

NEW RECORDS OF CORAL REEF FISHES FROM ANDAMAN AND NICOBAR ISLANDS

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INTRODUCTION

Andaman Nicobar Islands situated in the Bay of Bengal between 6°45'–13 45'N and 92°10'–94°15'E, consist of 352 islands 220 islets and rock and cover a distance of almost 470 km over North South, with a coastline of 1962 km, and bring in for India an Exclusive Economic Zone (EEZ) of 600 thousand sq km. The coast is under the influence of a diverse set of oceanographical and ecological conditions. The shelf topography of these islands show frequent rises supporting coral reefs, which are characterized as fringing reefs on the eastern side and barrier reefs off west coast; the depressions are known as passages and straits. Besides coral reefs, the shore is composed of rocky and sandy areas and vast stretches of Mangrove swamps, also few freshwater rivers and streams. A comprehensive and authoritative account of fishes of the Indian region including Andaman and Nicobar Islands was published by Francis Day (1870, 1875-78 and 1888). Herre (1941) listed 490 species of fishes. Talwar (1990) prepared a comprehensive list of fishes consisting of 724 species, followed by a supplementary list by Kamla Devi (1991) containing 71 species of fish. The recent developments in the fish taxonomy of these Islands are the works by Kamla Devi and Rajan (1991), Mishra and Krishnan (1992), Krishnan and Mishra (1992), Dhandapani and Misra (1993), Rajan (2001 a, 2001b, 2003, 2009), Rajan *et al.* (1992, 1993a, 1993b, 2012), Kamla Devi *et al.* (1993), Kamla Devi and Rao (1997,

2003a, 2003b, 2007), Rao *et al.* (1992, 1992a, 1992b, 1994, 1993a, 1993b, 1997, 2000), Rao (2003, 2009), Rao and Kamla Devi (1996, 1997a, 1997b, 1998, 2004), Soundararajan and Dam Roy (2004), Remadevi *et al.* (2010) Rajaram *et al.* (2007), Ramakrishna *et al.*, 2010. Smith-Vaniz, 2011, Smith-Vaniz & Allen (2012) and Rajan and Sreeraj (2014).

MATERIALS AND METHODS

The new records of fishes were made by field surveys and underwater observations in the coral reef ecosystem of Havelock Island, near Light House, 12, 02,765N / 92, 57,923 E. Fringing reef following the contour of the land, depth from 0 m to 22 m. Predominately *Porites* coral forms massive boulder corals all the way to a depth of 15 m. Site is covered with broken dead *Acropora* damaged during the tsunami, which is covered with macro algae. Subject to wave action during the south west winds, mild current running along the reef. The photographs were taken in the coral reef. areas from 3 m to 25 m using scuba gears by the authors. Taxonomic classification follows Nelson (2006).

RESULTS

The last few years represent a significant increase of knowledge about the fishes of Andaman and Nicobar Islands. During this study 22 new record of fishes were recorded under 2 orders, 5 families and 17 genera as *Dendrochirus biocellatus* Fowler, 1938, *Diploprion bifasciatum* Cuvier,

1828, *Parapercis schauinslandi* (Steindachner, 1900), *Nemipterus furcosus* (Valenciennes, 1830), *Mulloidichthys ayliffe* Uiblein, 2011, *Pempheris schwenkii* Bleeker, 1855, *Apolemichthys xanthurus* (Bennett, 1833), *Amblyglyphidodon silona* Allen, Erdmann and drew, 2012, *Calotomus carolinus* (Valenciennes, 1840), *Ecsenius paroculus* Springer 1988, *Ecsenius lubbocki* Springer, 1988, and the gobies *Amblyeleotris downingi* Randall, 1994, *Bryaninops tigris* Larson, 1985, *Eviota cometa* Jewett and Lachner, 1983, *Eviota guttata* Lachner and Karnella 1978, *Eviota storthynx* (Rofen, 1959), *Fusiogobius inframaculatus* (Randall, 1994), *Phyllogobius platycephalops* (Smith, 1964), *Pleurosicya bilobata* (Koumans, 1941), *Pleurosicya boldinghi* Weber, 1913, *Trimma sanguinellus* Winterbottom and Southcott, 2007 and *Valenciennesa decora* Hoesel and Larson 1994 are associated with coral reefs.

SYSTEMATICS ACCOUNT

Class ACTINOPTERYGII

Order SCORPAENIFORMES

Family SCORPAENIDAE

1. *Dendrochirus biocellatus* Fowler, 1938

Twinspot lionfish

1938. *Nemapterois biocellatus*, Fowler *Proceedings of the United States National Museum*, 85 (3032): 81, FIG. 36 (Type locality: off Jolo Light, Philippines).

2012. *Dendrochirus biocellatus*, Allen and Erdmann, *Reef fishes of the East Indies*, v. 1: 217.



Diagnosis: Reddish brown with three pinkish to yellowish bars on body, white and brown bands on

pectoral fins and two large ocellated black spots on soft dorsal fin. Attains 13 cm.

Habitat: Solitary, found in caves and under ledges of coral rich areas.

Distribution: East Africa to Line and Tuamotu islands and Australia to Ryukyu Islands; East Indian locations include Christmas Island, Malaysia, Indonesia, Philippines, Papua New Guinea and Solomon Islands.

Order PERCIFORMES

Family SERRANIDAE

2. *Diploprion bifasciatum* Cuvier, 1828

Doublebanded soapfish

1828. *Diploprion bifasciatum*, Cuvier, *Historie naturelle des poissons*. 2: 137, Pl. 21. (Type locality: Java, Indonesia).

2012. *Diploprion bifasciatum*. Allen, and Erdmann, *Reef fishes of the East Indies*, v. 1: 304.

Diagnosis: Body yellow head, body and fins; dark brown to black eye bar and broad bar from mid dorsal fin to anal fin. Solitary or form small groups. Attains 25 cm.

Habitat: Coastal reefs, often in turbid water.



Distribution: Maldives and India to Vanuatu and New Caledonia and Australia to Japan; ranges throughout east Indian region.

Family PINGUIDIDAE

3. *Parapercis schauinslandi* (Steindachner, 1900) Red-spotted sandperch

1900. *Percis schauinslandii*, Steindachner, *Anzeiger der Akademie der Wissenschaften in Wien* v. 16: 175. (Type locality: Oahu, Hawaiian Islands)

2012. *Parapercis schauinslandi*, Allen and Erdmann, *Reef fishes of the East Indies*, v. 2: 757.

Diagnosis: Spinous portion of dorsal fin black at base, deep red distally; a longitudinal row of black spots 8 or 9 subquadrangular red to dark brown spots along back alternating with similar but more vertically elongate red spots on lower side; two narrow bright red bars at pectoral-fin base and pair of small dark spots on tail base. Tail lunate. Attains 18 cm.

Habitat: Found around sand and rubble bottoms of reef areas.



Distribution: East Africa to Hawaiian and Pitcarin islands and Australia to Japan; throughout East Indian region.

Family NEMIPTERIDAE

4. *Nemipterus furcosus* (Valenciennes, 1830)
Fork-tailed threadfin bream

1830. *Dentex furcosus*, Valenciennes in Cuvier & Valenciennes, *Histoire naturelle des poissons* v. 6: 244. (Type locality: Trincomalee, Sri Lanka).

2005. *Nemipterus furcosus*, Randall, *Reef and shore fishes of the South Pacific*. New Caledonia to Tahiti and the Pitcairn Islands: 282.

Diagnosis: Upper body iridescent pink, silvery white below. Lower margin of caudal fin white.

Habitat: Inhabits sandy and muddy bottoms.

Distribution: Indian Ocean: Maldives, Gulf of Mannar, Sri Lanka, Andaman Sea, Strait of Malacca and northwestern Australia. Western Pacific: southern Japan to northeastern Australia.



Family MULLIDAE

5. *Mulloidichthys ayliffe* Uiblein, 2011
Indian Mimic Goatfish

2011. *Mulloidichthys ayliffe* Uiblein, *Smithiana*, Publications in Aquatic Biodiversity, Bulletin No. 13:56, Figs. 2-3, Pls. 1-2. (Type locality: Sodwana Bay, KwaZulu-Natal, South Africa).

2012. *Mulloidichthys ayliffe* Allen and Erdmann, *Reef fishes of the East Indies*, v. 2: 503.

Diagnosis: Yellow including fins with three blue stripes on side. Attains 30 cm.

Habitat: Rocky reefs and coral areas.

Distribution: East Africa, Oman, Sri Lanka and Andaman Islands.

6. *Pempheris schwenkii* Bleeker, 1855
Silver Sweeper

1855. *Pempheris schwenkii* Bleeker, *Natuurkundig Tijdschrift voor Nederlandsch Indie*. 8: 314. (Type locality: Batu Islands, Sumatra, Indonesia).

2012. *Pempheris schwenkii* Allen and Erdmann, *Reef fishes of the East Indies*, v. 2: 513.

Diagnosis: Yellowish brown with darker edges, blackish anterior margin on dorsal fin and black stripe along base of anal fin. Attains 15 cm.



Habitat: Forms schools around large coral

formations with crevices and caves. Coastal and offshore reefs.

Distribution: Red Sea and East Africa to Micronesia and Fiji and Australia to Japan; throughout East Indian region.

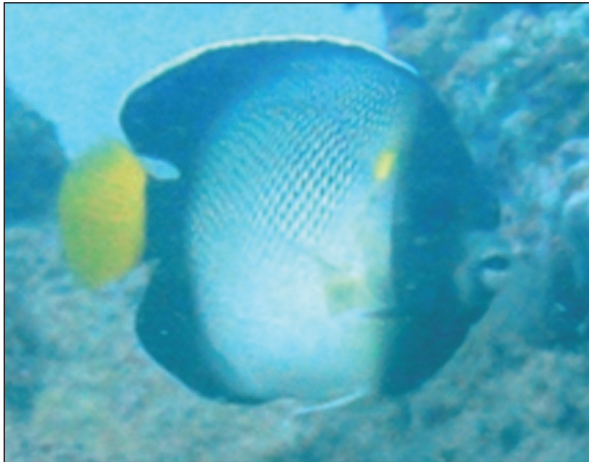
Family POMACANTHIDAE

7. *Apolemichthys xanthurus* (Bennett, 1833)
Indian yellow-tail Angelfish

1833. *Holacanthus xanthurus* Bennett, Proceedings of the Committee of Science and Correspondence of the Zoological Society of London: 183 (pt 2) (Type locality: Srilanka).

2012. *Apolemichthys xanthurus* Allen and Erdmann, *Reef fishes of the East Indies*, v. 2: 544.

Diagnosis: Grey with darker scale centers, yellow ear spot, yellow caudal fin and black dorsal anal fins with white or blue margin.



Habitat: Coral reefs and rocky shores. Solitary or pairs.

Distribution: Central and eastern Indian Ocean from Sri Lanka and Maldives to Andaman Sea.

Family POMACENTRDAE

8. *Amblyglyphidodon silolona* Allen, Erdmann and drew, 2012 Silolona Damsel fish

2012. *Amblyglyphidodon silolona* Allen, Erdmann and drew, in Allen and Erdmann, *Reef fishes of the East Indies*: 568.

Diagnosis: Silvery grey with yellow belly and yellow dorsal, anal and pelvic fins, black spot at base of upper pectoral fin rays and dark dorsal and ventral caudal fin margins.



Habitat: Coral reef areas.

Distribution: Andaman Islands.

Family SCARIDAE

9. *Calotomus carolinus* (Valenciennes, 1840)
Stareye Parrotfish

1840. *Callyodon carolinus*, Valenciennes in Cuvier & Valenciennes, *Histoire naturelle des poissons* v. 14: 291 (Type locality: Valenciennes, 1840).

2012. *Calotomus carolinus* Allen and Erdmann, *Reef fishes of the East Indies*: 729.

Diagnosis: Male largely blue green with orange pink bands radiating from eye. Female mottled brown with whitish patches and spoke like bands radiating from eye. Attains 50 cm.

Habitat: Solitary or groups. Lagoon and seaward reefs and seagrass bottoms.



Distribution: East Africa to Micronesia, Hawaiian Islands and Pitcarin islands and Australia to Ryukyu and Ogasawara islands; ranges throughout East Indian region.

Family BLENNIDAE

10. *Ecsenius paroculus* Springer 1988

1988. *Ecsenius paroculus* Springer, *Smithsonian Contributions to Zoology*, No. 465: 64, Pl. 7 (fig. 2); Figs. 32b, 34. (Type locality: Pulau, Tikus, Pulau Pari, Group, Pulau Seribu, Java, Indonesia).

2012. *Ecsenius paroculus* Allen and Erdmann, *Reef fishes of the East Indies*: 817.

Diagnosis: Brown with series of pale-edged white spots along back, broad dark brown stripe along lower side grading to series of squarish spots on lower caudal peduncle, row of irregular white spots on lower side and short dark brown stripe behind eye. Attains 4.1 cm.



Habitat: Coastal reefs.

Distribution: Indonesia, and East Andaman Sea.

11. *Ecsenius lubbocki* Springer, 1988
Lubbock's coral blenny

1988. *Ecsenius lubbocki* Springer, *Smithsonian Contributions to Zoology*, No. 465: 103, fig. 54. (Type locality: Kata Beach, Leam Sai, Phuket Island, Thailand).

2012. *Ecsenius lubbocki*, Allen and Erdmann, *Reef fishes of the East Indies* v 2: 814.

Diagnosis: Bright yellow iris, black margin on gill cover, black line across top of nape and combination of diffuse brown bars and three broad stripes on body with white interspaces. Solitary or form small group. Attains 4 cm.



Habitat: Coastal reefs encrusted with coralline algae.

Distribution: Andaman Sea (Andaman Islands, Myanmar and Thailand), and Indonesia.

Family GOBIIDAE

12. *Amblyeleotris downingi* Randall, 1994
Downing's Shrimgoby

1994. *Amblyeleotris downingi*, Randall, *Fauna of Saudia Arabia* v. 14: 318, Pls. 1-4. (Type locality: Kubbar Island, Persian Gulf, Kuwait).

2012. *Amblyeleotris downingi*, Allen and Erdmann, *Reef fishes of the East Indies* v. 3: 862.

Diagnosis: Whitish with 4-5 brown bars on side, including base of caudal fin, narrower dark bars dorsally in pale spaces between main body bars, blackish spot above and behind upper opercular margin, and irregular dusky brown blotch on operculum.



Habitat: Inhabits silty sand rubble bottoms symbiotic with a snapping shrimp.

Distribution: Persian Gulf, Thailand, Andaman Islands and western Sumatra.

13. *Bryaninops tigris* Larson, 1985
Black coral Goby

1985. *Bryaninops tigris*, Larson, *The Beagle (Occasional Papers of the Northern Territory Museum of Arts and Sciences)* v. 2 (no. 1): 70, Figs. 7-8. (Type locality: Lizard Island, Great Barrier Reef, Australia).

2012. *Bryaninops tigris*, Allen and Erdmann, *Reef fishes of the East Indies* v. 3: 896.

Diagnosis: Mainly semi transparent on upper half, with red to dark brown stripe (may be interrupted by white) from snout to lower tail base. Attains 3 cm.

Habitat: Inhabit deep slopes, subject to strong currents, with isolated outcrops of black corals. Solitary; seen only on branches of black coral *Antipathes* sp.



Distribution: Oman and Chagos to Palau, Solomon Islands, Fiji and Hawaii. Gulf of Thailand to Great Barrier Reef.

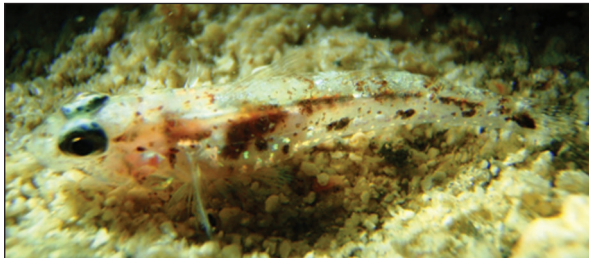
14. *Eviota cometa* Jewett and Lachner, 1983

1983. *Eviota cometa*, Jewett and Lachner, *Proceedings of the Biological Society of Washington*, v. 96 (no. 4): 796, figs. 8-9. (Type locality: Totoya Island, Fiji Islands).

2012. *Eviota cometa*, Allen and Erdmann, *Reef fishes of the East Indies* v. 3: 913.

Diagnosis: Mainly translucent with red to brown, internal midlateral stripe from head to base of caudal fin (interrupted by a few white spots or dash like marks), 3-5 white to yellowish spots posteriorly above anal fin base, black mark at base of caudal in. Attains 2.5 cm.

Habitat: Sand bottoms adjacent to coral reefs.



Distribution: Western Ocean and Eastern Indian Ocean eastward to Marshall and Phoenix Islands, but East Indian records include Indonesia, Philippines, Papua New Guinea and Solomon Islands.

15. *Eviota guttata* Lachner and Karnella, 1978
Spotted dwarfgoby

1978. *Eviota guttata* Lachner & Karnella, *Smithsonian Contributions to Zoology* No. 286: 9, Figs. 2a, 3b, 5. (Type locality: Massawa, Eritrea, Red Sea).

2012. *Eviota guttata* Allen and Erdmann, *Reef fishes of the East Indies* v. 3: 915.

Diagnosis: Body transparent, white stripe from eye to rear belly, three red blotches separated by white or yellow bars on side of belly and row of horizontally elongate reddish spots behind eye. Attains 3 cm.

Habitat: Solitary or groups, resting on bottom. Coastal and offshore reefs.



Distribution: Red Sea to Mariana Islands and Samoa and Australia to Ryukyu and Ogasawara islands; ranges throughout most of East Indian region.

16. *Eviota storthynx* (Rofen, 1959)

Storthynx dwarfgoby

1959. *Eviotops storthynx* Rofen, *Copeia*, no.3: 237, Figs. 1-3. (Type locality: Bungau, Sulu Province, Philippines).

2012. *Eviota storthynx* Allen and Erdmann, *Reef fishes of the East Indies* v. 3: 923.

Diagnosis: Semitranslucent grayish with internal stripe of alternating white and reddish brown, large brownish patch on lower side just posterior to pectoral fin base punctuated with large irregular white spots, about 14 brown spots with smaller white spots between from nape, along dorsal fin base, to dorsal surface of caudal peduncle and 6-7 similar brown and white marks above anal fin base. Attains 4.5 cm.

Habitat: Usually algal cover reefs.



Distribution: Western Australia, Indonesia, Philippines, Hong Kong, Palau, Ryukyu Islands and Ogasawara Islands.

17. *Fusiogobius inframaculatus*
(Randall, 1994)

1994. *Fusiogobius inframaculatus* Randall, J.E., *Fauna Saudi Arabia* **14**: 317-340 (Type locality: Jana Island, Persian Gulf, Saudi Arabia).

2012. *Fusiogobius inframaculatus* Allen and Erdmann, *Reef fishes of the East Indies* v. **3**: 971.

Diagnosis: Semi-translucent body, small orange spots, and 4-5 large internal blackish blotches and rectangular white marks. Attains 6 cm.

Habitat: Inhabits sand rubble bottoms near reefs.



Distribution: Persian Gulf and East Africa to western Caroline Islands and Tonga, and northern Great Barrier Reef to Taiwan; ranges throughout most of East Indian region.

18. *Phyllogobius platycephalops* (Smith, 1964)
Flathead goby

1964. *Cottogobius platycephalops*, Smith, *Annals and Magazine of Natural History* (Series 13) v. 7 (no. 75): 174, Pl. 4. (Type locality: Pinda, Mozambique).

2012. *Phyllogobius platycephalops*, Allen and Erdmann *Reef fishes of the East Indies* v. **3**: 903.

Diagnosis: Translucent with scattered white flecks; red line from upper lip to eye; a U-shaped reddish mark on each side behind eye. Attains 3.5 cm.



Habitat: Usually in small groups, on and under

flat leaf like sponges, including *Phyllospongia* sp. Camouflage makes it difficult to be getting noticed on sponges.

Distribution: East Africa to East Indian region and northern Great Barrier Reef of Australia; East Indian locations include Malaysia, Indonesia, Philippines, Papua New Guinea and Solomon Islands.

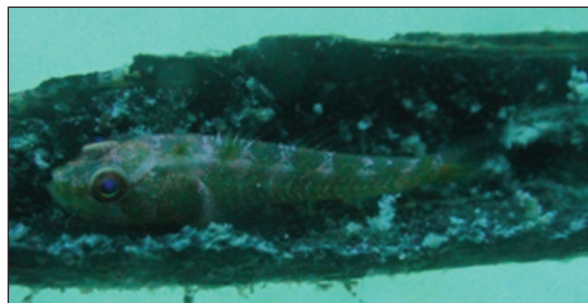
19. *Pleurosicya bilobata* (Koumans, 1941)
Seagrass ghostgoby

1941. *Cottogobius bilobatus* Koumans, *Memoirs of the Indian Museum* v. **13**: 253 (pt 3). (Type locality: Muthivaratu Paar, India).

2012. *Pleurosicya bilobata* Allen, and Erdmann, *Reef fishes of the East Indies* v. **3**: 904.

Diagnosis: Translucent green to yellowish green with brown to golden brown bands on head and body. Attains 2.8 cm.

Habitat: Commensal with seagrasses.



Distribution: Cargados Carajos Shoals (western Indian Ocean), southern India, Indonesia, Papua New Guinea, Palau, Guam and Ryukyu Islands.

20. *Pleurosicya boldinghi* Weber, 1913
Soft coral ghostgoby

1913. Weber, *Pleurosicya boldinghi*, *Die Fische der Siboga-Expedition*: 457, Fig. 88. (Type locality: between Misool and Vogelkop Peninsula, Western New Guinea).

2012. *Pleurosicya boldinghi*, Allen, and Erdmann *Reef fishes of the East Indies* v. **3**: 904.

Diagnosis: Body and fins semi-translucent tinted with color of host, solitary or in pairs.

Habitat: Found with *Dendronephthya* and *Sarcophyton* soft corals and *Virgularia* sea pens.

Distribution: East Africa to New Guinea. South

Japan and Micronesia to South East Australia and New Caledonia.



21. *Trimma sanguinellus* Winterbottom and Southcott, 2007

2007. *Trimma sanguinellus*, Winterbottom, and Southcott, *Aqua*, International Journal of Ichthyology: 74, Figs. 3B, 4, 5A-B v. 13 (no. 2). (Type locality: Similan Island, Western Thailand).

2012. *Trimma sanguinellus* Allen and Erdmann, *Reef fishes of the East Indies* v. 3: 945.

Diagnosis: Uniform orange red. Attains 2.7 cm.

Habitat: Caves and ledges of coastal reefs.



Distribution: Thailand, western Sumatra and Andaman Islands.

22. *Valenciennea decora* Hoese and Larson, 1994 Orange barred goby

1994. *Valenciennea decora*, Hoese, and Larson, *Indo-Pacific Fishes* No. 23: 18, Pls. 1C-D, 5B. (Type locality: Capricorn Group, Great Barrier Reef, Australia).

2005. *Valenciennea decora*, Randall, *Reef and shore fishes of the South Pacific. New Caledonia to Tahiti and the Pitcairn Islands*: 555.

Diagnosis: Grayish white with yellow stripe

on the lower side of the body and four to five orange bars crossing the sides; pearly spots and lines on head and orange margin on first dorsal fin. Solitary or in pairs. Attains 12 cm.

Habitat: Clean sandy bottoms of offshore reefs.



Distribution: Great Barrier Reef and Coral Sea to Fiji.

SUMMARY

The following twenty two new records of fishes for Andaman and Nicobar Islands are reported from the coral reef ecosystems: the lionfish *Dendrochirus biocellatus* Fowler, 1938, the soapfishes *Diploprion bifasciatum* Cuvier, 1828, the sandperch *Parapercis schauinslandi* (Steindachner, 1900), the threadfin bream *Nemipterus furcosus* (Valenciennes, 1830), the goatfish *Mulloidichthys ayliffe* Uiblein, 2011, the Silver Sweeper *Pempheris schwenkii* Bleeker 1855, the angelfish *Apolemichthys xanthurus* (Bennett, 1833), the damselfish *Amblyglyphidodon silona* Allen, Erdmann and drew, 2012, the parrotfish *Calotomus carolinus* (Valenciennes, 1840), the blennids *Ecsenius paroculus* Springer 1988, *Ecsenius lubbocki* Springer, 1988, and the gobies *Eviota cometa* Jewett and Lachner, 1983, *Eviota guttata* Lachner and Karnella 1978, *Eviota storthynx* (Rofen, 1959), *Pleurosicya bilobata* (Koumans, 1941), *Amblyeleotris downingi* Randall, 1994, *Bryaninops tigris* Larson, 1985, *Fusiogobius inframaculatus* (Randall, 1994), *Phyllogobius platycephalops* (Smith, 1964), *Pleurosicya boldinghi* Weber, 1913, *Trimma sanguinellus* Winterbottom and Southcott, 2007, and *Valenciennea decora* Hoese and Larson, 1994 during recent field surveys. Diagnostic characters, distribution and colour photos of each species are given in this chapter. The aim of this work is to add new information on the additions of fishes

from these Islands. A total of 1440 species of fishes under 576 genera belonging to 33 orders and 165 families are known from Andaman and Nicobar islands.

CONCLUSIONS

This finding shows that Andaman and Nicobar Islands coast has a regular connectivity with the south-eastern coast of Indonesia and north-eastern coast of Burma as the fish diversity in these waters also receives special interest in terms of marine zoogeography because of the confluence of Andaman Sea fishes with Western Pacific and the Eastern Indian Ocean. Long-term monitoring studies will allow a better understanding of connectivity patterns along the coast of Andaman and Nicobar Islands as well as the possible establishment of new populations of species. Much more field

work is advised for the remote islands of Nicobar group, especially Tillangchong, Battyally, Little Nicobar and Great Nicobar Islands. Review of literature revealed that all the species are new addition to Indian waters.

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