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Original Article

Notes on some newly recorded fish from Andhra Pradesh coast, India

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Abstract
Eleven fish species, namely *Heniochus singularius* Smith & Radcliffe, 1911; *Entomacrodus vermiculatus* (Valenciennes, 1836); *Pomacentrus similis* Allen, 1991; *Myripristis berndti* Jordan & Evermann, 1903; *Myripristis seychellensis* Cuvier, 1829; *Sargocentron cornutum* (Bleeker, 1854); *Thalassoma lunare* (Linnaeus, 1758); *Pardachirus pavoninus* (Lacepède, 1802); *Paraplotosus albilabris* (Valenciennes, 1840); *Canthigaster papua* (Bleeker, 1848), have been documented for the first time in Andhra Pradesh state of India associated with artificial reef and rocky shoreline habitats. Additionally, *E. thalassinus* has been recorded for the first time in India from this study. The study provides detailed descriptions of the diagnostic characteristics and distribution of these ten species. These findings highlight the richness of fish fauna along the Andhra Pradesh coastline of India.

Keywords: artificial reef habitat; *Entomacrodus*; fish diversity; new record; range extension

1 | INTRODUCTION

Being one of the mega diversity countries the marine fish faunal resources of India is one of the gemstones. About 2443 species of marine fishes have been recorded from India (Gopi and Mishra 2015). The mainland Indian coastline has been represented by the presence of 1905 marine fish species (Mohapatra *et al*. 2020). Andhra Pradesh being a maritime state; is situated at the east coast of India, covering a coastline of 974 km and a continental shelf area of 33227 km^2 from 12 coastal districts (Rao *et al*. 2008). The fisheries resources of Andhra Pradesh is quite diverse and it ranked third in overall marine fish production (5.94 lakh tones) in India in 2022 (HFS 2022). The main reason behind this output is the diverse fishing grounds and various fishing resources like crafts and gears containing many fishing vessels and various methods of fish catching involved in the process (Rao *et al*. 2008). Due to continuous fish catching stations around the coastline, a total of 353 fish landing centres are in the state (CMFRI 2012).

Fishes are one of the crucial pillars holding the aquatic ecosystem functioning in community equilibrium, energy flow and nutrient cycling (Jeppesen *et al*. 2010). Various physio-chemical and geological factors affect the fish community distribution from site to site (Talukder *et al*. 2016). Marine fish distribution is highly dependent upon the salinity, ocean current, temperature and niche availability (Srinivasan *et al*. 2020). Overall fish diversity of the Andhra Pradesh state has been studied by several persons, namely Sudarsan (1988), Krishnan and Mishra (1993), Sujatha (1995), Barman *et al.* (2004), Sreedhar *et al*. (2010) and Chatla and Padmavathi (2021). The comprehensive work by Barman *et al*. (2004) reported a total of 580 species of fish under 292 genera, 121 families and 27 orders from Andhra Pradesh coast, which can be accepted as baseline data for the next two decades of study; although the record of 200 species from the Visakhapatnam is the pioneering work from the state of

Andhra Pradesh by Russell (1803). Very recently, the work by Silambarasan *et al*. (2022) provided a baseline data of the reef-associated fish from Andhra Pradesh coast and that recorded a total of 127 species from the region. Although most of the reef ecosystem of India is located Andaman and Nicobar Islands, Lakshadweep Islands, Gulf of Mannar, Palk Bay, Gulf of Kutch (Muley *et al*. 2000). The patchy reef systems of the Andhra coast, Tamil Nadu coast of the east coast of India cannot be overlooked because these grounds harbours a very suitable habitat for breeding, foraging and refuge for those fishes which are purely marine and cannot enter an estuarine ecosystem (Silambarasan *et al*. 2022). Reef ecosystem (artificial / coral) is quite essential as a nursery ground for the fishes and to conserve fish diversity (Flopp *et al*. 2020). The selected study site in the Andhra Pradesh coastline is an artificial reef system and rocky shoreline, which is closely related with the patchy reef ecosystem of Andhra Pradesh. Reviewing these facts, present study was aimed to prepare inventory of the reef-associated fishes of Andhra Pradesh for future studies and better conservational efforts.

2 | METHODOLOGY

The present study was carried out in Andhra Pradesh coast of India, during 2019 to 2023 with the help of SCUBA and photographed from reef sites of Andhra coast, namely Chintapalli reef (Santhapalli Rocks) 18°00.275N 83°43.021E (8 meter depth) and 18°00.457N 83°43.641E (22 meter depth). Also some of the specimens were collected from trawler trash and Visakhapatnam Fishing Harbour (17°41.783N 83°18.031E; Figure 1). Freshly collected specimens were fixed using 10% formalin and then preserved in 70% ethanol for long term preservation in museum. The photographed and collected specimens were identified based on the structure, morphological characteristics following general published literatures (Springer 1967; Allen and Erdmann 2012; Nair and Dineshkumar 2016; Froese and Pauly 2023). Classification of the species is followed from e-Catalogue of Fishes (Fricke *et al.* 2023). The collected and identified specimens were deposited in the National Zoological Collections of Zoological Survey of India, Sunderban Regional Centre, Canning, West Bengal (Deposition IDs: ZSI/SBRC/KN 7968, 7983, 8146 and 8147).

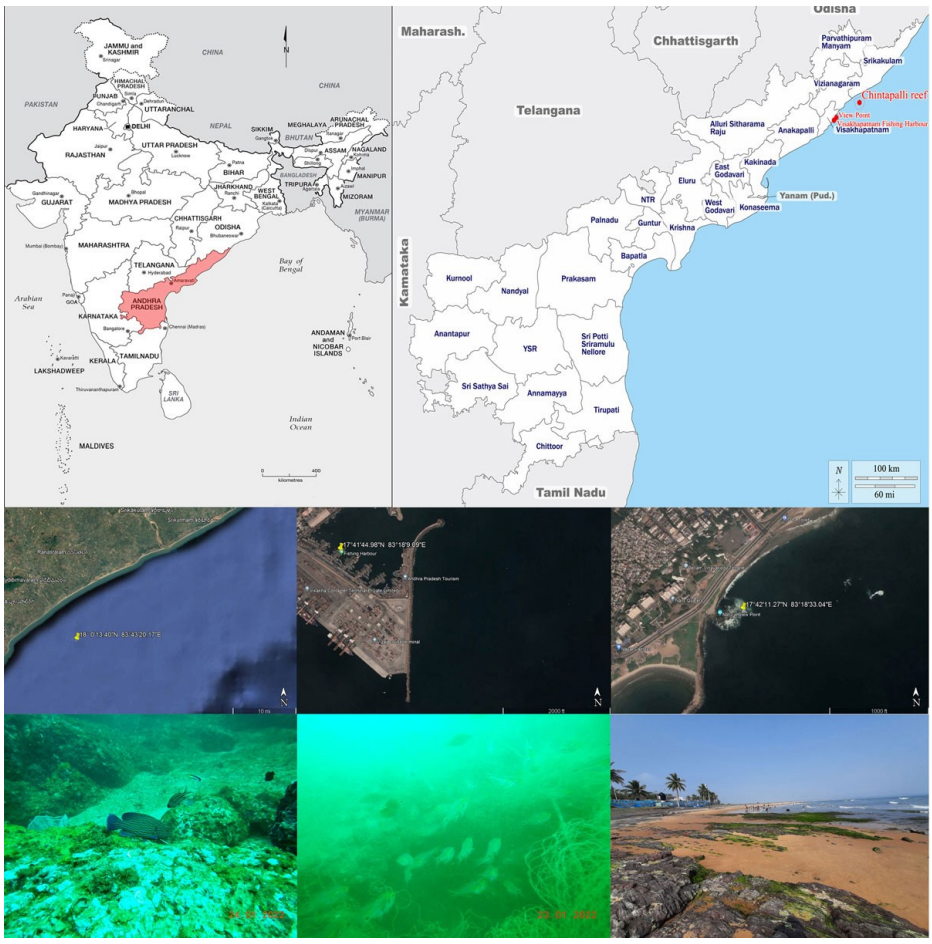

FIGURE 1 Map and habitat image of the study area.

3 | RESULTS

List and description of the identified fishes are as follows:

3.1 *Heniochus singularius* Smith & Radcliffe, 1911

Gigaclass: Actinopterygii
Class: Teleostei
Order: Acanthuriformes
Family: Chaetodontidae
Common name - Singular bannerfish
Conservation Status - Least Concern (IUCN 2023)

1911. *Heniochus singularius* Smith [H. M.] & Radcliffe [L.]. Proceedings of the United States National Museum, 40:321 [Alibijaban, Ragay Gulf, Luzon Island, Philippines]. Holotype: USNM 67354.

Material examined: 2 exs, Chintapalli reef (18°00.275N 83°43.021E), 10 meter depth, 23 Jan 2023, Obs: JS Yogesh Kumar.

Description: Bilaterally compressed body and short length. Dorsal profile straight with a terminal mouth. Hump is present over the nape region. Face and mouth mostly black. Black centred scales are present in the main white band. Middle portion the body is margined with black bars on front and caudal peduncle portion. A patch of white bar is present over the eyes. A white filamentous portion extends from the frontal part of the dorsal fin. Other than this part, both dorsal and caudal fins are yellow coloured (Figure 2a).

Distribution and remarks: Associated with the reef ecosystem and previously reported from Andaman Nicobar Islands, Lakshadweep, Tamil Nadu (Chandra and Raghunathan 2018; Chandra *et al*. 2020). This present study provides the first evidence of this species from farther northern part of east coast, from the state of Andhra Pradesh.

3.2 *Entomacrodus vermiculatus* (Valenciennes, 1836)

Order: Blenniiformes
Family: Blenniidae
Common name - Vermiculated blenny
Conservation Status - Least Concern (IUCN 2023)

1836. *Salarias vermiculatus* Valenciennes [A.]. Histoire naturelle des poisons, 11:301 [Seychelles, western Indian Ocean]. Lectotype: MNHN A-1809.

Material examined: ZSI/SBRC/KN 8146, 1 example (ex)., View point near Visakhapatnam Fishing Harbour (17°42.112N; 83°18.334E), hand picking from intertidal rocky shoreline, 23 Jan 2023, Col: JS Yogesh Kumar.
Description: Dorsal fin spine 13; dorsal fin rays 15; anal fin spines 2; anal fin rays 18; pelvic fin spine 1; pelvic fin rays 4. Total length – 162 mm, Standard length – 129.02 mm, Depth – 34.02 mm. Strong body and length to depth ratio is high with a crest on the head that resembles a low ridge. Body depth is 5.2 times of the standard length. The supra-orbital cirrus, which is about the same size as the eye diameter, is pointed and has 4 to 12 filaments on each side. The nasal cirrus has 4 to 10 simple filaments, and there is a single pointed nuchal cirrus on each side. Upper lip is crenulated. Base body colouration is light greenish and whole body is marked with vermiculation, while head is covered with small white spots (Figure 2c).

Distribution and remarks: Present specimen was collected from the small intertidal water pockets in rocky shoreline exposed during the low tides. This species is reported from Kerala, Tamil Nadu, Andaman Nicobar Islands and Lakshadweep (Biswas *et al*. 2012; Rajan *et al*. 2013). This present record confirms the presence of the species from Andhra Pradesh for the first time.

3.3 *Entomacrodus thalassinus* (Jordan & Seale, 1906)

Common name - Sea blenny
Conservation Status - Least Concern (IUCN 2023)

1906. *Alticus thalassinus* Jordan [D. S.] & Seale [A.]. Bulletin of the Bureau of Fisheries, 25:425 [Apia, Upolu Island, Samoa]. Holotype: USNM 51795.

Material examined: ZSI/SBRC/KN 8147, 1 ex., View point near Visakhapatnam Fishing Harbour (17°42.112N 83°18.334E), hand picking from intertidal rocky reefs, 20 Feb 2021, Col: JS Yogesh Kumar.

Description: Dorsal fin spine 13; dorsal fin rays 14; pelvic fin rays 4; pectoral fin rays 14; anal fin rays 15; caudal fin spines 2; caudal fin rays 17; pseudobranchial filamets 4; supraorbital cirri 4. Elongated body. Total length – 47.34 mm, Standard length – 40.71 mm, Depth – 8.64 mm. Cuboid shaped head proportional with the body. Canine teeth are present on the upper jaw. Lower edge of the upper lip and upper edge of the lower lip is somewhat folded. Lateral line is continuous to the 11th dorsal fin spine. Dorsal fin is low compared to the body depth and notched in the middle. Base body colouration is greyish to light greenish, with numerous black spot over the body. These spots are smaller over the head opercula but are larger over the body and spots on the caudal peduncle is somewhat arranged in a parallel row. A dusky grey line is prominent just behind the eye. Fin rays are multicolored by dusky grey and white, while the fin membranes are translucent. 6 vertical bands present on the body which starts from the base of dorsal area and each band is divided at the upper part (Figure 2d).

Distribution and remarks: Present specimen was

collected from the small intertidal water pockets in rocky shoreline exposed during the low tides along with *E. vermiculatus* and *Helcogramma ellioti*. *Entomacrodus* Gill, 1859 from Indian region is represented by four species namely, *E. striatus*; *E. vermiculatus*; *E. epalzeocheilos*; *E. marmoratus* (Chandra and Raghunathan 2018; Chandra *et al.* 2020). This present record confirms the presence of the *E. thalassinus* from India for the first time. Previously it has been recorded from Japan, French Polynesia, Australia, Sri lanka, Papua New Guinea, Philippines, New Caledonia, Seychelles, Madagascar (Fricke *et al.* 2023; GBIF 2023). *Entomacrodus thalassinus* is closely associated with *E. macrospilus*, which is recorded from Eastern and Western Central Pacific. *Entomacrodus Macrospilus* can be differentiated by the increased number of dorsal fin rays (16); anal fin rays (17-18) and semi parallel vertical bands and presence of lager spots on the body (Springer 1967).

3.4 *Pomacentrus similis* Allen, 1991
Order: Cichliformes
Family: Pomacentridae
Common name - Similar damsel
Conservation Status - Least Concern (IUCN 2023)

1991. *Pomacentrus similis* Allen [G. R.]. Damselfishes of the world, 232 [Trincomalee, Sri Lanka]. Holotype: WAM P.26511-001.

Material examined: 2 examples (exs)., Chintapalli reef (18°00.275N; 83°43.021E), 10 meter depth, 23 Jan 2023, Obs: JS Yogesh Kumar.

Description: Body fusiformly compressed and elongate ovate shaped. Dorsally head is convex shaped with a terminal mouth. Base body colouration is deep blue and caudal fin is deep yellow, other fins with light yellowish tinge. Posterior part of caudal fin is somewhat dusky and ventral fins are greyish to black (Figure 2b).

Distribution and remarks: Reef-associated fish and can be found near coral reef areas. This species has been recorded from Andaman seas, Sri lanka near Indian territory (Allen *et al.* 2003). Very recently *P. similis* has been recorded from the reef associated waters of Bangladesh and from this present study, this species is first recorded from the state of Andhra Pradesh and gives definitive proof of the species being present around the Bay of Bengal area (Islam and Habib 2020).

3.5 *Myripristis berndti* Jordan & Evermann, 1903
Order: Holocentriformes
Family: Holocentridae
Common name - Blotcheye soldierfish
Conservation Status - Least Concern (IUCN 2023)

1903. *Myripristis berndti* Jordan [D. S.] & Evermann [B. W.]. Bulletin of the U. S. Fish Commission, 22: 170 [Honolulu, Oahu Island, Hawaiian Islands]. Holotype: USNM 50627.

Material examined: 2 exs, Chintapalli reef (18°00.275N 83°43.021E), 10 meter depth, 23 Jan 2023, Obs: JS Yogesh Kumar.

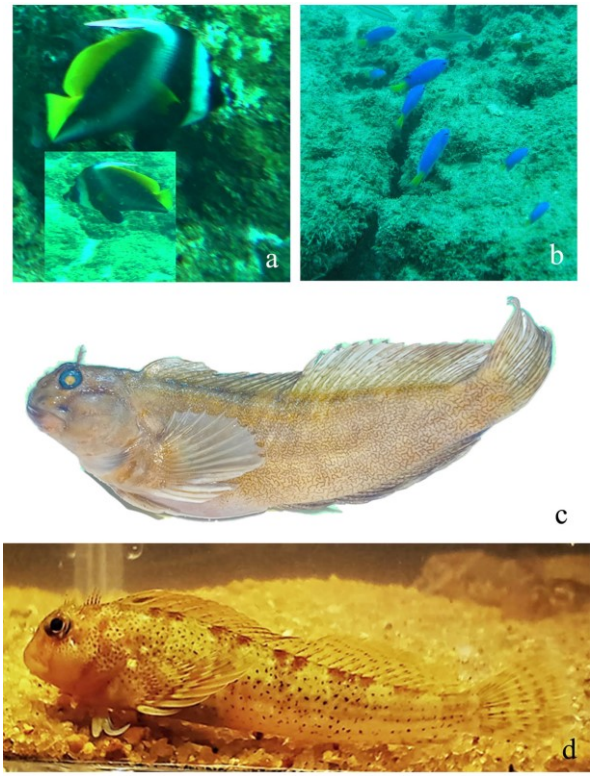

FIGURE 2 Newly recorded fishes from Andhra Pradesh; a, *Heniochus singularius* Smith & Radcliffe, 1911; b, *Pomacentrus similis* Allen, 199; c, *Entomacrodus vermiculatus* (Valenciennes, 1836); d, *Entomacrodus thalassinus* (Jordan & Seale, 1906).

Description: Body fusiformly compressed with an upward position of mouth. Lower jaw is projecting outwards. Scales on the body with a yellowish centre and margin is marked with red. Black portion of the oppercuar membrane is extended bellow the oppercular spine. Last part of the dorsal spines are marked with yellowish orange colouration, frontal edge is white and rest of the part is red coloured. Forked caudal fin is conspicuous (Figure 3a).

Distribution and remarks: *Myripristis berndti* has been recorded from Tamil Nadu, Gulf of Mannar and Andaman and Nicobar Islands and from this present study this species is recorded first time from the state of Andhra Pradesh showing a northward distribution in the Bay of Bengal as the species has not been previously recorded

from West Bengal and Orissa (Rajan *et al*. 2013; Kar *et al*. 2017; Mogalekar *et al*. 2018; Pati *et al*. 2018).

3.6 *Myripristis seychellensis* Cuvier, 1829
Common name - Seychelles soldier
Conservation Status - Least Concern (IUCN 2023)

1829. *Myripristis seychellensis* Cuvier [G.]. Histoire naturelle des poissons, 3: 172 [Seychelles, western Indian Ocean]. Holotype: MNHN 0000-9518.

Material examined: ZSI/SBRC/KN 7983, 1 ex., Visakhapatnam Fishing Harbour (17°41.783N; 83°18.031E), 20 February 2021, Col: JS Yogesh Kumar.

Description: Dorsal fin spine 11; dorsal soft ray 14; anal spines 4; anal soft rays 13; pectoral fin rays 16; lateral line scales 28. Total length – 162.32 mm, Standard length – 133.24 mm, Depth – 55.70 mm. Mouth terminal, body fusiform ovate, convex head, lower jaw slightly concave. Fourth dorsal spine longest. Base body coloration is reddish to pink. Dorsally body whitish and ventrally silvery. Scale edges dark reddish and oppercular membrane with a longitudinal black blotch. Axil of dorsal, anal and caudal with a dusky longitudinal band which gets prominent after preservation (Figure 3b).

Distribution and remarks: *Myripristis seychellensis* has been previously recorded from Seychelles, Reunion, St. Brandon's Shoals (*Cargados Carajos*), and Madagascar - from western Indian Ocean (Froese and Pauly 2023). Very recently the species has been recorded from western Indian Coast from Kerala (Nair and Dineshkumar 2016). This present study confirms the presence of this species from eastern coast of India and from Andhra Pradesh for the first time. *Myripristis seychellensis* can be easily misidentified as *M. murdjan* due structural similarities but can be distinguished by lesser number of lateral line scales and higher number of pectoral fin rays (Nair and Dineshkumar 2016).

3.7 *Sargocentron cornutum* (Bleeker, 1854)
Common name - Threespot squirrelfish
Conservation Status - Least Concern (IUCN 2023)

1854. *Holocentrum cornutum* Bleeker [P.]. Natuurkundig Tijdschrift voor Nederlandsch Indië, 5(3): 172 [Ceram or Ambon Island, Molucca Islands, Indonesia]. Lectotype: BMNH 1880.4.21.21.

Material examined: 3 exs, Chintapalli reef (18°00.275N 83°43.021E), 10 meter depth, 23 Jan 2023, Obs: JS Yogesh Kumar.

Description: Laterally compressed body, somewhat elongated. Depth of caudal peduncle is very less than of the body making it conspicuous. Large and conspicuous eyes. Mouth terminal and lower jaw projecting outwards. Base body colour is dark red to light red with white bands. Fins are red coloured with white shades. Prominent black spot at caudal fin base, dorsal and anal fin base. A darker stripe is present at the anterior edge of the anal fin (Figure 3c).

Distribution and remarks: Reef associated species and has been previously reported from Indian west coast (Anthonypillai *et al.* 2020). A total of 10 species of *Sargocentron* is reported from Indian waters of which *S. cornutum* was not previously recorded from east coast of India. Hence, this study provides a definitive proof of the distribution of *S. cornutum* from Andhra Pradesh as well as from east coast of India (Chandra *et al*. 2018, 2020).

3.8 *Thalassoma lunare* (Linnaeus, 1758)
Order: Perciformes
Family: Labridae
Common name - Moon wrasse
Conservation Status - Least Concern (IUCN 2023)

1758. *Labrus lunaris* Linnaeus [C.]. Systema Naturae Ed. X, 1: 238 [Indonesia]. Syntypes: BMNH 1853.11.12.39.

Material examined: 3 exs, Chintapalli reef (18°00.275N 83°43.021E), 10 meter depth, 23 Jan 2023, Obs: JS Yogesh Kumar.

Description: Laterally compressed fusiform and elongated body. Caudal fin is lunate shaped with deep yellow colour. Head bluish and turns to graded greenish towards the posterior part of the body. Vertical bands of red to purple colour dorsally over the body. Head region with pink and violet bands. Pectoral fins blue with an elongated pink patch on it. Dusky to black spot over the caudal base (Figure 3d).

Distribution and remarks: Reef associated fish and has been reported from Tamil Nadu, Andaman and Nicobar Island, Kerala (Mogalekar *et al*. 2018; Chandra *et al*. 2018, 2020; Alzahaby and Kumar 2023). Present study extends the range of the species from Andhra Pradesh.

3.9 *Pardachirus pavoninus* (Lacepède, 1802)
Order: Pleuronectiformes
Family: Soleidae
Common name - Peacock sole
Conservation Status - Least Concern (IUCN 2023)

1802. *Achirus pavoninus* Lacepède [B. G. E.]. Histoire naturelle des poissons (Lacepède), 4: 658, 660 [probably Indonesia]. Holopes: Unknown.

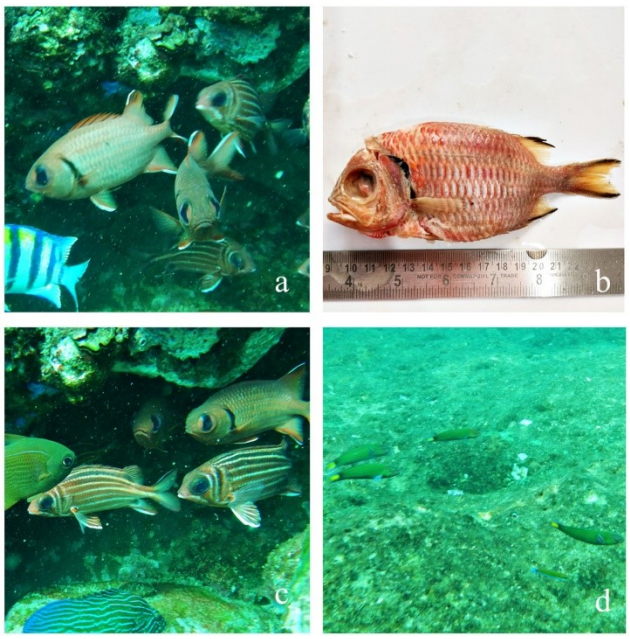

FIGURE 3 Newly recorded fishes from Andhra Pradesh; a, *Myripristis berndti* Jordan & Evermann, 1903; b, *Myripristis seychellensis* Cuvier, 1829; c, *Sargocentron cornutum* (Bleeker, 1854); d, *Thalassoma lunare* (Linnaeus, 1758).

Material examined: ZSI/SBRC/KN 7968, 1 ex., Visakhapatnam Fishing Harbour (17°41.783N 83°18.031E), 20 Feb 2021, Col: JS Yogesh Kumar.

Description: Dorsal rays 66; anal Rays 46; pelvic rays 5; caudal rays 15. Total length – 186.20 mm, Standard length – 162.37 mm, Depth – 73.94 mm. Oblong body. Base body colouration brownish with numerous ocelliies on the ocular side and grey to whitish at the blind side. Ocelliies are dark blue coloured and some black spots are there with four to five yellow spots. Head small with a wide rounded mouth and upper eye is placed somewhat in front of the lower eye. Interorbital wide and dorsal fin originates in front of the eye. Pelvic of the ocular is larger than the other one. Caudal fin rounded and free from dorsal and anal. Cycloid scales cover-up the body (Figure 4a).

Distribution and remarks: Mostly found from reef associated areas with clear water and sandy bottom. The genus has been represented in India by two species only, *P. marmoratus* (Lacepède, 1802) and *P. pavoninus.* Mostly treated as a trash fish. Previously *P. pavoninus* has been recorded from Andaman Islands and Gulf of Mannar, Tamil Nadu, and except these two, there were no records of the species from India (Nair 2011; Vijayagopal and Peter 2018). This the first record of this species from Andhra Pradesh coastline, which extends the distribution range in northwards of Bay of Bengal.

3.10 *Paraplotosus albilabris* (Valenciennes, 1840)
Order: Siluriformes
Family: Plotosidae
Common name - Whitelipped eel catfish
Conservation Status – Not Evaluated (IUCN 2023)

1840. *Plotosus albilabris* Valenciennes [A.]. Histoire naturelle des poisons, 15: 427 [Jakarta, Java, Indonesia]. Holopes: Holotype: MNHN A-9544.

Material examined: 1 ex., Chintapalli reef (18°00.275 N; 83°43.021E), 10 meter depth, 23 Jan 2023, Obs: JS Yogesh Kumar.

Description: Body elongated and circular shaped. Four pairs of barbells in head. Dorsal fins are short with rounded pectoral fins. Second dorsal fin originates just behind the first dorsal fin. Base body colour pale grey to dark brown. Fins are darker than body and body ventrally whitish (Figure 4b).

Distribution and remarks: *P. albilabris* is previously recorded from Gulf of Mannar, India and that is the sole record of the species from India and this species is the sole representative of the genus from India out of the 3 described species globally (Yogesh Kumar *et al.* 2013). It is native to Indo-Australian Archipelago. This present study extends the distributional range in more north wards of Bay of Bengal from Andhra Pradesh.

3.11 *Canthigaster papua* (Bleeker, 1848)
Order: Tetraodontiformes
Family: Tetraodontidae
Common name - Papuan toby
Conservation Status - Least Concern (IUCN 2023)

1848. *Tetraodon papua* Bleeker [P.]. Journal of the Indian Archipelago and Eastern Asia (Singapore), 2(9): 638 [Bima, Sumbawa Island, Lesser Sunda Islands, Indonesia]. Syntype: AMS B.7769.

Material examined: 1 ex., Chintapalli reef (18°00.275N 83°43.021E), 10 meter depth, 23 Jan 2023, Obs: JS Yogesh Kumar.

Description: Base body colouration is brownish with the presence of numerous bluish green spots. Bluish green lines with black edges radiate from the eye to dorsal part of the body. Lower part of the head is prominent with two lines. Terminal portion of the mouth is distinct with orange colouration. A black spot with blue outer line is prominent over the dorsal fin origin (Figure 4c).

Distribution and remarks: Closely associated from reef

areas and the species is observed from Indian Island ecosystem only, Andaman Islands and Lakshadweep Islands (Ajith Kumar *et al*. 2012; Allen and Erdmann 2012). This present study records the first occurrence of this species from Indian mainland associated reef ecosystem and from the state of Andhra Pradesh (Mishra *et al.* 2019). *Canthigaster solandri* (Richardson, 1845) has been recorded from the present study site previously but the orange colouration on the chin area of *C. papua* can easily distinguish it from the other species (Silambarasan *et al*. 2022).

The present study has also documented some mention worthy fishes from the study sites; namely *Chiloscyllium griseum* Müller & Henle, 1838 (1 ex); *Helcogramma ellioti* (Herre, 1944) (4 exs); *Heniochus diphreutes* Jordan, 1903 (2 exs); *Lalmohania velutina* Hutchins, 1994 (1ex); *Lutjanus quinquelineatus* (Bloch, 1790) (5 exs); *Naucrates ductor* (Linnaeus, 1758) (3 exs); *Scomberoides lysan* (Forsskål, 1775) (2 exs); *Terapon puta* Cuvier, 1829 (4 exs); *Torpedo fuscomaculata* Peters, 1855 (1 ex) (Figure 5). It is worth mentioning that these species have been previously reported in Andhra Pradesh, and these are commonly found alongside the present findings.

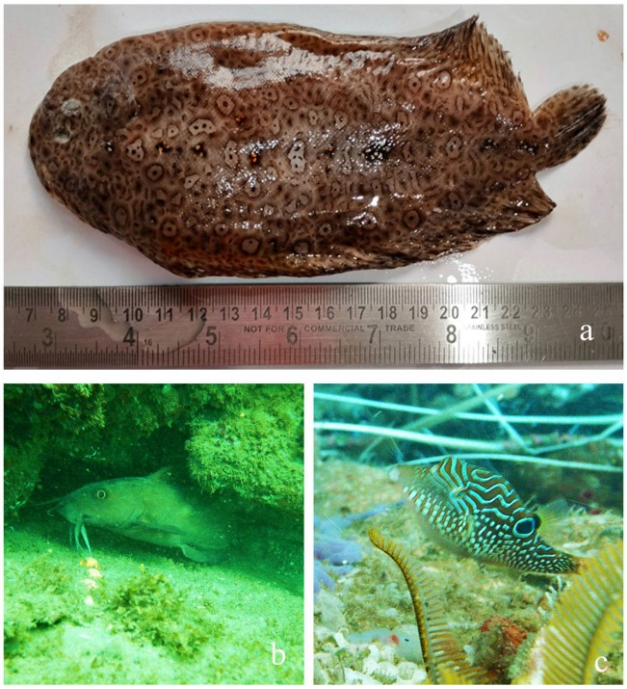

FIGURE 4 Newly recorded fishes from Andhra Pradesh; a, *Pardachirus pavoninus* (Lacepède, 1802); b, *Paraplotosus albilabris* (Valenciennes, 1840); c, *Canthigaster papua* (Bleeker, 1848).

4 | DISCUSSION AND CONCLUSION

Compared to the area coverage and species diversity, reef habitats are one of the foremost suitable places for the fishes. These reefs (artificial / coral) provide diverse habitats that are not only suitable foraging ground for fishes but also for other several organisms belonging to Crustacea, Mollusca etc. Live corals provide a good food source as well as shelter to the reef-associated organisms. Almost 25% of the marine fishes are associated with the reef ecosystems in some way or another. Reef fish diversity loss is directly linked with reef habitat destruction and it is accounted that marine habitat destruction will lead to almost 37% of the diversity loss, of which specifically coral reef destruction can be a major threat for the future survival of reef-associated organisms; although changes in artificial reef structures like underwater rocky reefs, sheep wreckage are also directly linked with the marine diversity (Coker *et al*. 2014). Indian coral reef systems are facing a lot of stress due to thermal fluctuations, coral bleaching, coastal developmental initiatives and overfishing, which are the main reason for the local-level extinction of several species and patch corals are also greatly affected by this fact but these are least documented (De *et al*. 2021). In case of Andhra Pradesh, the state is ranked third in marine fish production but when compared with the marine fish diversity, the number is quite less. In context with the reef ecosystem, Bakus (1994) reported reefs around the coastal part of Andhra Pradesh starting from the breakwater zone to one km where water depth is almost 10 m and live patchy coral reefs are present in the area. Although studies undertaken to document the faunal resources of these reef habitats are quite less. The previous works from Andhra Pradesh coast are mostly done on the basis of fishes collected from the markets, which are economically profitable but that does not give the proper scenario of the diversity as all the reef-associated fishes are commercially important. The fish trawlers avoid reef areas due to the far of net entanglement and destruction of the reefs. The most updated work by Silambarasan *et al*. (2022) is the baseline data, which provided a list of 127 fishes from reef habitats of the state. But a high risk of destruction is always present for these patchy reefs as well as for the artificial reefs; and the suitable foraging ground for several organisms would be gone in that case, therefor underwater surveys and focused studies on reef areas(artificial/coral) to document the diversity is thoroughly needed for future conservational prospect. From this work a total of 11 fishes have been newly recorded for the state of Andhra Pradesh and from these, 9 species seen to be closely associated with an artificial reef ecosystem. This implies a greater need of focus for recording the original diversity status from the study region, as reef fish play a crucial role in numerous processes within reef ecosystems, and their loss would have a detrimental impact on reef health. Also, the record of *E. thalassinus* from the study site suggests that non-commercial benthic fishes, which are not a common

market product in India, had been easily overlooked and thus Blennies of India need a comprehensive future work so that their biology and ecology for India region would be noted for any conservational approaches.

FIGURE 5 Common fishes observed during the study from same habitat. a, *Chiloscyllium griseum* Müller & Henle, 1838; b, *Helcogramma ellioti* (Herre, 1944); c, *Heniochus diphreutes* Jordan, 1903; d, *Lalmohania velutina* Hutchins, 1994; e, *Lutjanus quinquelineatus* (Bloch, 1790); f, *Naucrates ductor* (Linnaeus, 1758); g, *Scomberoides lysan* (Forsskål, 1775); h, *Terapon puta* Cuvier, 1829; i, *Torpedo fuscomaculata* Peters, 1855.

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CONFLICT OF INTEREST

The authors have no conflict of interests to declare that are relevant to the content of this article.

AUTHORS' CONTRIBUTION

Author JSYK collected the specimen, confirmed the identification and prepared the final manuscript. AS assisted during the field survey and prepared the draft manuscript. CR overall guidance, supervision, coordinated the work and finalized the manuscript.

DATA AVAILABILITY STATEMENT

The collected specimens are available at the National Zoological Collection of Sunderban Regional Centre, Zoological Survey of India, Canning – 743329, India and available on request.

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