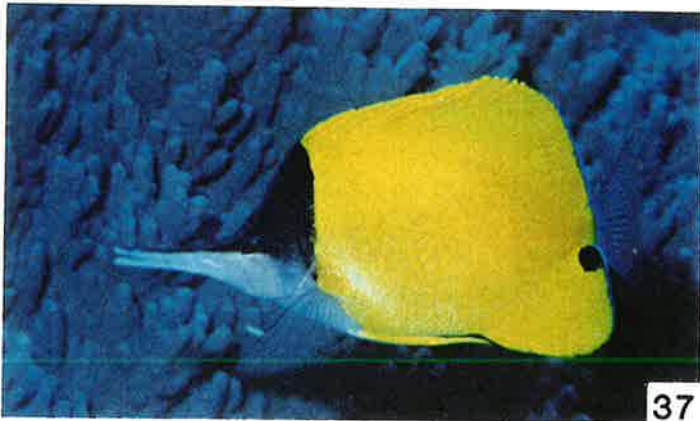
**38.** *Hemitaurichthys polylepis* (Bleeker, 1857).  
Pyramid Butterflyfish.

Length 10 cm. Occasionally seen in small schools outside Palmerston reef, 5–10 m depth. Body and tail white, head brown. Dorsal and anal fins bright yellow, the yellow extending down the anterior and posterior dorsal body to give the white a pyramid appearance.

#### Family POMACANTHIDAE (Angelfishes)

**40.** *Pomacanthus imperator* (Bloch, 1787).  
Emperor Angelfish.

Length 30 cm. Occasional specimens seen on the outer reef slope of Palmerston, at around 10 m depth. Adult individuals have longitudinal blue and yellow stripes over the body, and the dorsal, pelvic, and anal fins. The tail is yellow. The face is pale blue with a black band through the eye, outlined in blue. A large black patch occurs around the pectoral fin.



41. *Centropyge flavissimus* (Cuvier & Valenciennes, 1831).

Lemonpeel Angelfish.

Length 10 cm. Common in Palmerston lagoon only, in shallow water, 2–5 m depth. The entire body and all fins are bright yellow but there is a blue streak down the operculum and along the posterior edges of the dorsal and caudal fins, and the eye is ringed with blue.

43. *Pygoplites diacanthus* (Boddaert, 1772).

Regal Angelfish.

Length 25 cm. Occasional on the outer reef slope at Suwarrow between 5 and 10 m depth. The body is striped in blue, black, white, and yellow, the pectoral, pelvic, and caudal fins are yellow, while the anal fin is striped in blue, yellow, and black. The dorsal fin is also striped in blue and yellow but its posterior third is patterned in purple and black.

45. *Dascyllus reticulatus* (Richardson, 1846).

Grey Damsel fish.

Length 10 cm. Common around *Acropora* colonies in Suwarrow lagoon, 2–10 m depth, often with *D. aruanus*. Body grey with a broad black band behind the head, extending from the dorsal fin to cover the pelvic fin. The edge of the dorsal fin is also black.

47. *Eupomacentrus nigricans* (Lacépède, 1803).

Dusky Demoiselle.

Length 10 cm. Common in Suwarrow lagoon, 2–5 m depth, around *Acropora* colonies. Body blue-grey with a black band behind the head and over the dorsal fin. The tail is bright yellow.

42. *Centropyge loriculus* (Günther, 1874).

Flame Angelfish.

Length 10 cm. Rare, only one specimen observed, at 10 m depth on the outer reef slope at Palmerston. The body is bright orange with double vertical brown bars. The posterior edges of the dorsal and anal fins are bright blue.

#### Family POMACENTRIDAE

Damsel fishes, Sergeant-majors)

44. *Dascyllus aruanus* (Linnaeus, 1758).

White-tailed Damsel fish.

Length 8 cm. Abundant in coral heads of *Acropora* at 1–5 m depth in both Palmerston and Suwarrow lagoons. Body and tail white with three black vertical bands — one down the head and through the eye; another mid-body, extending over the dorsal, pectoral, and pelvic fins; and the third across the dorsal fin, caudal peduncle, and posterior anal fin.

46. *Eupomacentrus albofasciatus* (Schlegel & Müller, 1844).

Pale Dusky Demoiselle.

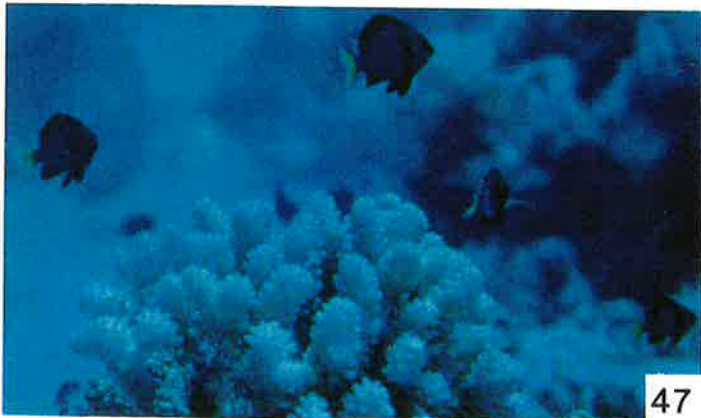
Length 10 cm. Occasional around *Acropora* colonies in very shallow (1–2 m deep) water in Palmerston lagoon. Body brown-blue with pale yellow deeply forked tail. There is a black ocellus at the posterior base of the dorsal fin, surrounded by blue and yellow on the anterior side. There are also some blue spots below the eye.

48. *Abudefduf septemfasciatus* Cuvier & Valenciennes, 1830.

Seven-banded Sergeant-major.

Length 20 cm. Common in shallow water, 1–4 m deep, throughout Palmerston lagoon. White with seven grey vertical bands, plus another at the base of the tail. Fins white, but the edge of the dorsal and caudal fins may be grey.





**49. *Plectroglyphidodon dicki*** (Liénard, 1839).  
Bronze Sergeant-major.

Length 10 cm. Very uncommon, only a few seen on the outer reef slope of Palmerston between 10 and 15 m depth. The body is a golden bronze with a black vertical bar from the soft dorsal fin down the body to the anal fin. Behind this, the tail and rear body are white or very pale orange. The pectoral fin is yellow.

Family **LABRIDAE**  
(Wrasses)

**51. *Thalassoma hardwicki*** (Bennett, 1830).  
Six-barred Wrasse.

Length 35 cm. Common in Palmerston lagoon at depths of 2–6 m. Upper body green, lower body silver, the two colours divided by a longitudinal red stripe. There are six black saddles along the dorsal body and the green head has 5–7 red bands through the eyes and over the cheeks.

**53. *Halichoeres centriquadus*** (Lacépède, 1802).  
Yellow-saddle Wrasse.

Length 30 cm. A few individuals observed in Palmerston lagoon between 2 and 6 m depth. Body pale silvery-green with a large yellow saddle beneath the middle of the dorsal fin, bordered on the posterior side by a black patch. Another smaller yellow patch occurs half-way between this and the tail, which has a yellow peduncle. The head is pale green with several red lines scattered over it.

**55. *Cheilinus undulatus*** Rüppell, 1840.  
Giant Wrasse.

Length 200 cm. Reasonably common on the outer reef slope at Palmerston. Most individuals appeared to prefer swimming along the sharp break in reef slope at around 15 m depth, but some were seen below 45 m. Large body with a conspicuously humped head in adults. Body dull green with paler saddles, fins brown-green, with caudal fin edged in white. The green head is covered in thin orange lines and patches.

**50. *Chromis caeruleus*** (Cuvier & Valenciennes, 1830).  
Blue Puller.

Length 12 cm. Abundant in dense schools about coral heads in Palmerston and Suwarro lagoons. Body pale blue-green, slightly iridescent. Fins colourless.

**52. *Thalassoma lutescens*** (Lay & Bennett, 1839).  
Moon Wrasse.

Length 20 cm. Common both in the lagoons and down the outer reef slopes of Palmerston and Suwarro from 2–10 m depth. The body is bright green with five wide longitudinal pale red bands along the head. The same pale red is along both borders of the caudal fin and the base of the dorsal fin. The pectoral fin is yellow with a bright blue margin.

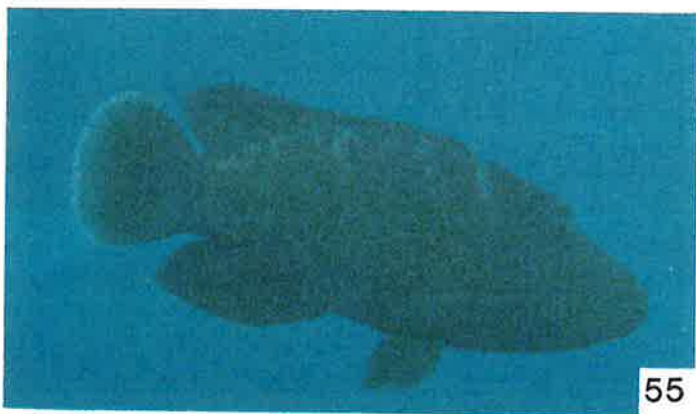
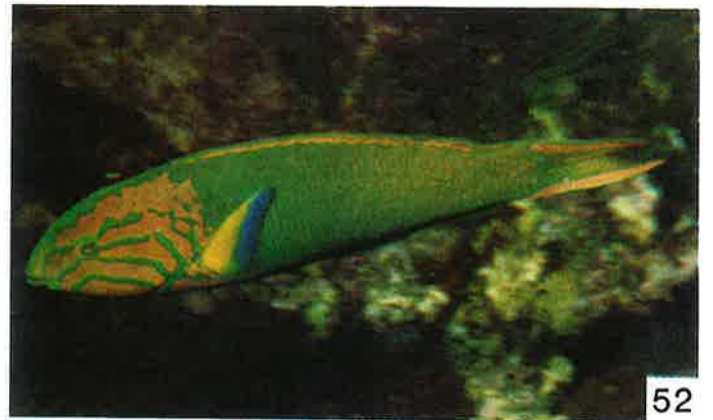
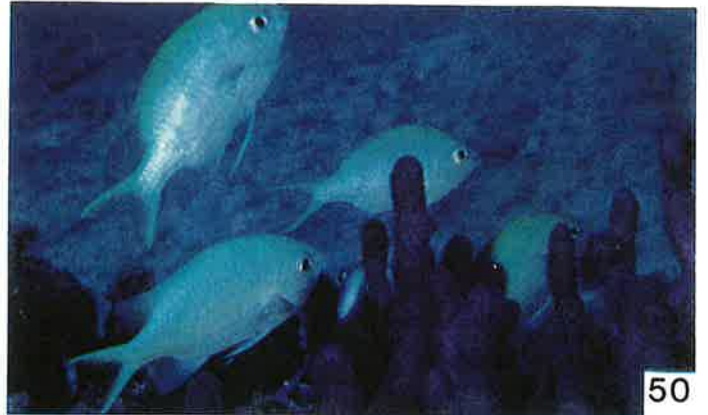
**54. *Halichoeres trimaculatus*** (Griffith, 1834).  
Three-spot Wrasse.

Length 15 cm. Occasional in Palmerston lagoon in shallow water, 1–4 m deep, usually over sand. Body pale yellow-green (bright yellow in juveniles) with pinkish vertical bars on each scale. The head is yellow with pink stripes and spots and there is a conspicuous black patch on the dorsal caudal peduncle. All fins are pale yellow.

**56. *Pseudocheilinus hexataenia*** (Bleeker, 1857).  
Six-lined Wrasse.

Length 40 cm. Only a few individuals observed, in Palmerston lagoon at 1–3 m depth around *Acropora* colonies. Most of body is blue, with six longitudinal stripes from the operculum to caudal peduncle, which is yellow-green and has a black ocellus ringed with yellow. The head and ventral body are pinkish with small white spots. The eyes are red with two white stripes across the pupil. The dorsal and anal fins are blue- and yellowstriped.







**57. *Thalliurus chlorurus*** (Bloch, 1781).  
Yellow-dotted Maori Wrasse.

Length 25 cm. Very common around the patch reefs scattered throughout Palmerston lagoon between 1 and 6 m depth. The body is brown and covered with pale dots that appear to form 6–8 longitudinal lines, which extend onto the tail. The caudal, dorsal, and anal fins have numerous small white spots. The head is greenish-brown and covered with dark pink spots.

**59. *Gomphosus varius*** Lacépède, 1802.  
Bird Wrasse.

Length 30 cm. Several observed in the lagoon and down the outer reef slope at Palmerston, 2–10 m depth. The body is green or blue (in mature males) with red patterns on each scale, and there is a yellow patch at the base of the pectoral fins. Head and long snout green and the caudal fin is bright blue.

**61. *Scarus gibbus*** Rüppell, 1828.  
Big Blue Parrotfish.

Length 40 cm. Very common in the lagoons and down the reef slopes of both Palmerston and Suwarrow. At low tide this species feeds on the reef crest in water so shallow that the dorsal and caudal fins are emergent, but it is also recorded to 15 m depth. Body bright blue-green with lighter blue patches. The head (which has a pronounced bump on older specimens) is green with orange-brown patches in front of and beneath the eyes. The white teeth are outlined with bright blue-green lips. The dorsal and anal fins are orange with green borders.

**63. *Scarus venosus*** Cuvier & Valenciennes, 1839.  
Cut Parrotfish.

Length 30 cm. Uncommon, but a few individuals observed in Palmerston lagoon and on the outer reef slope at depths of 5–10 m. Body green but each scale has a purplish-pink vertical band. There is a light broad vertical band which appears to cut the body in half from the mid-dorsal fin to the anterior base of the anal fin. All fins are green with pink stripes, as is the tail.

**58. *Labroides dimidiatus*** (Cuvier & Valenciennes, 1839).

Cleaner Wrasse.

Length 8 cm. Quite common around the sides of patch reefs throughout Palmerston lagoon at 3–6 m depth. Body white or pale blue with a single wide very dark blue longitudinal stripe down the central body which widens on the tail. A similarly coloured stripe runs down the middle of the dorsal and anal fins.

#### Family SCARIDAE (Parrotfishes)

**60. *Scarus chlorodon*** Jenyns, 1842.  
Green-beak Parrotfish.

Length 35 cm. Quite common in Palmerston lagoon and in the current-swept passages through the reef crest. Not seen deeper than 5 m. Body greenish-brown with brown fins, edged in green. The most distinctive feature is the bright green teeth.

**62. *Scarus sordidus*** Forskål, 1775.  
Burnt Parrotfish.

Length 40 cm. Adults quite common on the outer reef at Palmerston, 2–10 m depth, but juveniles were commoner in the lagoon and often seen in large schools in water less than 5 m deep. A very variable species which changes completely as it grows from juvenile to female to large male. The juveniles are brown-green with a pale peduncle that carries a large black spot. The head is brown but the chin red. The female (Fig. 62, lower specimen) is orange-brown with darker scale margins, and may have a series of longitudinal dark bars; the caudal peduncle, however, is always pale and devoid of markings. The larger male (Fig. 62, upper specimen) is blue-green with orange dorsal and anal fins outlined in green. There are various pink and orange markings on the face, but the area surrounding the mouth is pale.

**64. *Scarops rubroviolaceus*** (Bleeker, 1849).  
Meadow Parrotfish.

Length 50 cm. Only one male individual observed on a night dive outside Palmerston reef at 13 m depth. The body is blue-green with bright green markings around the mouth and a darker green saddle around mid-body. The fins are green but have bright yellow centres. This yellow almost covers the posterior soft dorsal. The tail is lunate with yellow lobes.





Family **CIRRHITIDAE**  
(Hawkfishes)

**65.** *Paracirrhites forsteri* (Bloch & Schneider, 1801).  
Hawkfish.

Length 20 cm. Only one individual seen, at 12 m on the outer reef slope at Palmerston. Head pink and covered in bright red spots; the rest of the body is orange which fades into white below the dorsal fin which is very pale pink, as is the tail. The anal and pelvic fins are yellow and the pectorals are red.

Family **ZANCLIDAE**  
(Moorish Idols)

**67.** *Zanclus cornutus* (Linnaeus, 1758).  
Moorish Idol.

Length 20 cm. Very common in all habitats in the lagoons and down the outer reef slopes to 25 m depth at Palmerston and Suwarrow. The body has alternating black and yellow bands with thin white bands separating the two on the dorsal edges of the black bands. These bands pass over the fins and extend on to the tail. The dorsal surface of the long snout is bright orange and there are two horn-like projections in front of the eyes. The dorsal fin is produced into a long white filament.

**69.** *Acanthurus aliala* Lesson, 1830.  
White-cheeked Surgeonfish.

Length 25 cm. Recorded from outside the reef at Palmerston and Suwarrow, but much more numerous at Suwarrow. Most common at depths from 5–10 m. Body dark blue with a yellow peduncle extending onto the tail and along the bases of the dorsal and anal fins. The remainder of the tail is white. There is a white streak down the side of the head from below the eye to the corner of the mouth. In some specimens the dorsal and anal fins are edged in blue.

**71.** *Acanthurus olivaceus* (Bloch & Schneider, 1801).  
Orange-epaulette Surgeonfish.

Length 30 cm. Seen only at Suwarrow, both in the lagoon and on the outer reef slope down to 10 m. Body dark olive-green or brown, darker on the posterior half. There is a bright orange elongated patch extending from behind the eye to the mid-dorsal and edged in black. The tail is dark except for a white posterior edge, more pronounced in the centre. In large specimens the tail is prolonged into two long filaments.

Family **PARAPERCIDAE**  
(Grubfishes)

**66.** *Parapercis cylindrica* (Bloch, 1792).  
Ocellated Grubfish.

Length 30 cm. Quite common in Palmerston lagoon at 2–5 m depth, over sand. Body sand-coloured with dark brown spots and short oblique stripes. A series of black elongated spots form three longitudinal stripes down the sides of the body and there is a large black spot at the base of the tail. The head is covered in small brown spots but these are replaced below the eye by fine brown lines in males.

Family **ACANTHURIDAE**  
(Surgeonfishes)

**68.** *Acanthurus achilles* Shaw, 1803.  
Achilles Surgeonfish.

Length 25 cm. Abundant in the lagoons and on the outer reef slopes to depths of 18–20 m, but more numerous between 5 and 10 m depth. The body is black with a conspicuous orange patch on the caudal peduncle. The tail is also bright orange with a white edge separated from the orange by a thin black line. The fins are black, edged in white, and a thin orange band runs the length of the dorsal and anal fins. There is also a white streak behind and below the eye.

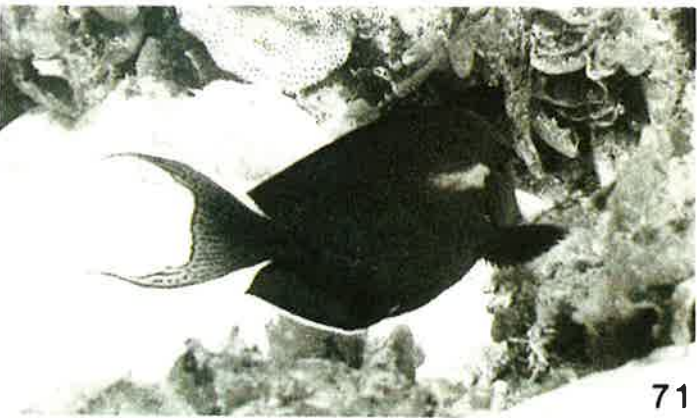
**70.** *Acanthurus guttatus* Bloch & Schneider, 1801.  
Spotted Surgeonfish.

Length 25 cm. Common outside Palmerston reef, but only in the turbulent surf zone of the reef crest. The body is brown with white vertical stripes, one behind the eye, another behind the head and pectoral fin and a third about mid-body. The inner two-thirds of the tail is also white and the pelvic fins are yellow. The entire body and the dorsal and anal fins are covered in white spots behind the second vertical stripe, the spots increasing in size towards the posterior body.

**72.** *Acanthurus thompsoni* (Fowler, 1923).  
Thompson's Surgeonfish.

Length 20 cm. Only one specimen observed, outside Palmerston reef at 30 m depth. Body pale olive-brown, devoid of markings except for a small dark brown spot at the base of the dorsal fin, and at the base of the pectoral fin. Tail white.





73. *Acanthurus triostegus* (Linnaeus, 1758).  
Convict Surgeonfish.

Length 15 cm. Very common in large schools in shallow (1–3 m deep) water around the reef crests of both Palmerston and Suwarrow. The body and fins are a pale yellow-grey with five vertical black stripes down the body and a sixth incomplete one down the caudal peduncle.

75. *Callicanthus lituratus* (Bloch & Schneider, 1801).  
Green Unicornfish.

Length 50 cm. Quite uncommon outside Palmerston reef around 5 m depth. Body dark green or brown with very faint darker vertical stripes. The two caudal lancets are surrounded by bright yellow-orange and the same colour surrounds the mouth and eye with a connecting yellow stripe. The dorsal fin is black and the anal is yellow but both are edged in blue.

77. *Zebrasoma veliferum* (Bloch, 1795).  
Sailfin-tang.

Length 40 cm. Quite uncommon, but a few juveniles seen in Palmerston lagoon at 10 m depth; commoner on the outer slope of Suwarrow between 8 and 10 m depth. Juveniles are yellow with bright yellow and white stripes and two black stripes down the head. The caudal peduncle is also black. The large dorsal and anal fins are yellow and the tail is white. Larger specimens are almost black with a few yellow lines down the body.

79. *Sebastapistes bynoensis* (Richardson, 1845).  
Marbled Scorpionfish.

Length 10 cm. Uncommon, on sand at 1–2 m depth in Palmerston lagoon. Body marbled with pale and dark brown, with a black band from the anterior base of the anal to the posterior of the dorsal fins and another black band on the caudal peduncle. Tail almost transparent with two darker bands, and fins almost transparent. There are small red spots on the face and around the mouth, and the pelvic fins are red.

74. *Acanthurus* sp.

Length 15 cm. An uncommon species seen outside Palmerston reef at 8–10 m depth. The body is dark golden-brown with a white tail, blue edges to the dorsal and anal fins, and a yellow patch around the eyes. The head is covered with small paler brown spots and there are longitudinal wavy lines of dark brown along the body.

76. *Ctenochaetus striatus* (Quoy & Gaimard, 1824).  
Bristle-toothed Surgeonfish.

Length 28 cm. Abundant in Palmerston lagoon and on the outer reef slope, but always in water less than 5 m deep. The entire body and all fins are dark brown, but finely striated with blue longitudinal lines and spots, particularly over the head.

Family **SCORPAENIDAE**  
(Lionfishes, Scorpionfishes)

78. *Pterois antennata* (Bloch, 1787).  
Lionfish.

Length 20 cm. Reasonably common at night in Palmerston lagoon and outside the reef at depths less than 8 m. Body and fins red- and white-striped with blue and green markings on the pectoral and pelvic fins. The dorsal and pectoral fin rays are projected into very long, sharp poisonous spines. There are two projections above the eyes and several smaller ones around the mouth.

Family **MONACANTHIDAE**  
(Filefishes)

80. *Cantherhines dumerili* (Hollard, 1854).  
Grey Filefish.

Length 20 cm. Only occasional individuals seen on the outer reef slope at Palmerston, around 10 m depth. Body grey-green with paler vertical stripes towards the posterior of the body. The tail is yellow, and the same colour surrounds the eye. Brown lines run along the base of the dorsal and anal fins.





Family **BALISTIDAE**  
(Triggerfishes)

**81.** *Rhinecanthus aculeatus* (Linnaeus, 1758).  
White-barred Triggerfish.

Length 25 cm. Quite common around coral heads in Palmerston lagoon, usually shallower than 3 m depth. The body is brown dorsally and white ventrally, but there are numerous blue, orange, yellow, white, and black oblique stripes and markings. The fins are almost colourless and there are three rows of black spines on the caudal peduncle.

Family **DIODONTIDAE**  
(Porcupinefishes)

**83.** *Diodon hystrix* Linnaeus, 1758.  
Spotted Porcupinefish.

Length 75 cm. A few individuals observed in Palmerston lagoon between 2 and 6 m depth. Body and fins brown and covered with dark brown spots. The body is covered with white spines, some of which also have brown spots.

**85.** *Canthigaster valentini* (Bleeker, 1853).  
Striped Toby.

Length 20 cm. Common in Palmerston and Suwarrow lagoons, in water less than 5 m deep. The dorsal body is black with blue markings, while the ventral body is white with grey stripes and spots. The eye surround is yellow, as are the dorsal, anal, and caudal fins, but the pectorals are colourless.

**87.** *Arothron nigropunctatus* (Bloch & Schneider, 1801).  
Yellow Toadfish.

Length 20 cm. A few specimens seen around coral heads in Palmerston lagoon, usually at 1–3 m depth. Body yellow, fading to pale grey on the ventral surface and covered with short spines. There are irregularly scattered black spots over the body and the tail has longitudinal black lines. The fins are bright yellow.

**82.** *Melichthys vidua* (Richardson, 1844).  
White-tailed Triggerfish.

Length 25 cm. Rare, only two specimens seen outside the reef at Palmerston at 10 m depth. Body greenish-brown with yellow markings around the mouth. The dorsal spines and pectoral fins are yellow but the dorsal and anal fins are pale clear-blue with black borders. The tail has a white base but pink at the posterior edge.

Family **CANTHIGASTERIDAE**  
(Sharp-nosed Puffers)

**84.** *Canthigaster margaritatus* (Rüppell, 1828).  
Ocellated Puffer.

Length 15 cm. Three individuals seen in Palmerston lagoon at a depth of 4 m. Body dark blue dorsally, fading to yellow-brown ventrally and covered with blue lines and white spots. There is a conspicuous black spot below the dorsal fin, edged in blue. The fins are yellow and the tail has white spots.

Family **TETRAODONTIDAE**  
(Puffers, Toadfishes)

**86.** *Arothron meleagris* (Bloch & Schneider, 1801).  
White-spotted Puffer.

Length 20 cm. Seen only at night on the outer reef slope at Palmerston at 6 m depth. Body dark greyish-blue, including all fins, and completely covered with raised white spots.

Family **OSTRACIIDAE**  
(Boxfishes)

**88.** *Ostracium lentiginosum* Bloch & Schneider, 1801.  
Spotted Boxfish.

Length 12 cm. Common in Palmerston lagoon and outside the reef to a maximum depth of 6 m. Body dark blue with yellowish markings around the mouth and covered with shiny blue-white spots. The fins are colourless.





TABLE 1

List of families, and numbers of genera and species in each family, from Palmerston and Suvarrow Atolls.

ORDER	FAMILY	No. of GENERA	No. of SPECIES
Lamniformes	Galeorhinidae	1	1
	Carcharhinidae	1	1
Myctophiformes	Synodontidae	1	1
Anguilliformes	Muraenidae	2	2
Pleuronectiformes	Bothidae	1	1
Beryciformes	Holocentridae	1	1
Syngnathiformes	Aulostomidae	1	1
	Fistulariidae	1	1
Perciformes	Scomberomoridae	1	1
	Carangidae	2	3
	Serranidae	3	4
	Lutjanidae	3	4
	Mullidae	2	3
	Chaetodontidae	4	15
	Pomacanthidae	3	4
	Pomacentridae	5	7
	Labridae	7	10
	Scaridae	1	4
	Cirrhitidae	1	1
	Parapercidae	1	1
	Zanclidae	1	1
	Acanthuridae	4	11
	Scorpaenidae	2	2
Monacanthidae	1	1	
Tetraodontiformes	Balistidae	2	2
	Diodontidae	1	1
	Canthigasteridae	1	2
	Tetraodontidae	1	2
	Ostraciidae	1	1

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