



New records of Lutjanids (Snappers), (*Perciformes: Lutjanidae*) from South East coast of India

M. Adelina Jaya Harsha¹, KVL. Shrikanya Rao^{2*}

^{1,2}Department of Biotechnology, Vikrama Simhapuri University, Nellore- 524324, Andhra Pradesh, India.

*Corresponding author's E-mail: shrikanya.rao@gmail.com

Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 23 Nov 2023	<i>Lutjanids (snappers) are a group of colorful, perch-like, demersal and important marine commercial fishes. Three species of snappers <i>Etelis coruscans</i> (Visakhapatnam), <i>Lutjanus timoriensis</i> (Kakinada), <i>Macolor niger</i> (Chennai - Kasimedu), are reported for the first time from the respective locations from South-east coast of India. The present study deals with detail description of the species along with illustration. We also confirm the occurrence and establishment of these 3 species (<i>Etelis coruscans</i>, <i>Lutjanus timoriensis</i>, and <i>Macolor niger</i>) in South-east Indian coast and extend the range of the occurrence of these species to Bay of Bengal.</i>
CC License CC-BY-NC-SA 4.0	Keywords: Snappers, Perches, Lutjanids, South East coast of India.

1. Introduction

Snappers are typical perch-like fishes placed in the family *Lutjanidae*, under order Perciformes. They form an important group of marine commercial fishes (Perches- MPEDA). Snappers are mainly shallow water inshore demersal species, found in tropical and subtropical seas throughout the world; most species are reef associated but also found in brackish estuaries, mangroves and hyper saline lagoons with several deep-water and three freshwater species (Allen., 1985).

Fishes of the family *Lutjanidae* is one of the largest in the order Perciformes and comprises 4 subfamilies, 17 genera and 113 species, mainly found on coral reefs in tropical and subtropical regions of the Atlantic and Indo-Pacific (Allen., 1985, Eschmeyer., 2014, Froese and Pauly., 2016, Nelson *et al.*, 2016). The *Lutjanidae* family is divided into four subfamilies. The largest subfamily is *Lutjaninae* with six genera, *Hoplopagrus*, *Lutjanus*, *Macolor*, *Ocyurus*, *Pinjalo* and *Rhomboplites* (Nelson *et al.*, 2016), with about 84 species. *Lutjanus* Bloch, 1790 is by far the largest genus with 73 species, including at least 43 species from the Indo-West Pacific region. There are about 10 genera and 45 species of the family reported to occur along the coasts of India although some records need to be verified with material support (Froese and Pauly., 2016, Allen *et al.*, 2013, Iwatsuk *et al.*, 2015; 2016). The second largest subfamily, *Etelinae* has four genera, *Etelis*, *Aphareus*, *Aprion* and *Pristipomoides* (Nelson, 1984). The snappers are a diverse family of carnivorous marine fishes, found in rock and reef habitats. There is still considerable confusion in the identification of the species in snappers because of the changes that take place in colour and in body proportions with growth and because of sexual dimorphism (Randall *et al.*, 1987).

Studies on the diversity and abundance of fishes are due, given the atoll system undergoing rapid changes: structural decline due to several bleaching related coral mortality events, changes in the seagrass meadows, and the increase in fishing reef-associated species (Rajan *et al.*, 2021). Visakhapatnam, Kakinada and Chennai are on the South east coast of India. Few new records of Lutjanids have been recorded from this area earlier, *Lutjanus notatus*, *Lutjanus indicus* from Visakhapatnam (Velamala *et al.*, 2013;2017), and *Lutjanus xanthopinnis* from Andaman Islands (Jayasimhan *et al.*, 2018). These three species of snappers *Etelis coruscans* (Visakhapatnam), *Lutjanus timoriensis* (Kakinada), *Macolor niger* (Chennai - Kasimedu), are reported here for the first time from the respective locations and systematic account of all these species are provided in this paper to document their first records.

2. Materials And Methods

Three new specimens of the Lutjanus fish species *Etelis coruscans*, *Lutjanus timoriensis*, *Macolor niger*, were collected respectively from Chennai (Kasimedu), Kakinada (Kumbabhishekam), Visakhapatnam (Jalaripeta) fish landing points (Fig.1), Southeast Coast of India during 2017-2018. The specimens were examined, identified from the hundreds of collected fish after transporting them to Vikrama Simhapuri University at the laboratory of Department of Biotechnology and found not reported in the identified fish landing points so far. The colour of the specimens was noted in fresh condition. Morphometric and meristic data of the fresh specimens were taken. Specimens of the *Etelis coruscans*, *Lutjanus timoriensis*, *Macolor niger* were identified based on Allen, (1985), Froese and Pauly., (2016), Allen, and Talbot., (1985). Methodology for morphometric measurements followed Hubbs Lagler., (1958). The specimens were preserved in 5% formaldehyde for further analysis.

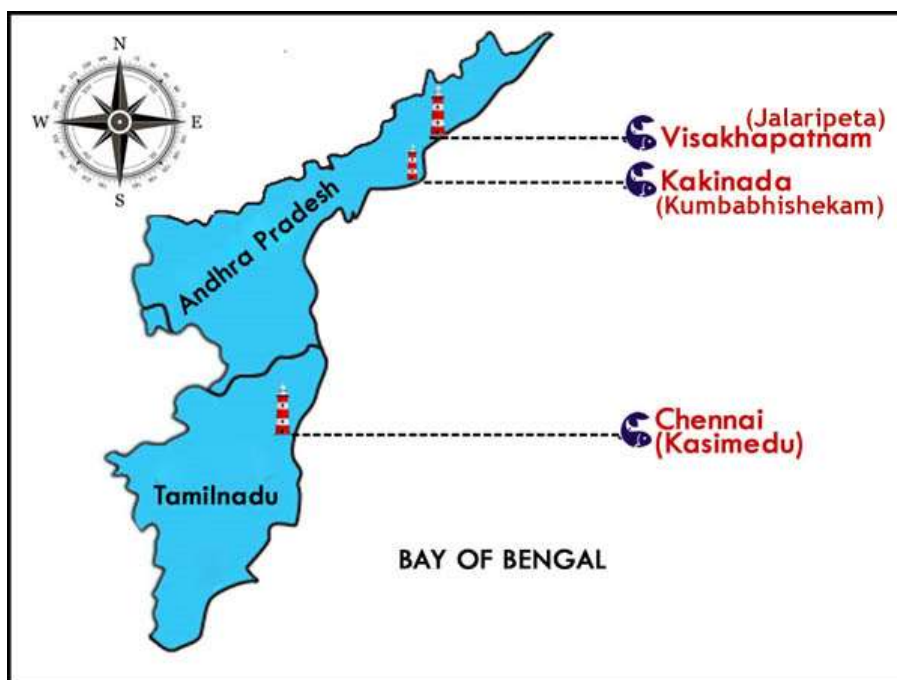


Fig.1. Sampling locations (Fish Landing Points) in Andhra Pradesh.

3. Results and Discussion

Deepwater longtail red snapper (Allen, 1985)- *Etelis coruscans*(Valenciennes, 1862).



Fig.2. *Etelis coruscans*

Descriptions:

Classification:

- Actinopteri (ray-finned fishes)>Eupercaria/misc (Various families in series *Eupercaria*)>*Lutjanidae* (Snappers) >Etelinae.
- Etymology: *Etelis*: Greek, *etelis*, -idos = a fish, perhaps the fish *Sparu saurata* (Romero, 2002).

Environment:

- Marine; reef-associated; depth range 45 - 400 m, usually 90 - 400 m (Anderson and Allen, 2001). Deep-water; 38°N - 32°S, 29°E - 139°W.

Distribution

Indo-Pacific: East Africa eastward to the Hawaiian Islands, north to Sea of Japan, south to Australia (Queensland and New South Wales) and Lord Howe Island; off Kermadec Islands, northeast of New Zealand (Anderson and Allen, 2001). Reported from the Marquesas (Russell *et al.*, 2016). The name *Etelis carbunculus* has been misapplied to this species by some previous authors.

Length at first maturity / Size / Weight / Age

- Maturity L_m : 66.3 cm, Max length: 120 cm TL male/unsexed (Anderson, 1986).
- Common length: 50.0 cm SL male/unsexed (Anderson and Allen, 2001).

Short description:

Dorsal spines (total): 10; Dorsal soft rays (total): 11; Anal spines: 3; Anal soft rays: 8. Interorbital space flat. Maxilla covered with scales. Dorsal and anal fin bases without scales. Upper caudal lobe becoming greatly elongated with increased growth. Scale rows on back parallel with lateral line. Back and upper sides deep pink to red; lower sides and belly pink; fins pink to red.

Biology:

Adults inhabit rocky bottoms (Sommer *et al.*, 1996), of the continental shelf and continental slope (Hoese *et al.*, 2006). Benthopelagic (Mundy, 2005; Bacchet, 2006), feed on small fishes, squids and crustaceans (Sommer *et al.*, 1996). Considered an important food fish in some areas. Marketed fresh and frozen (Frimodt, 1995), highly value for the quality of its flesh (Opic *et al.*, 1994).

Timor snapper (Allen, 1985)- *Lutjanus timoriensis* (Quoy&Gaimard, 1824).



Fig. 3. *Lutjanustimoriensis*

Descriptions:**Classification:**

- Actinopteri (ray-finned fishes)>Eupercaria/misc (Various families in series Eupercaria) >*Lutjanidae* (Snappers) >*Lutjaninae*
- Etymology: *Lutjanus*: Malay, *Ikanlutjan*, name of a fish.

Environment:

- Marine; reef-associated; depth range 20 - 150 m (Allen and Erdmann, 2012).
- Tropical; 21°N - 20°S, 92°E - 177°W (Allen, 1985).

Distribution:

Western Pacific: Iriomote Island, Okinawa Prefecture, Japan; Fiji to Malay Peninsula. Also recorded from the Andaman Sea off Thailand. This species has been frequently confused with other red snappers, particularly *Lutjanus malabaricus*.

Size:

Max length: 73.7 cm FL male/unsexed (Matthews *et al.*, 2019); common length: 30.0 cm TL male/unsexed (Allen, 1985); max. published weight: 6.7 kg (Matthews *et al.*, 2019).

Short description:

Dorsal spines (total): 11; Dorsal soft rays (total): 14-15; Anal spines: 3; Anal soft rays: 8. Dorsal profile of head steeply sloped. Preorbital width greater than eye diameter. Preopercular notch and knob poorly developed. Scale rows on back rising obliquely above lateral line. Axil of pectoral fin black. Young with a blackish or brownish band from upper jaw to the beginning of dorsal fin and a black saddle preceded by a pearly-white border on upper edge of caudal peduncle; horizontal stripes on sides (Allen and Talbot, 1985); Body depth 2.2-2.4 in SL (Matthews *et al.*, 2019).

Biology:

Adults inhabit coral and rubble reefs. Usually, solitary. Juveniles on muddy coastal slopes on open substrates with small outcrops of reef debris, usually in depth of 15 m or more (Kuitert and Tonzuka, 2001). Relatively uncommon (Lieske and Myers, 1994).

Black and white snapper (Allen, 1985), *Macolor niger* (Forsskål, 1775).



Fig. 4. Black and white snapper (*Macolor niger*).

Descriptions:

Classification:

- Actinopteri (ray-finned fishes) > Eupercaria/misc (Various families in series Eupercaria) > *Lutjanidae* (Snappers) > Lutjaninae.
- Etymology: *Macolor*: Latin, macula, -ae =stain, spot.

Environment:

- Marine; reef-associated; depth range 2 - 90 m (Anderson and Allen, 2001).
- Tropical; 36°N - 30°S, 31°E - 153°W (Allen, 1985).

Distribution:

- Indo-Pacific: East Africa to Samoa, north to central Japan, south to Australia.

Size / Weight / Age:

- Max length: 75.0 cm TL male/unsexed (Anderson, 1986), common length: 35.0 cm TL male/unsexed (Sommer *et al.*, 1996).

Short description:

Dorsal spines (total): 10; Dorsal Soft ray (total): 13-15; Anal spines: 3; Anal spine rays: 10 - 11. This species is distinguished by the following characters: body relatively deep and laterally compressed, greatest body depth 2.2-2.4 in SL; dorsal profile of head convex in adults, in oblique straight line in young; maxilla without scales or longitudinal ridges; preopercle with a deep notch (or gash) receiving elongate inter opercular spine (none for individuals less than 16 cm SL); gill rakers of first gill arch 26-38 + 60-71 = 89-107; soft rays of dorsal fin usually 14, in anal fin 11, in pectoral fin 17; continuous dorsal fin with spinous portion distinctly notched in young; dorsal and anal fins distinctly pointed posteriorly, the soft ray of both fins, shorter than next to last ray; caudal fin rounded with middle rays elongated in small juveniles, slightly notched at intermediate sizes and emarginate in adults; pelvic fins short and rounded for all sizes; soft dorsal and anal fins with scales basally; tubed lateral-line scales 50-55; juveniles with very long pelvic fins. Colour of adults silvery grey, strongly blotched with blackish patches, lacks yellow on head and body and without blue markings on head and body, much duller iris; juveniles with black and white pattern but broader white area encompassing posterior head and adjacent body and with less than 5 white spots on back (Anderson and Allen, 2001; Matthewset *al.*, 2019).

Biology:

Adults are found on steep outer walls of lagoon, channel and seaward slopes in large schools (Kuitert and Tonozuka, 2001; Lieske and Myers, 1994). Juveniles are solitary (Sommeret *al.*, 1996). Feeds largely on fishes and crustaceans; Caught with handlines, gill nets, and traps, but also speared by divers and are frequently seen in markets and sold mainly fresh (Anderson and Allen, 2001).

Table1. Meristic characters of the three newly recorded Snapper (*Lutjanids*).

S.No	Particulars	Deepwater longtail red snapper (<i>Etelis coruscans</i>)	Timor snapper (<i>Lutjanustimoriensis</i>)	Black and white snapper (<i>Macolor niger</i>)
1	Date	25-03-2017	10-08-2017	14-08-2018
2	Landing center	Visakhapatnam (Jalaripeta)	Kakinada (Kumbabhishekam)	Chennai (Kasimedu-Royapuram)
3	Weight (Grams)	950	221.5	900
5	Standard Length (S.L.)	33	27	35.5
6	Total length (T.L)	40	9.7	46
7	Body depth	10	8	16.5
8	Head length	11.7	9.9	15
9	Pre dorsal distance	13.2	7.5	16
10	Pre pectoral distance	11.2	8.2	13.1
11	Pre ventral distance	11.8	13.4	15.5
12	Pre anal distance	20	12.2	24.7
13	Dorsal fin base	14.2	1.4	19.9
14	Pectoral fin base	1.3	4.2	2.4
15	Anal fin base	4	4	6
16	1,2,3,4 Dorsal spine height	1.1,2.8,3.1,3.3	0.8,1.7,2.3,2.6	0.7,3.9,4.5,4.8
17	Soft dorsal height	4.8	4.8	6.3
18	1,2,3 Anal spine height	0.8,1.6,2.0	1.3,2.4,2.3	1.5,2.5,3
19	Soft anal height	4.4	4.2	5.3
20	Pectoral length	8.9	6.1	11.5
21	Pelvic spine length	3.7	3.2	6
22	Soft pelvic length	6	5.2	8.7
23	Head depth	8.4	7.6	12.5
24	Head width	4.9	3.3	3.3
25	Eye diameter	2	1.5	7.5

26	Pre orbital distance	3.3	3.1	5
27	Post orbital distance	5.7	3.9	7.6
28	Inter orbital distance	3	1.7	4.7
29	Upper jaw length	4.3	3.2	6.2
30	Lower jaw length	3.5	2.4	4.9
31	Maxillary width	0.7	0.9	1.4
32	Snout length	2.2	1.6	3.5
33	Dorsal Fin	X+11	XI+14	X+13
34	Pectoral fin	16	16	16
35	Pelvic fin	1+5	1+5	I+5
36	Anal fin	3+8	III+8	III+10
37	Caudal fin	18	18	18
38	Lateral line scale series	59	59	70
39	Lateral line pored scales	58	64	65
40	Lateral transverse scales	23	44	23
41	Gill rakers	5+1+15	4+1+11	7+1+13

4. Conclusion

The present work was carried out to find and identify new record fish species belonging to family *Lutjanidae*, which can be used to perform further studies like molecular identification, phylogenetic inference and barcoding.

Future scope:

The discovery of new records of *Lutjanids* (Snappers) along the South East coast of India promises to significantly expand our knowledge of regional marine biodiversity. The future scope of these findings is multifaceted. Taxonomic studies will help elucidate their classification and relationships, while ecological research will deepen our understanding of their role in local ecosystems. This, in turn, will inform the development of sustainable fisheries management strategies, benefitting both the environment and local communities. The findings can also attract collaborative research efforts, potential funding, and international partnerships. Moreover, in the face of climate change, monitoring these species may provide critical insights into their adaptability and survival in changing marine environments.

Conflict of Interest: No

Acknowledgements:

The authors are thankful to the Department of Biotechnology, Vikrama Simhapuri University, Kakatur, Nellore, for providing the necessary amenities to carry out this research work and also to the marine fishermen who helped during the sample collection. The authors are grateful to DST-SERB, New Delhi for providing financial support under the file number EMR/2016/004036.

References:

- Allen, G.R. & Talbot, F.H. (1985). Review of the snappers of the genus *Lutjanus* (Pisces: *Lutjanidae*) from the Indo-Pacific, with the description of a new species. *Indo-Pacific Fishes* 11: 1-87.
- Allen, G.R. (1985). FAO species catalogue. Vol. 6 Snappers of the world: An annotated and illustrated catalogue of the lutjanid species known to date. FAO Fisheries Synopsis 125:1-208.
- Allen, G.R. and M.V. Erdmann, (2012). Reef fishes of the East Indies. Perth, Australia: University of Hawai'i Press, Volumes I-III. Tropical Reef Research.
- Allen, G.R.; White, W.T. & Erdmann, M.V. (2013). Two new species of snappers (Pisces: Lutjanidae: *Lutjanus*) from the Indo-West Pacific. *Journal of the Ocean Science Foundation* 6: 35-51.
- Anderson, W.D. Jr. and G.R. Allen, (2001). *Lutjanidae*. Job fishes. p. 2840-2918. In K.E. Carpenter and V. Niemi (eds.) FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes' part 3 (Menidae to Pomacentridae). FAO, Rome.
- Anderson, W.D. Jr., (1986). *Lutjanidae*. (Genus *Lutjanus* by G.R. Allen). p. 572-579. In M.M. Smith and P.C. Heemstra (eds.) Smiths' sea fishes. Springer-Verlag, Berlin.
- Bacchet, P., T. Zysman and Y. Lefèvre, (2006). Guide des poissons de Tahiti et ses îles. Tahiti (Polynésie Française): Éditions Au Vent des Îles. 608 p.

- Eschmeyer, W.N. (Ed.). (2014). Catalog of fishes. <http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. Accessed May 16, 2014.
- Frimodt, C., (1995). Multilingual illustrated guide to the world's commercial warmwater fish. Fishing News Books, Osney Mead, Oxford, England. 215 p.
- Froese, R. & Pauly, D. (2016). FishBase. World Wide Web electronic publication. www.fishbase.org, (April-2016 version).
- Hoese, D.F., D.J. Bray, J.R. Paxton and G.R. Allen, (2006). Fishes. In Beasley, O.L. and A. Wells (eds.) Zoological Catalogue of Australia. Volume 35 Australia: ABRIS & CSIRO Publishing, 2178 p.
- Hubbs, C.L. & Lagler, K.F. (1958). *Fishes of the great Lake region*. Cranbrook Inst. Scientific Fishery Bulletin 26: 1-213.
- Iwatsuki, Y.; Al-Mamry, J.M. & Heemstra, P.C. (2016). Validity of a blue stripe snapper, *Lutjanus octolineatus* (Cuvier, 1828) and a related species, *L. bengalensis* (Bloch 1790) with a new species (Pisces: *Lutjanidae*) from the Arabian Sea. *Zootaxa* 4098 (3): 511-528.
- Iwatsuki, Y.; Tanaka, F. & Allen, G.R. (2015). *Lutjanus xanthopinnis*, a new species of snapper (Pisces: *Lutjanidae*) from the Indo-west Pacific, with a redescription of *Lutjanus madras* Valenciennes 1831. *Journal of the Ocean Science Foundation* 17: 22-42.
- Jayasimhan, Praveenraj & Dani, Daniel & Rajendran, Kiruba-Sankar & Mishra, Subhrendu. (2018). First record of *Lutjanus xanthopinnis* (Actinopterygii: Perciformes: *Lutjanidae*) from the Andaman Islands, India. *Acta Ichthyologica et Piscatoria*. 48. 393-397. 10.3750/AIEP/02457.
- Kuiter, R.H. and T. Tonozuka, (2001). Pictorial guide to Indonesian reef fishes. Part 1. Eels- Snappers, Muraenidae - *Lutjanidae*. Zoonetics, Australia. 1-302.
- Lieske, E. and R. Myers, (1994). Collins Pocket Guide. Coral reef fishes. Indo-Pacific & Caribbean including the Red Sea. Haper Collins Publishers, 400 p.
- Matthews, T., D. Ochavillo, S. Felise, T. Letalie, E. Letuane, E. Schuster, A. Soonaolo, S. Tofaeono, A. Tua and F. Tuilagi, (2019). Length-weight relationships for 71 reef and bottom fish species from Tutuila and Aunu'u, American Samoa. *Pacific Islands Fish. Sci. Cent. Admin. Rep.* H-19-03, 9 p.
- Mundy, B.C., (2005). Checklist of the fishes of the Hawaiian Archipelago. *Bishop Mus. Bull. Zool.* (6):1-704.
- Nelson, J.S., (1984). *Fishes of the world*. 2nd edition. John Wiley & Sons, Inc., New York. 523 p.
- Nelson, J.S.; Grande, T.C. & Wilson, M.V.H. (2016). *Fishes of the world*. 5th edition. John Wiley & Sons, New York, USA. 707p.
- Opic, P., F. Conand and P. Bourret, (1994). Poissons commerciaux du sud-ouest de l'océan Indien. ORSTOM Éditions, 91p.
- [Perches - MPEDA](#). (Perches Fishes-Marine products Exports Development Authority).
- Rajan, R., Rajan, P.T., Mishra, S.S. *et al.* Fishes of Lakshadweep archipelago: new records, review and a revised checklist. *Mar Biodivers Rec* 14, 14 (2021). <https://doi.org/10.1186/s41200-021-00208-6>.
- Randall, J.E.; Allen, G.R. & Anderson, W.D. (1987). Revision of the Indo-Pacific Lutjanid Genus *Pinjalo* with Descriptions of a New Species. *Indo Pacific Fishes* 14: 1-17.
- Romero, P., (2002). An etymological dictionary of taxonomy. Madrid, unpublished.
- Russell, B., W.F. Smith-Vaniz, A. Lawrence, K.E. Carpenter, R. Myers and R. Thaman, 2016. *Etelis coruscans*. The IUCN Red List of Threatened Species 2016: e.T194382A2327142. <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T194382A2327142.en>.
- Sommer, C., W. Schneider and J.-M. Poutiers, 1996. FAO species identification field guide for fishery purposes. The living marine resources of Somalia. FAO, Rome. 376 p.
- Velamala, G. R., Kondamudi, R. B., & Naranji, m. K. (2017). First record of *Lutjanus indicus* Allen, White & Erdmann, 2013 (Perciformes: *Lutjanidae*) from Andhra Pradesh, East Coast of India. *Iranian Journal of Ichthyology*, 4(1), 69-74. <https://doi.org/10.22034/iji.v4i1.206>.
- Velamala, GR. Naranji KM, Babu RK (2017). New Record of Blue Striped Snapper, *Lutjanus Notatus* (Cuvier, 1828) (Family: *Lutjanidae*), From Indian Waters. *J Aquac Mar Biol.* 5(2): 00113. DOI: 10.15406/jamb.2017.05.00113.