

Final Report 2026

Port Coogee Marina fish diversity monitoring programme



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30 March 2026



AQUA RESEARCH & MONITORING SERVICES

EXECUTIVE SUMMARY

In 2018 and 2019 Aqua Research & Monitoring Services (ARMS) conducted a marine biodiversity study of Port Coogee Marina, focussing on the prevailing fish assemblage, while also recording other marine species including crustaceans, molluscs, corals and seagrass. Abiotic parameters were also measured to establish a baseline for future monitoring. ARMS repeated the survey in 2022/23 and again in 2025/26 to identify spatial and temporal changes in species diversity within the marina.

Observations during the 2025/26 survey yielded **89 finfish species**, compared to 81 species in 2022/23 and 85 species in 2018/19. Combining all surveys, a total of **114 finfish species** have now been recorded within the marina. Sea temperatures recorded during the monitoring period continue to show variability, with elevated summer temperatures and occasional cooler winter minima. These conditions, along with the presence of several juvenile tropical species, may reflect broader oceanographic influences such as the Leeuwin Current and regional warming trends.

In addition to the finfish monitoring programme, a complementary study of non-fish marine fauna (“critter survey”) was completed by ARMS in 2024, incorporating multi-year observations from 2018 to 2024. This work identified approximately 180 non-fish species across ten phyla based on over 280 verified photographic records. These findings substantially expand the documented biodiversity of the marina and demonstrate that Port Coogee supports a diverse and well-established marine community beyond the fish assemblage.

The present report also documents:

- continued growth and persistence of hard coral assemblages;
- a noticeable increase in soft corals (*Chromonephthea* spp.);
- expansion of seagrass patches (*Posidonia australis*) and new occurrences of *Amphibolis antarctica* in the entrance channel; and,
- a range of additional marine fauna and observations of ecological interest.

ARMS recommends:

- continued monitoring of fish diversity at 2–3 year intervals;
- continuation of the long-term sea temperature monitoring programme;
- ongoing monitoring of coral growth and changing benthic composition;
- continued monitoring of seagrass distribution and expansion;
- consideration of future work to further document non-fish fauna within the marina.

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1.0 OVERVIEW

A fish diversity monitoring programme of Port Coogee Marina, Western Australia, was completed by Aqua Research and Monitoring Services for the City of Cockburn in 2025/26. The survey was designed to replicate previous surveys conducted in 2018/19 and 2022/23 in order to identify any spatial and temporal changes in species diversity within the marina. In addition, the 2025/26 survey included continued observations of coral growth and diversity, spatial extent of seagrass and algae, and ongoing sea temperature measurements. Consistent with the 2022/23 monitoring programme, sediment and water chemistry analyses were not undertaken as part of the current survey, with focus maintained on biological indicators and long-term temperature monitoring.

While the overall monitoring programme has been primarily focused on the prevailing fish assemblage, a significant body of additional data relating to non-fish fauna has also been collected over time. This dataset was formally compiled and analysed in a dedicated “critter” survey completed in 2024, which documented approximately 180 species across a wide range of taxonomic groups including molluscs, crustaceans, echinoderms, worms and bryozoans. This complementary work provides important context for interpreting the ecological condition of the marina and highlights the broader biodiversity supported within the system. For further information: Whisson, G and Hoschke, A. 2024. *Final Report. Port Coogee Marina critter monitoring programme (non-fish marine fauna)*. Aqua Research & Monitoring Services, May 2024, 45p.

1.1 Objective

The Port Coogee Marina monitoring programme was originally established in 2018 to provide a baseline assessment of fish diversity and ecological condition within the marina. Since that time, the programme has been repeated and refined to enable long-term comparison of biological communities and environmental conditions, and now incorporates complementary data from a separate invertebrate diversity assessment.

The objectives of the 2025/26 fish diversity survey were therefore to continue this established monitoring programme, maintaining consistency with previous surveys while updating fish diversity knowledge within the marina. Specifically, the programme aimed to:

- 1.1 document current fish diversity using in situ video and diver observations, and apply standard ecological biodiversity indicators for comparison with previous surveys;
- 1.2 photograph and assess coral growth, diversity and condition within the marina;
- 1.3 identify transient or developing marine habitats (e.g. seagrass patches, wrack) and comment on their distribution relative to previous surveys;
- 1.4 continue the long-term water temperature monitoring programme initiated in 2018 and provide updated analyses of daily and monthly average water temperature;
- 1.5 observe and record additional marine fauna encountered during the survey, complementing the broader invertebrate dataset compiled in the 2024 critter study;
- 1.6 compare results with the 2018/19 and 2022/23 monitoring programmes to identify any spatial or temporal trends.

2.0 PERSONNEL

- Dr Glen Whisson, Aqua Research and Monitoring Services
- Alexandra Hoschke, Aqua Research and Monitoring Services

3.0 METHODS

3.1 Monitoring Approach

The monitoring approach adopted for the 2025/26 survey was consistent with that established in previous surveys (2018/19 and 2022/23), enabling direct comparison of results over time. The programme focused on repeat transect-based fish diversity assessments, supported by photographic records, opportunistic observations of other marine fauna, and ongoing environmental monitoring.

3.2 Aquatic Biodiversity Assessment

Six 100m scuba transects (T1 to T6, Fig. 1) were surveyed within Port Coogee Marina over five days in April 2025 and repeated over four days in December 2025 and January 2026. In addition, a night dive was undertaken on 25 February 2026, and opportunistic floating weed (macroalgae) sampling was conducted on 31 May and 6 June 2025. During surveys, two divers recorded fish species and other marine fauna using underwater cameras. Observations were subsequently compiled into a database including location, date, species and relative abundance.

3.3 Identification of Fauna

Faunal identifications were based primarily on photographic records obtained during the surveys and were supported by reference literature and online taxonomic resources. Where necessary, identifications were verified through consultation with relevant experts. All fish species were identified to species level where possible, and records were incorporated into a standardised database consistent with previous surveys.

3.4 Coral and Seagrass Observations

Corals and seagrass patches were observed and photographed during surveys in an effort to provide indications of changes in species, distribution and overall health within the marina.

3.5 Sea Temperature

Sea temperature was recorded at hourly intervals using HOBO UA-001-64 data loggers installed approximately 50 cm above the seabed at the western end of D Jetty. Two loggers were deployed to provide redundancy and data were downloaded periodically and aggregated into daily and monthly averages to provide a continuous long-term dataset spanning from 2018 to 2026.



Fig. 1 Survey and monitoring locations in Port Coogee Marina

4.0 RESULTS & DISCUSSION

4.1 Fish diversity assessment

A total of 89 finfish species were photographed during the period (Appendix 1), with representative photographs included at Appendix 2. Species richness and total estimated abundance were highest at T6 (southern wall of the marina entrance channel) and T1 (north-west corner of the western seawall) (Fig. 2), once again showing the same pattern recorded in both the 2018/19 and 2022/23 surveys, where these transects also supported the highest values.

Combining results from all ARMS surveys carried out to date, a total of 114 unique finfish species have now been recorded in the marina (Appendix 2). Thirteen of the species identified during the 2025/26 surveys were not recorded during the previous two surveys in the marina (Table 1; photos Appendix 3).

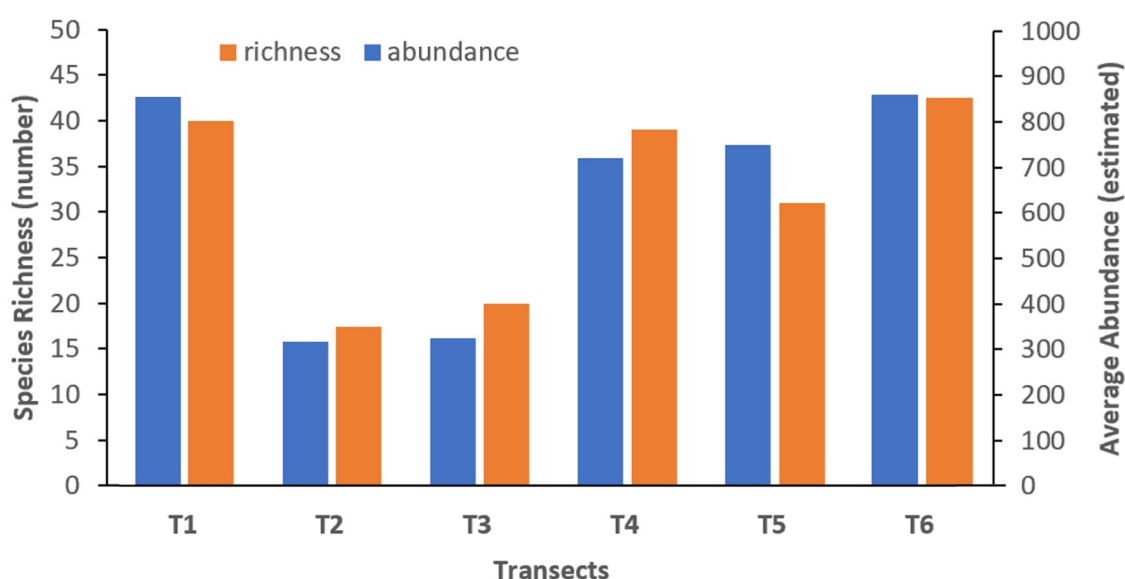


Fig. 2 Fish species richness and abundance recorded at Port Coogee Marina, 2022-23

*Each transect was surveyed twice and average abundance calculated

Table 1 Finfish species additional to those logged in the 2018/19 and 2022/23 surveys

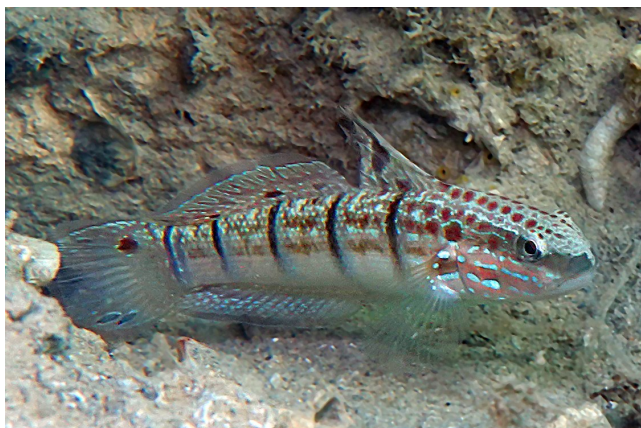
FAMILY	Species Name	Common Name
ANTENNARIIDAE	<i>Histrio histrio</i>	Sargassum Fish
PLATYCEPHALIDAE	<i>Onigocia spinosa</i>	Midget Flathead
CARANGIDAE	<i>Seriola hippos</i>	Samsonfish
PEMPHERIDAE	<i>Parapriacanthus elongatus</i>	Elongate Bullseye
TERAPONTIDAE	<i>Amniataba caudavittata</i>	Yellowtail Grunter
APLODACTYLIDAE	<i>Aplodactylus westralis</i>	Western Seacarp
POMACENTRIDAE	<i>Abudefduf vaigiensis</i>	Indo-Pacific Sergeant
LABRIDAE	<i>Achoerodus gouldii</i>	Western Blue Groper
LABRIDAE	<i>Olisthops cyanomelas</i>	Herring Cale
ACANTHURIDAE	<i>Acanthurus triostegus</i>	Convict Surgeonfish
ACANTHURIDAE	<i>Acanthurus dussumieri</i>	Pencil Surgeonfish
MONACANTHIDAE	<i>Brachaluteres jacksonianus</i>	Southern Pygmy Leatherjacket
MONACANTHIDAE	<i>Scobinichthys granulatus</i>	Rough Leatherjacket

4.2 Dominant species and abundance patterns

Large schools of Scaly Mackerel (between 100 and 500, Fig. 3) were observed in the marina on several of the transects, making them the most abundant species recorded. Other large schools include the balls of juvenile Striped Catfish (see cover photograph) observed on three of the dives; Blue Sprats and Common Hardyheads often seen feeding in schools near the surface; and Western Pomfrets (Fig. 3) and Western Striped Grunter near the outer marina walls (T1 and T6, Fig. 1). Other resident species with high counts include the Western Gobbleguts, Weeping Toadfish and Western Butterfish, which were observed in high numbers on all dives. Whitebarred Gobies (Fig. 3) continue to thrive, living in pairs in sediment holes throughout the marina.



Scaly Mackerel

Sardinella lemuru


Whitebarred Goby

Amblygobius phalaena


Western Pomfred

Schuettea woodwardi

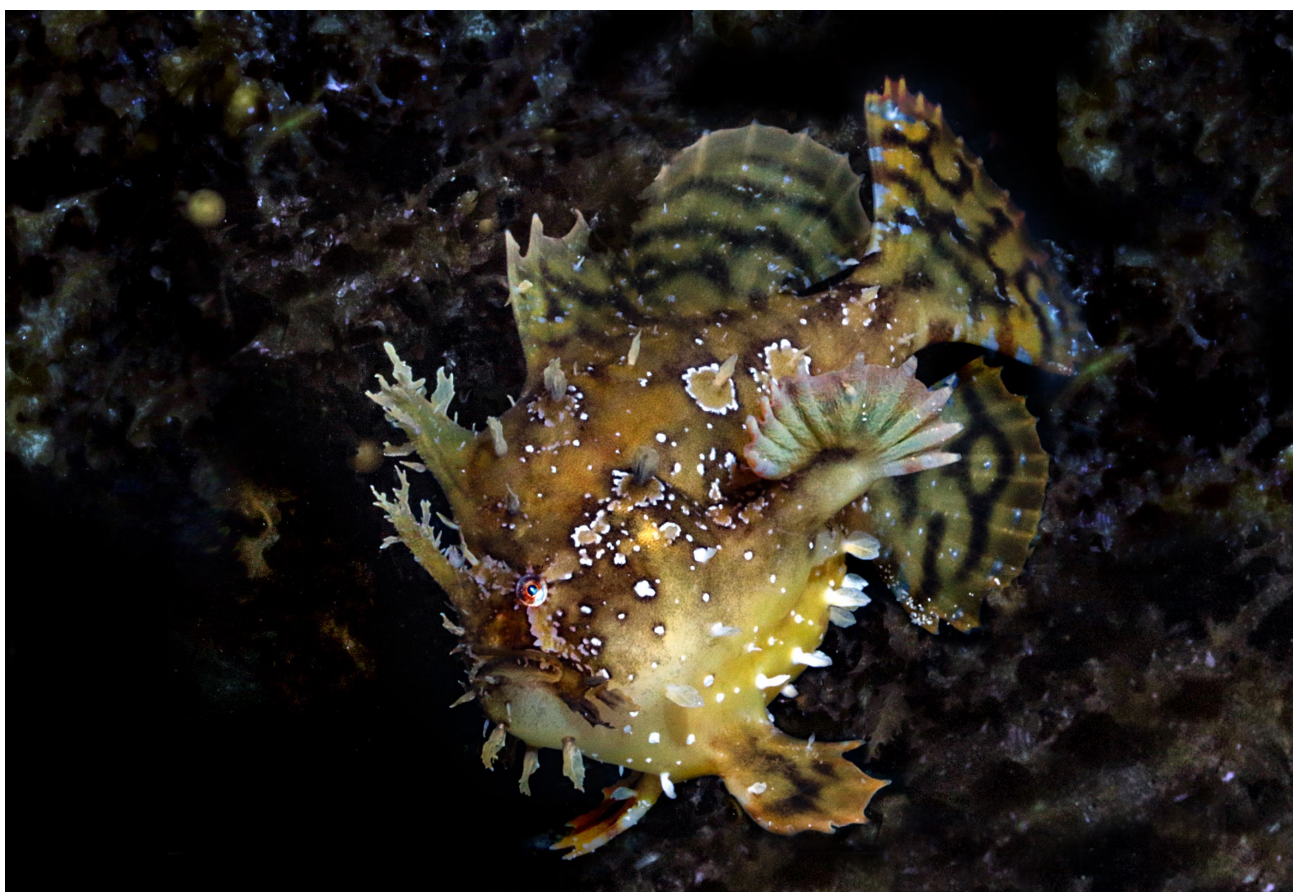
Fig. 3 Examples of species observed in high numbers in Port Coogee Marina, 2025/26

4.3 Species identified in the current survey but not in previous surveys

Three of the species recorded for the first time in the marina are tropical species not usually found as far south as Perth (Indo-Pacific Sergeant, Convict Surgeonfish, Pencil Surgeonfish; Appendix 3). They were all juveniles, and most likely came down as larvae on the Leeuwin Current from the Abrolhos Islands or other more tropical regions. The Indo-Pacific Sergeants are more common at Rottnest with larvae arriving in autumn each year, but are rarely seen nearer the Perth Coast, and with no evidence of them breeding this far south they are still considered out of their normal range. The Convict Surgeonfish is also occasionally seen in protected bays at Rottnest, with its normal range extending from the Abrolhos Islands northwards. The Pencil Surgeonfish is rarely observed this far south, with its documented range from Shark Bay North.

Western Blue Groper, although within their normal range, are now rarely seen near Perth due to overfishing. They are very slow growing, only reaching maturity at around 15 years of age, and are one of the species included in the current West Coast recreational demersal fishing ban which is active until spring 2027.

The Sargassum Fish and juvenile Western Seacarp have been recorded in the marina before, but not within survey periods. They live in rafts of Sargassum weed that float in the open oceans and are sometimes blown into the marina during winter storms. Other species such as pipefish, juvenile Rough Leatherjackets and other juvenile finfish that do not usually inhabit the marina are also brought in with the Sargassum.



Sargassum Fish

Histrio histrio

Fig. 4 The remarkable Sargassum Fish that floats into the marina on floating weed rafts under certain conditions

4.4 Species count comparisons

The total species counts for the three finfish surveys completed in 2018/19, 2022/23 and 2025/26 were remarkably similar, ranging from 80 to 89 (Appendix 2). This is surprising given the sporadic construction in and around the marina often resulting in high sediment input (easily observed by dust on resident boats) and subsequent increases in turbidity, as well as variations in sea temperature. These consistent results over an eight year period form a useful baseline of species diversity and abundance against which future changes (e.g. climate, construction works, pollution events) can be measured for impact.

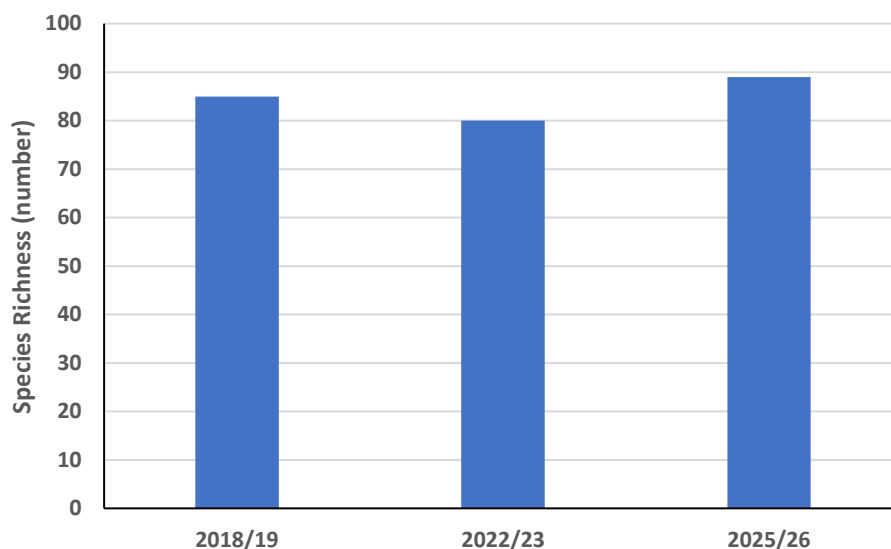


Fig. 5 Species richness recorded in fish diversity surveys at Port Coogee Marina: 2018/19; 2022/23; 2025/26

4.5 Other finfish observations of interest

The Frillgoby identified in previous marina surveys as *Bathygobius fuscus* is now thought to be *B. krefftii* (or possibly a new species; Fig. 6). There are currently no museum records of any *Bathygobius* species from near Perth, but fin-ray counts and colouration are a good match to the east coast *B. krefftii*, even though *B. fuscus* is supposedly within range at the marina, where it is common near the rock walls.

Two whaler shark carcasses were found (most likely Dusky Whalers *Carcharhinus obscurus*) during on T4 on 25/4/2025 (Fig. 7). These were not included in the species count as they appeared to have been dumped after fillets were removed, and it wasn't clear if they were caught in the marina or elsewhere.



Krefftt's Frillgoby

Bathygobius krefftii



Shark carcasses, likely Dusky Whaler *Carcharhinus obscurus*

Fig. 6 *Bathygobius krefftii* (formerly *B. fuscus*)

Fig. 7 Shark carcasses dumped in the marina

4.6 Coral

As reported in the 2021/22 marina survey (Whisson and Hoschke, 2023) at least 12 species of stony corals from six families were identified growing on marina walls. In addition, during the current survey there was a noticeable increase in soft corals from the genus *Chromonephthea* (family Nephtheidae), with orange, pink and white forms observed colonising many of the pylons in the marina (Fig. 8). There is little published information on occurrences of this genus in the coastal vicinity of Perth, but it appears to have spread rapidly over recent years on shallow artificial structures and rock walls including the new artificial reef at CY O'Connor beach and jetties along the coast.

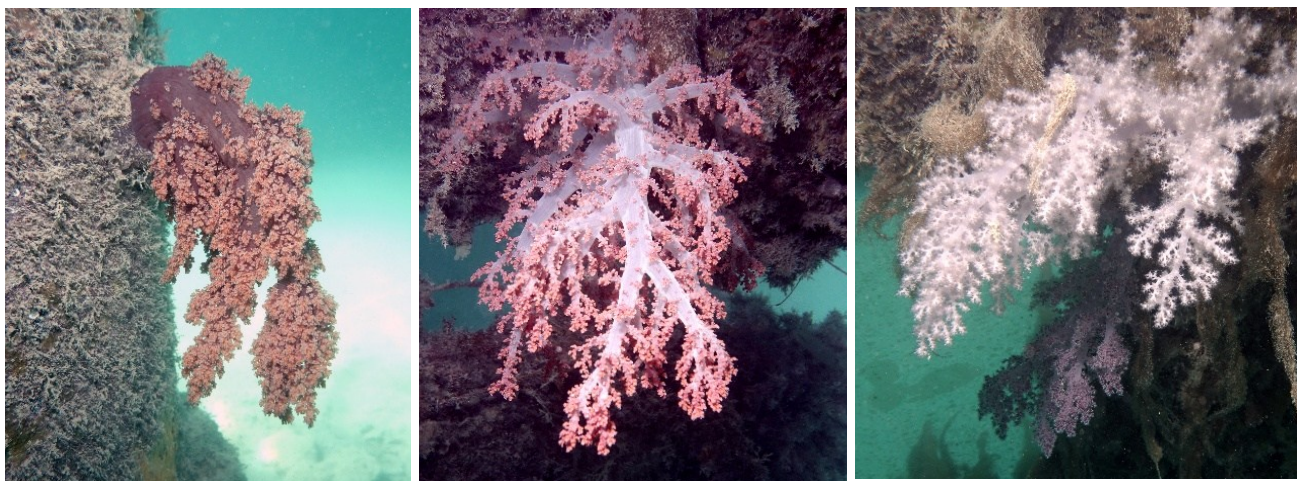


Fig. 8 Soft corals from the genus *Chromonephthea* growing on marina pylons

4.7 Flora

Two patches of the seagrass *Posidonia australis*, mapped during the 2019 and 2022 surveys, approximately 20m off the end of D jetty, were again observed during the current survey period, despite heavy epiphytic growth and frequent high turbidity (Fig. 9). The patches appear to have expanded somewhat, with an associated sediment build-up noticeable.



Fig. 9 *Posidonia australis* seagrass in 2023 (left) and 2025 (right)

*Whisson, G and Hoschke, A. 2023. *Final Report. Port Coogee Marina fish diversity monitoring programme.* Aqua Research & Monitoring Services, May 2024, 29p.

In addition seagrass was noted growing for the first time in the marina entrance channel where seagrass and algal wrack accumulates during winter storms (Fig. 10). The species was predominantly *Amphibolis antarctica*, with a few clumps of *Posidonia sinuosa*.



Fig. 10 *Amphibolis antarctica* (left) and *Posidonia sinuosa* (right) in the marina entrance channel

4.8 Sea Temperature

A seawater temperature monitoring programme initiated in Port Coogee Marina in November 2018 is ongoing. Measurements are recorded at hourly intervals using two HOBO UA-001-64 data loggers installed approximately 50 cm above the seabed at the western end of D Jetty (location depicted on Fig. 1). Daily and monthly mean temperatures were calculated through to the end of February 2026, excluding a gap from 25 September 2019 to 8 February 2020 due to logger failure (Table 2; Fig. 11).

Table 2. Monthly Mean Sea Temperature in Port Coogee Marina (see Fig. 1 for logger location).

	2018	2019	2020	2021	2022	2023	2024	2025	2026
Jan	no data	23.6	no data	24.2	24.7	23.7	25.0	24.9	23.9
Feb	no data	23.8	no data	23.8	25.1	24.4	24.5	24.4	24.1
Mar	no data	23.6	23.6	23.5	23.8	23.6	23.1	23.8	
Apr	no data	20.9	21.9	22.1	21.6	20.8	21.1	22.3	
May	no data	18.6	18.7	20.1	19.5	18.9	20.1	20.2	
Jun	no data	17.0	18.6	17.8	18.3	17.2	18.8	18.9	
Jul	no data	16.8	17.3	16.6	17.5	16.2	17.0	16.6	
Aug	no data	16.8	16.9	16.7	16.8	16.7	17.4	16.4	
Sep	no data	17.6	17.6	17.3	17.4	18.2	17.9	17.2	
Oct	no data	no data	19.5	18.5	18.8	19.9	19.6	19.5	
Nov	20.5	no data	21.1	20.2	19.8	21.7	21.0	20.8	
Dec	22.3	no data	22.5	22.6	22.3	23.7	23.1	23.0	

*Colour highlights = Highest/lowest mean monthly temperature over whole programme

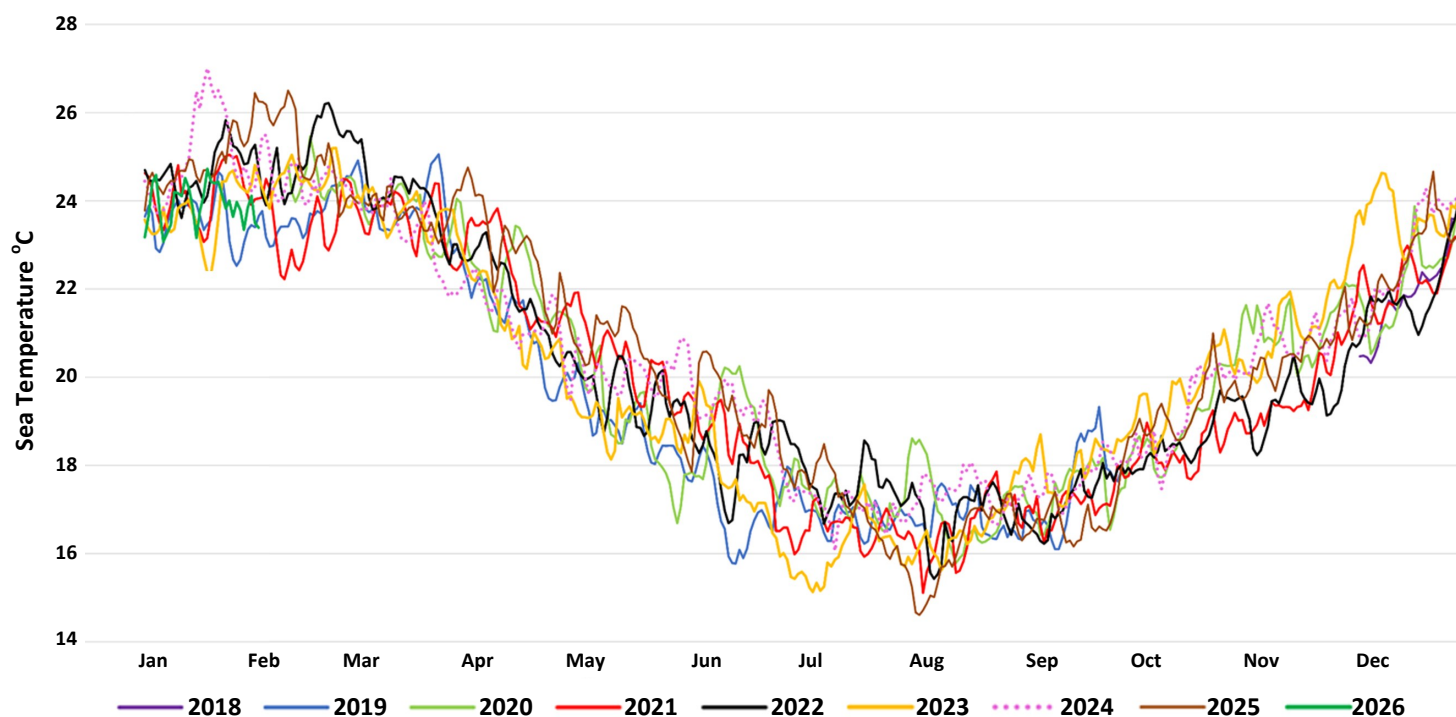


Fig. 11 Port Coogee Marina Mean Daily Sea Temperature; Dec 2018 to Feb 2026

Over the period 15–19 January 2024, mean daily sea temperatures at approximately 3 m depth were between 2.2 and 3.7°C higher than the corresponding mean daily temperatures for the same period between 2019 and 2023 (excluding 2020 when data were incomplete). Temperatures peaked at 27°C on 18 January 2024, representing the highest daily mean recorded since monitoring commenced (Fig. 11). This event is clearly distinguishable from other years and represents a short-term warm anomaly within the dataset.

Marina sea temperatures during 2025 showed increased seasonal variability. Elevated temperatures persisted into summer, with nine days exceeding 26°C between 31 January and 11 February (Fig. 11). In contrast, winter 2025 recorded the lowest temperatures in the monitoring period, with daily means falling below 15°C for the first time between 29 July and 1 August (Fig. 11). Together, these observations indicate a shift towards greater seasonal variability in recent years, characterised by both higher summer maxima and lower winter minima. Outside of these extremes, interannual temperature patterns remain broadly consistent (Table 2; Fig. 11).

From an ecological perspective, elevated summer temperatures of the magnitude recorded in January 2024 and February 2025 may place thermal stress on temperature-sensitive marine flora and fauna, particularly sessile organisms such as macroalgae, sponges and corals, as well as early life stages of fish and invertebrates. Prolonged periods above ~26°C may also influence growth and behaviour in mobile species, potentially altering species interactions and distribution within the marina.

Warmer conditions are also typically associated with an increased influence of tropical and subtropical species transported southward via the Leeuwin Current, often arriving as larvae or small juveniles. Enhanced recruitment of these species during warm periods may lead to temporary or longer-term shifts in species composition within the marina.

Conversely, the lower winter temperatures recorded in 2025 may affect cold-sensitive species and could influence seasonal recruitment patterns. Increased temperature variability may therefore have implications for community structure and resilience, particularly if such extremes become more frequent or prolonged. Continued periods of elevated temperature may favour species arriving from the north and potentially disadvantage temperate fauna, contributing to gradual compositional changes in the local assemblage.

4.9 Other Fauna

A range of non-fish fauna were opportunistically observed during the 2025–26 surveys, including echinoderms, molluscs and crustaceans (Appendix 4). Notable records included several nudibranchs, including *Thordisa villosa*, and a pair of adult *Dendrodoris krusensternii* (Gem Doris, Fig. 12), and a sap-sucking slug *Elysia ornata*. Chitons (including *Ischnochiton* spp.) were recorded on hard substrates (Fig. 13), while bivalves such as mussels and razor clams were also present. Crustaceans included the Four-lobed Swimming Crab (*Thalamita sima*) and the Australian Blue Swimmer Crab (*Portunus armatus*), with higher numbers of *P. armatus* juveniles noted compared to previous surveys. These observations highlight the diversity of cryptic and benthic fauna utilising marina habitats, particularly within sheltered substrates and artificial structures. Further information on the invertebrate marine fauna prevailing in Port Coogee Marina can be found in: Whisson, G and Hoschke, A. 2024. *Final Report. Port Coogee Marina critter monitoring programme (non-fish marine fauna)*. Aqua Research & Monitoring Services, May 2024, 45p.



Fig. 12 A pair of Gem Doris (*Dendrodoris krusensternii*) nudibranchs (left) and *Thordisa villosa* (right)



Fig. 13 Chitons in the marina: *Ischnochiton cariosus* (left) and *Ischnochiton contractus* (right)

4.9.1 Pleurobranch Observation

During the dive survey on 11 December 2025, a large pleurobranch was observed (Fig. 14), which was subsequently identified as *Pleurobranchus peronii* (Peron's Pleurobranch), measuring approximately 12 cm in length (Fig. 14). This species is a nocturnal, benthic predator that typically remains concealed beneath ledges and within crevices during daylight hours, making it infrequently recorded in standard survey conditions. It is widely distributed across the Indo-Pacific, including Western Australian waters, but is only occasionally encountered locally due to its cryptic and predominantly nocturnal behaviour. Its occurrence within the marina indicates the presence of well-developed benthic communities capable of supporting higher trophic-level invertebrates.



Fig. 14 Peron's Pleurobranch in Port Coogee Marina



Pleurobranchus peronii

6.0 RECOMMENDATIONS

Continued long-term monitoring of marine biodiversity and seawater temperature within Port Coogee Marina is strongly recommended, as the dataset is now beginning to provide a valuable temporal record of environmental conditions and ecological patterns along the metropolitan coast. Ongoing diversity surveys at 2-3 year intervals will be essential for detecting trends in species composition, including the increasing influence of warmer water taxa and responses to temperature variability, and for distinguishing short-term anomalies from longer-term change. Observations of other biological indicators of marina health, including coral growth, seagrass distribution and invertebrate diversity, should continue in concert with the finfish surveys.

The importance of this work is underscored by the marina's achievement of international environmental accreditation through the Marina Industries Association, including Clean Marina status (first awarded in 2018), and more recently, Fish Friendly accreditation in 2025, outcomes that have coincided with ARMS' ongoing marine monitoring programme.

Continued monitoring will therefore not only strengthen the scientific value of the dataset but also support ongoing environmental management, reporting and accreditation of the marina as a high-quality marine habitat.

APPENDIX 1: Combined fish species recorded in Port Coogee Marina during the 2018/19, 2022/23 and 2025/26 surveys (in phylogenetic order)

	FAMILY	Common Name	Species († endemic to WA)	2018/19	2022/23	2025/26
1	ORECTOLOBIDAE	Spotted Wobbegong	<i>Orectolobus maculatus</i>	1		
2	TRYGONORRHINIDAE	Southern Fiddler Ray	<i>Trygonorrhina dumerilii</i>	1		1
3	UROLOPHIDAE	Western Shovelnose Stingaree	<i>Trygonoptera mucosa</i>	1	1	1
4	MURAENIDAE	Highfin Moray	<i>Gymnothorax pseudothyrsoides</i>	1	1	
5	CLUPEIDAE	Scaly Mackerel	<i>Sardinella lemuru</i>	1		1
6	CLUPEIDAE	Blue Sprat	<i>Spratelloides robustus</i>	1	1	1
7	ENGRAULIDAE	Australian Anchovy	<i>Engraulis australis</i>	1		
8	PLOTOSIDAE	Estuary Cobbler	<i>Cnidoglanis macrocephalus</i>		1	1
9	PLOTOSIDAE	Striped Catfish	<i>Plotosus lineatus</i>	1	1	1
10	ANTENNARIIDAE	Sargassum Fish	<i>Histrio histrio</i>			1
11	MUGILIDAE	Yelloweye Mullet	<i>Aldrichetta forsteri</i>	1	1	1
12	MUGILIDAE	Sea Mullet	<i>Mugil cephalus</i>	1		1
13	ATHERINIDAE	Common Hardyhead	<i>Atherinomorus vaigiensis</i>	1	1	1
14	ATHERINIDAE	Silver Fish	<i>Leptatherina presbyteroides</i>	1	1	
15	HEMIRAMPHIDAE	Southern Garfish	<i>Hyporhamphus melanochir</i>		1	
16	SYNGNATHIDAE	Tiger Pipefish	<i>Filicampus tigris</i>	1		1
17	SYNGNATHIDAE	West Australian Seahorse	<i>Hippocampus subelongatus</i>	1	1	1
18	SYNGNATHIDAE	Knobby Seahorse	<i>Hippocampus tuberculatus</i>	1		
19	SYNGNATHIDAE	Rhino Pipefish	<i>Histiogamphelus cristatus</i>	1		
20	SYNGNATHIDAE	Javelin Pipefish	<i>Lissocampus runa</i>	1		
21	SYNGNATHIDAE	Spotted Pipefish	<i>Stigmatopora argus</i>	1		
22	PEGASIDAE	Slender Seamoth	<i>Pegasus volitans</i>	1		
23	TETRAROGIDAE	Soldier	<i>Gymnapistes marmoratus</i>	1	1	
24	TRIGLIDAE	Red Gurnard	<i>Chelidonichthys kumu</i>	1		
25	NEOSEBASTIDAE	Little Gurnard Perch	<i>Maxillicosta scabriceps</i>		1	
26	PLATYCEPHALIDAE	Longhead Flathead	<i>Leviprora inops</i>	1	1	1
27	PLATYCEPHALIDAE	Midget Flathead (cf)	<i>Onigocia cf. spinosa</i>			1
28	PLATYCEPHALIDAE	Southern Bluespotted Flathead	<i>Platycephalus speculator</i>		1	1
29	PLATYCEPHALIDAE	Yellowtail Flathead	<i>Platycephalus westraliae</i>	1		1
30	SERRANIDAE	Blowhole Perch	<i>Caesiocorpius theagenes</i> †	1	1	1
31	APOGONIDAE	Western Gobbleguts	<i>Ostorhinchus rueppellii</i>	1	1	1
32	APOGONIDAE	Western Striped Cardinalfish	<i>Ostorhinchus victoriae</i>	1	1	1
33	APOGONIDAE	Wedgehead Siphonfish	<i>Siphamia cuneiceps</i>	1		1
34	LATIDAE	Spikey Bass	<i>Hypopterus macropterus</i> †	1		
35	LATIDAE	Black Sand Bass	<i>Psammoperca datnoides</i>		1	1
36	POMATOMIDAE	Tailor	<i>Pomatomus saltatrix</i>		1	1
37	SILLAGINIDAE	Southern School Whiting	<i>Sillago bassensis</i>	1	1	1
38	SILLAGINIDAE	Western Trumpeter Whiting	<i>Sillago burrus</i>	1	1	1
39	CARANGIDAE	Silver Trevally	<i>Pseudocaranx georgianus</i>	1	1	1
40	CARANGIDAE	Samsonfish	<i>Seriola hippos</i>			1
41	CARANGIDAE	Yellowtail Scad	<i>Trachurus novaezelandiae</i>	1	1	1
42	NEMIPTERIDAE	Western Butterfish	<i>Pentapodus vitta</i> †	1	1	1
43	GERREIDAE	Common Silverbiddy	<i>Gerres subfasciatus</i>	1	1	1
44	GERREIDAE	Silverbelly	<i>Parequula melbournensis</i>	1		

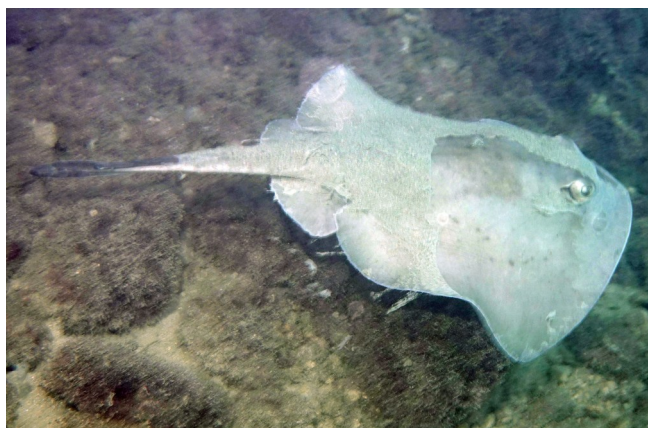
APPENDIX 1 (cont'd): Combined fish species recorded in Port Coogee Marina during the 2018/19, 2022/23 and 2025/26 surveys (in phylogenetic order)

	FAMILY	Common Name	Species († endemic to WA)	2018/19	2022/23	2025/26
45	SPARIDAE	Black Bream	<i>Acanthopagrus butcheri</i>	1	1	1
46	SPARIDAE	Pink snapper	<i>Chrysophrys auratus</i>	1		1
47	SPARIDAE	Tarwhine	<i>Rhabdosargus sarba</i>	1	1	1
48	MULLIDAE	Blacksaddle Goatfish	<i>Parupeneus spilurus</i>	1		1
49	MULLIDAE	Bluespotted Goatfish	<i>Upeneichthys vlamingii</i>	1		1
50	MULLIDAE	Australian Goatfish	<i>Upeneus australiae</i>		1	1
51	PEMPHERIDAE	Elongate Bullseye	<i>Parapriacanthus elongatus</i>			1
52	PEMPHERIDAE	Rough Bullseye	<i>Pempheris klunzingeri</i>	1	1	1
53	MONODACTYLIDAE	Western Pomfred	<i>Schuettea woodwardi</i>	1	1	1
54	ARRIPIDAE	Australian Herring	<i>Arripis georgiana</i>	1	1	1
55	ARRIPIDAE	West Australian Salmon	<i>Arripis truttaceus</i>	1	1	
56	GIRELLIDAE	Zebrafish	<i>Girella zebra</i>	1	1	1
57	KYPHOSIDAE	Western Buffalo Bream	<i>Kyphosus cornelii</i> †	1	1	1
58	KYPHOSIDAE	Silver Drummer	<i>Kyphosus sydneyanus</i>	1	1	1
59	MICROCANTHIDAE	Stripey	<i>Microcanthus strigatus</i>	1	1	1
60	MICROCANTHIDAE	Moonlighter	<i>Tilodon sexfasciatus</i>		1	
61	SCORPIDIDAE	Banded Sweep	<i>Scorpiis georgiana</i>	1	1	1
62	CHAETODONTIDAE	Western Talma	<i>Chelmonops curiosus</i>	1	1	1
63	ENOPLOSIDAE	Old Wife	<i>Enoplosus armatus</i>	1	1	1
64	TERAPONTIDAE	Yellowtail Grunter	<i>Amniataba caudavittata</i>			1
65	TERAPONTIDAE	Western Striped Grunter	<i>Helotes octolineatus</i>	1	1	1
66	APLODACTYLIDAE	Western Seacarp	<i>Aplodactylus westralis</i>			1
67	LATRIDAE	Magpie Morwong	<i>Goniistius gibbosus</i> †	1	1	1
68	LATRIDAE	Redlip Morwong	<i>Goniistius rubrolabiatu</i> †	1	1	1
69	POMACENTRIDAE	Indo-Pacific Sergeant	<i>Abudefduf vaigiensis</i>			1
70	POMACENTRIDAE	McCulloch's Scalyfin	<i>Parma mccullochi</i> †	1	1	1
71	POMACENTRIDAE	Western Scalyfin	<i>Parma occidentalis</i>		1	
72	POMACENTRIDAE	Miller's Damsel	<i>Pomacentrus milleri</i>	1	1	1
73	LABRIDAE	Western Blue Groper	<i>Achoerodus gouldii</i>			1
74	LABRIDAE	Baldchin Groper	<i>Choerodon rubescens</i> †	1	1	1
75	LABRIDAE	Western King Wrasse	<i>Coris auricularis</i> †	1	1	1
76	LABRIDAE	Blue Weed-Whiting	<i>Haletta semifasciata</i>	1	1	1
77	LABRIDAE	Little Weed Whiting	<i>Neodax balteatus</i>	1	1	1
78	LABRIDAE	Brownspotted Wrasse	<i>Notolabrus parilus</i>	1	1	1
79	LABRIDAE	Bluethroat Rainbow Wrasse	<i>Suezichthys cyanolaemus</i>		1	
80	LABRIDAE	Herring Cale	<i>Olisthops cyanomelas</i>			1
81	PINGUIPEDIDAE	Wavy Grubfish	<i>Parapercis haackei</i>	1	1	1
82	TRIPTERYGIIDAE	Blackhead Threefin	<i>Enneapterygius larsonae</i> †	1	1	1
83	BLENNIIDAE	Germain's Blenny	<i>Omobranchus germaini</i> <i>Parablennius</i>	1	1	1
84	BLENNIIDAE	False Tasmanian Blenny	<i>postoculomaculatus</i> †	1	1	1
85	BLENNIIDAE	Shorthead Sabretooth Blenny	<i>Petroscirtes breviceps</i>	1	1	1

APPENDIX 1 (cont'd): Combined fish species recorded in Port Coogee Marina during the 2018/19, 2022/23 and 2025/26 surveys (in phylogenetic order)

	FAMILY	Common Name	Species († endemic to WA)	2018/19	2022/23	2025/26
86	BLENNIIDAE	Crested Sabretooth Blenny	<i>Petroscirtes mitratus</i>		1	
87	CALLIONYMIDAE	Finger Dragonet	<i>Dactylopus dactylopus</i>	1	1	1
88	CALLIONYMIDAE	Painted Stinkfish	<i>Eocallionymus papilio</i>	1	1	
89	CALLIONYMIDAE	Longspine Dragonet	<i>Pseudocalliurichthys goodladi†</i>	1	1	
90	GOBIIDAE	Striped Sandgoby	<i>Acentrogobius pflaumii</i>	1	1	1
91	GOBIIDAE	Whitebarred Goby	<i>Amblygobius phalaena</i>	1	1	1
92	GOBIIDAE	Bridled Goby	<i>Arenigobius bifrenatus</i>	1	1	1
93	GOBIIDAE	Kreffft's Frillgoby	<i>Bathygobius krefftii</i>	1	1	1
94	GOBIIDAE	Sculptured Goby	<i>Callogobius mucosus</i>		1	1
95	GOBIIDAE	Twospot Eviota	<i>Eviota bimaculata</i>	1	1	1
96	GOBIIDAE	Southern Longfin Goby	<i>Favonigobius lateralis</i>	1	1	1
97	ACANTHURIDAE	Convict Surgeonfish	<i>Acanthurus triostegus</i>			1
98	ACANTHURIDAE	Pencil Surgeonfish	<i>Acanthurus dussumieri</i>			1
99	SPHYRAENIDAE	Striped Barracuda	<i>Sphyraena obtusata/pinquis</i>	1	1	1
100	XIPHIIDAE	Swordfish	<i>Xiphias gladius</i>	1		
101	PARALICHTHYIDAE	Smalltooth Flounder	<i>Pseudorhombus jenynsii</i>	1	1	
102	MONACANTHIDAE	Spinytail Leatherjacket	<i>Acanthaluteres brownii</i>	1	1	1
103	MONACANTHIDAE	Bridled Leatherjacket	<i>Acanthaluteres spilomelanurus</i>		1	1
104	MONACANTHIDAE	Toothbrush Leatherjacket	<i>Acanthaluteres vittiger</i>	1	1	1
105	MONACANTHIDAE	Southern Pygmy Leatherjacket	<i>Brachaluteres jacksonianus</i>			1
106	MONACANTHIDAE	Sixspine Leatherjacket	<i>Meuschenia freycineti</i>		1	1
107	MONACANTHIDAE	Horseshoe Leatherjacket	<i>Meuschenia hippocrepis</i>	1	1	1
108	MONACANTHIDAE	Fanbelly Leatherjacket	<i>Monacanthus chinensis</i>	1	1	1
109	MONACANTHIDAE	Rough Leatherjacket	<i>Scobinichthys granulatus</i>			1
110	ARACANIDAE	Western Smooth Boxfish	<i>Anoplocapros amygdaloides</i>	1	1	1
111	ARACANIDAE	Whitebarred Boxfish	<i>Anoplocapros lenticularis</i>	1		1
112	TETRAODONTIDAE	Stars and Stripes Puffer	<i>Arothron hispidus</i>		1	
113	TETRAODONTIDAE	Weeping Toadfish	<i>Torquigener pleurogramma</i>	1	1	1
114	DIODONTIDAE	Globefish	<i>Diodon nictemerus</i>		1	1
			TOTALS	85	80	89

APPENDIX 2: Fish photographs taken during the 2025/26 marine survey in Port Coogee Marina



Trygonoptera mucosa Western Shovelnose Stingaree



Trygonorrhina dumerilii Southern Fiddler Ray



Sardinella lemuru

Scaly Mackerel



Plotosus lineatus

Striped Catfish (adult)



Plotosus lineatus

Striped Catfish (juv school)



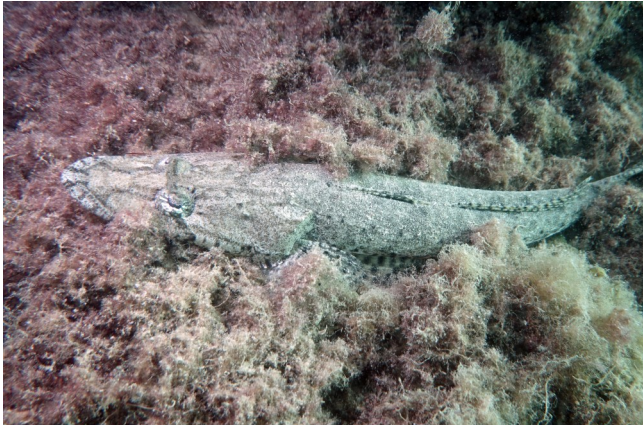
Filicampus tigris

Tiger Pipefish



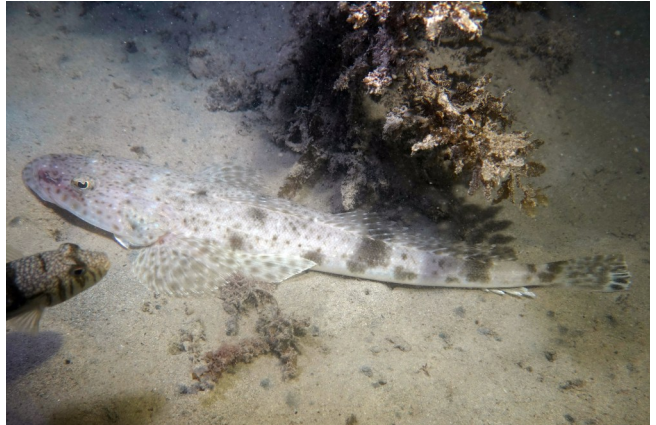
Hippocampus subelongatus West Australian Seahorse

APPENDIX 2 (cont'd): Fish photographs taken during the 2025/26 marine survey in Port Coogee Marina



Leviprora inops

Longhead Flathead



Platycephalus speculator Southern Bluespotted Flathead



Platycephalus westraliae

Yellowtail Flathead



Caesioscorpis theagenes Blowhole Perch (at night)



Ostorhinchus rueppellii

Western Gobbleguts

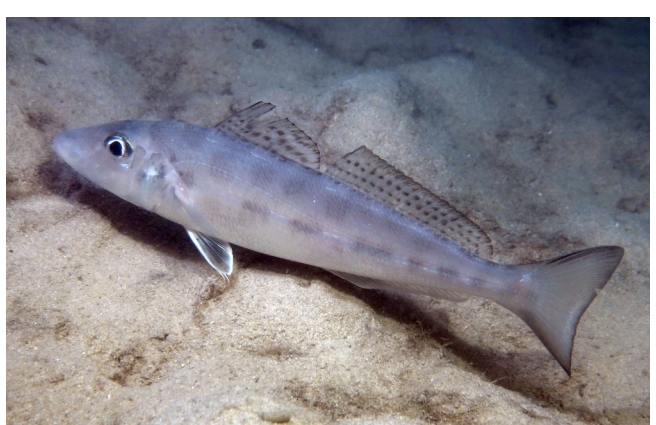


Ostorhinchus victoriae Western Striped Cardinalfish



Sillago bassensis

Southern School Whiting



Sillago maculata

Trumpeter Whiting

APPENDIX 2 (cont'd): Fish photographs taken during the 2025/26 marine survey in Port Coogee Marina



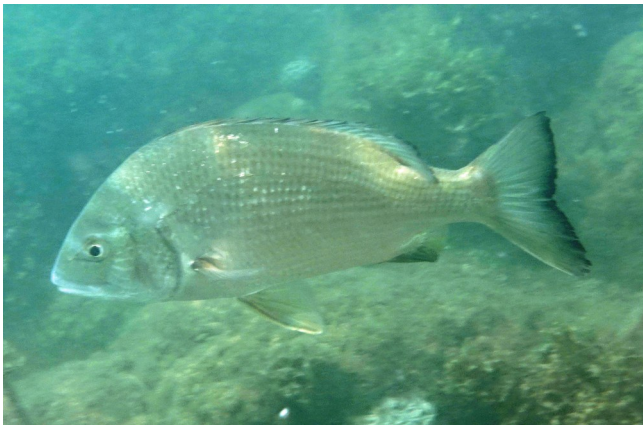
Pseudocaranx georgianus

Silver Trevally



Trachurus novaezelandiae

Yellowtail Scad



Acanthopagrus butcheri

Black Bream



Rhabdosargus sarba

Tarwhine



Parupeneus spilurus

Blacksaddle Goatfish



Upeneus australiae

Australian Goatfish



Upeneichthys vlamingii

Bluespotted Goatfish



Schuettea woodwardi

Western Pomfred

APPENDIX 2 (cont'd): Fish photographs taken during the 2025/26 marine survey in Port Coogee Marina



Arripis georgiana

Australian Herring



Girella zebra

Zebrafish



Kyphosus cornelii

Western Buffalo Bream



Kyphosus sydneyanus

Silver Drummer



Microcanthus strigatus

Stripey



Scorpis georgiana

Banded Sweep



Chelmonops curiosus

Western Talma



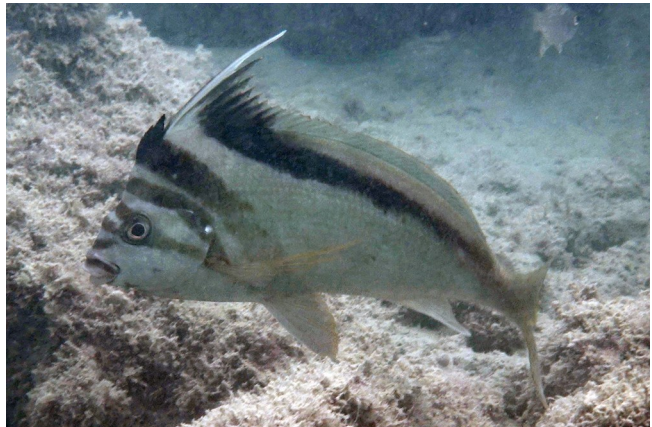
Enoplosus armatus

Old Wife

APPENDIX 2 (cont'd): Fish photographs taken during the 2025/26 marine survey in Port Coogee Marina



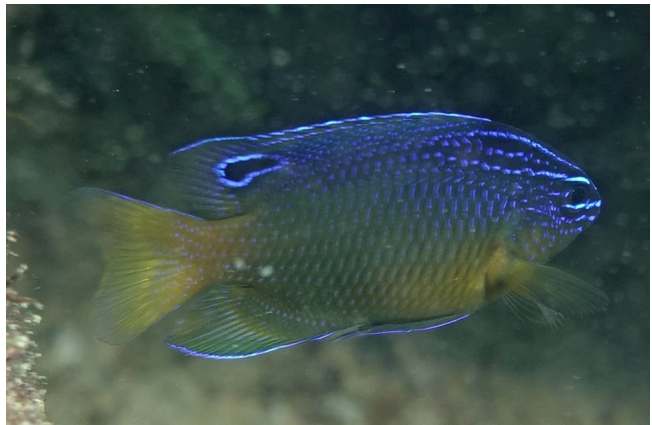
Helotes octolineatus Western Striped Grunter



Goniistius gibbosus Magpie Morwong



Goniistius rubrolabiatatus Redlip Morwong



Pomacentrus milleri Miller's Damsel (juv)



Haletta semifasciatus Blue Weed Whiting



Parapercis haackei Wavy Grubfish



Omobranchus germaini Germain's Blenny



Petroscirtes breviceps Shorthead Sabretooth Blenny

APPENDIX 2 (cont'd): Fish photographs taken during the 2025/26 marine survey in Port Coogee Marina



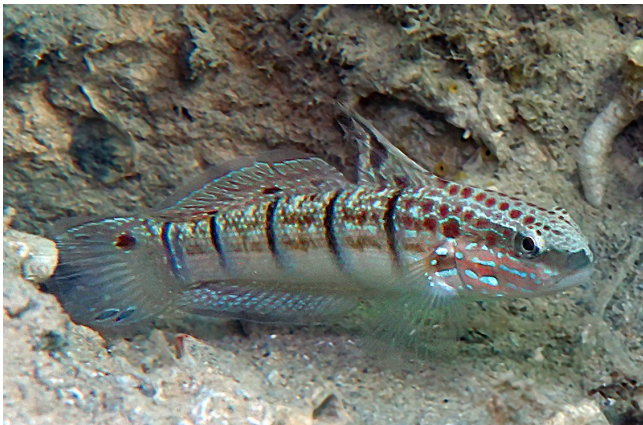
Dactylopus dactylopus

Finger Dragonet



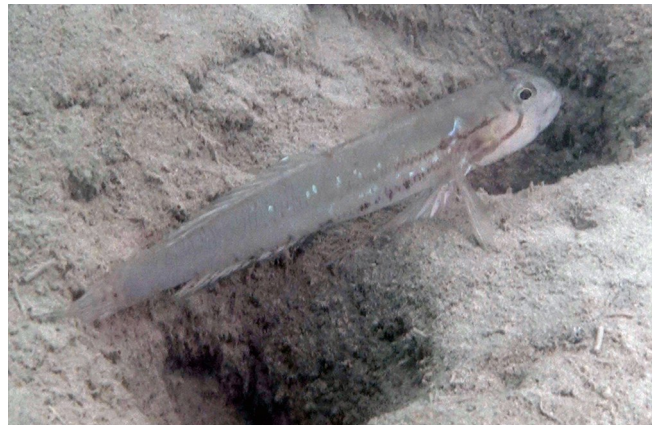
Acentrogobius pflaumi

Striped Sandgoby



Amblygobius phalaena

Whitebarred Goby



Arenigobius bifrenatus

Bridled Goby



Bathygobius krefftii

Krefft's Frillgoby



Callogobius mucosus

Sculptured Goby



Eviota bimaculata

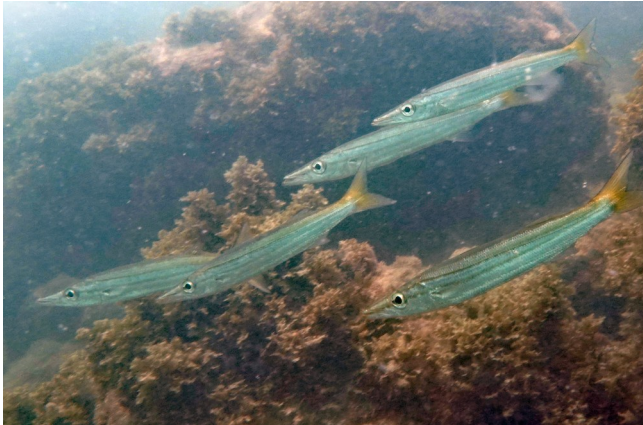
Twospot Eviota



Favonigobius lateralis

Southern Longfin Goby

APPENDIX 2 (cont'd): Fish photographs taken during the 2025/26 marine survey in Port Coogee Marina



Sphyraena obtusata Striped Barracuda



Meuschenia freycineti Sixspine Leatherjacket



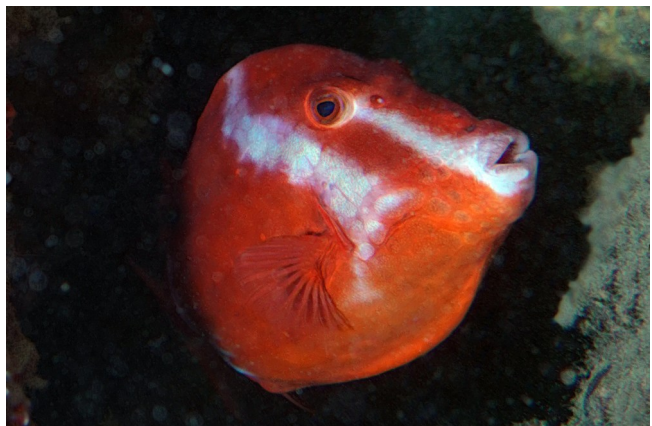
Meuschenia hippocrepis Horseshoe Leatherjacket



Monacanthus chinensis Fanbelly Leatherjacket



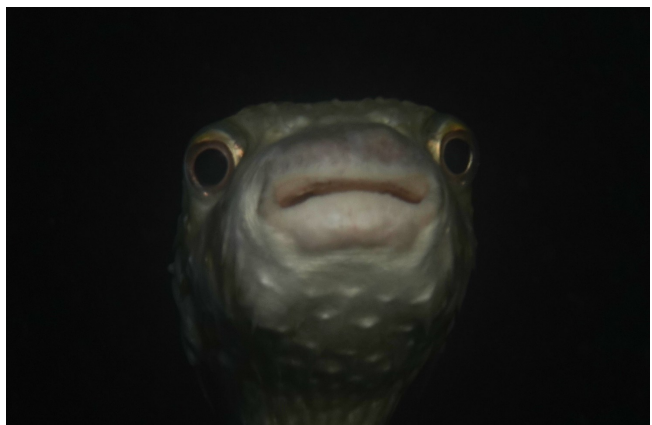
Anoplocapros amygdaloides Western Smooth Boxfish



Anoplocapros lenticularis Whitebarred Boxfish



Diodon nicthemerus Globefish



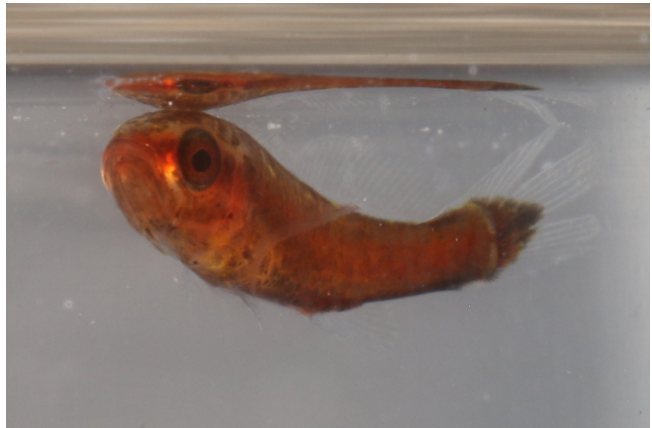
Diodon nicthemerus Globefish

APPENDIX 3: Fish species recorded in Port Coogee Marina not observed in previous surveys



Seriola hippos

Samson Fish



Aplodactylus westralis

Western Seacarp (juv)



Abudefduf vaigiensis

Indo-Pacific Sergeant (juv)



Achoerodus gouldii

Western Blue Groper (juv)



Acanthurus triostegus

Convict Surgeonfish (juv)



Acanthurus dussumieri

Pencil Surgeonfish (juv)



Brachaluteres jacksonianus

Southern Pygmy
Leatherjacket



Scobinichthys granulatus

Rough Leatherjacket (juv)

APPENDIX 3 (cont'd): Fish species recorded in Port Coogee Marina not observed in previous surveys



Histrio histrio

Sargassum Fish



Onigocia spinosa

Midget Flathead



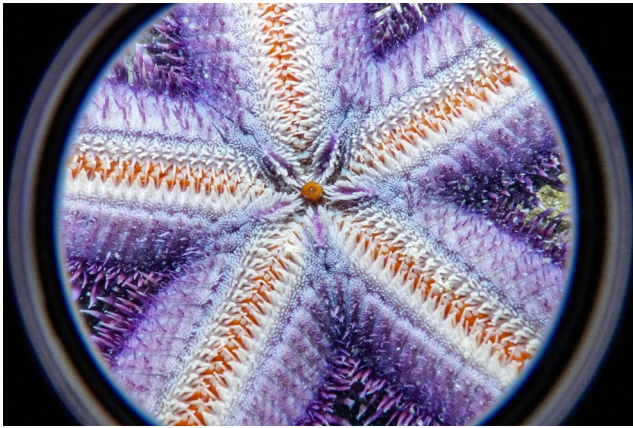
Parapriacanthus elongatus

Elongate Bullseye



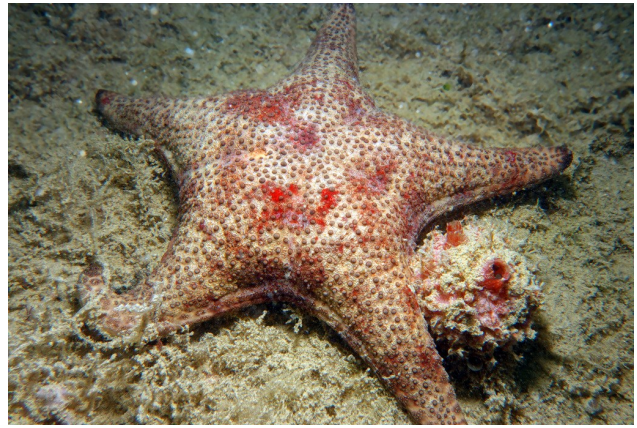
Mixed school of Elongate and Rough Bullseyes

APPENDIX 4: Photographs of non-fish species from the 2025/26 marine survey in Port Coogee Marina



Priess' Sand Star (underside)

Astropecten preissi



Australian Cushion Star

Anthenea australiae



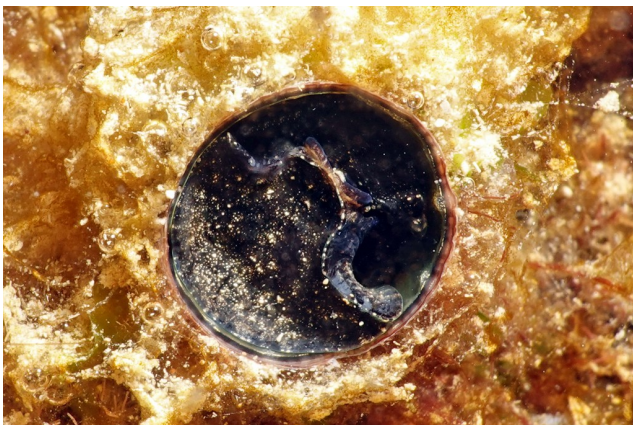
Four-lobed Swimming Crab

Thalamita sima



Australian Trumpet

Syrinx aruana



Common Worm-Shell

Thylacodes sipho



Palaemonid Shrimp

Family Palaemonidae



Scaleworm

Family Polynoidae



Undescribed Nudibranch

Goniobranchus sp.