Note on peagsus moth, *Pegasus volitans* Linnaeus, 1758 (Family: Pegasidae) of Thoothukudi coast of Gulf of Mannar, India (08° 27.963'N 78° 23.450'E) (185 M)

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Abstract

Deep-sea as an incidental by-catch finfish and shellfish are one of the most concentrated studied marine taxonomic phylogeny groups yet obscure specimens are still being revealed. An incorporated taxonomic approach is used herein to explain and illustrate a new cryptic seamoth (genus Pegasus) fishes. The present investigation of Sea Moth, *Pegasus volitans* Linneaus,1766 (72 mm in TL and weighing 10 g) the said species was collected as an incidental by-catch in the deep sea trawl fisheries of Thoothukudi coast of Gulf of Mannar. Undescribed specimens and other valuable species are expected from relatively by-catch and unexplored marine habitats from Thoothukudi fishing harbour, Gulf of Mannar region, India. *Pegasus volitans* Linneaus,1766 was caught together in trawls at (08° 27.963'N 78° 23.450'E), Kuzhyll Kuli at a depth of 185 M. No population and stock assessment data was available for a complete conservation assessment is needed for the Sea Moth and other fauna and flora.

Keywords: Deep-sea *Pegasus volitans*, Thoothukudi coast, Gulf of Mannar, India.

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Introduction

The family Pegasidae (Syngnathiformes) contains 5 valid species within 2 genera, *Pegasus* and *Eurypegasus*, which are geographical distribution all over Indo-West and Central Pacific. According to Deborah Osterhage *et al*., (2016) the genus *Pegaus* consists of 3 currently recognized species, *P. lancifer* Kaup, *P. laternarius* Cuvier and *P. volitans* Linnaeus. The two latter species have an Indo-West Pacific distribution, whilst *P. lancifer* is endemic to southern Australia. *Pegasus volitans* is currently recognised as having the broadest range, from East Africa to Australia and southern Japan. The first species were reported by Day (1889), Johnstone (1904), Munro (1955), recorded *Pegasus* (*Parapegasus*) *volans* (Linnaeus) and *Pegasus draconis natans* (Linnaeus) from Ceylon. *Pegasus* (*Parapegasus*) *natans* (Linnaeus) and *Pegasus* (*Parapegasus*) *volans* (Linnaeus) are synonymous with *Pegasus volitans* Linnaeus. Inhabitants of tropical and temperate coastal regions throughout the Indo-Pacific (Palsson and Pietsch, 1989). Venkataramani *et al.,* (2004) have reviewed that the sea-moths are primitive siblings group of the seahorses, pipefishes and seadragons (Family Syngnathidae) and of the ghost pipefishes (family Solenostomidae) (Pietsch, 1978).

According to Stiller *et.al.,* (2022), has reviewed that the order Syngnathiformes consists of 10 families, including the large and diverse family Syngnathidae, which contains 320 species of seahorses, seadragons, and pipefish. In divergence, Osterhage *et.al.*, 2016; Zhang *et.al.,* 2020 has described in 2016 and 2020 incorporated and added to the two new species of *P. tetrabelos* and *S. nanhaiensis* (Zhang *et al.*, 2022).

Overexploitation of by-catch and identical and non-identical marine fauna and flora in capture fisheries is the most widespread and direct driver of change and loss of global marine biodiversity. According to (Hall *et al*., 2000; FAO, 2003) has reviewed that the responsible fisheries conduct requires effective governance all of sources of fishing mortality, including from retained identical and not-identical catch, both retained and discarded bycatch, and unobserved mortalities. Since, 1996 onwards marine invertebrate and vertebrate specimens were identified and reported in the Thoothukudi (Tuticorin) fishing harbour, Gulf of Mannar region, Southeast coast of India, viz., Squat lobsters, Sand locust lobster, sea spider, stomatopoda, Thalassinidea, Molluscs-Gastropoda and Bivalves, Cephalpoda Pelagic octopus, Echinoidea and spatagoida, Barnacles -Acorn Barnacles, Ascidian-Sea Squirts, Sea Urchin, Horny corals gorgonians, spiny lobsters, marine crabs, Cephalopoda, Alpheidae, Sicyoniidae off Indian coast. On the occurrence of by-catch specimen of Sea Moth, *Pegasus volitans* Linneaus,1766 is 72 mm in TL and weighing 10 gm, between the longitude and latitude, off Thoothukudi region, South India (08° 27.963'N 78° 23.450'E) at a depth of 185 M and habitats with the discovery of new species and genera continuing unabated. The marine biological data collection for various ecosystem components, viz., Benthic invertebrates (Epifauna), fish, zooplankton, phytoplankton, algae.

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Exposure of microfauna and flora, meiofauna, and various parasitic groups (e.g. Myxozoa, Trematoda, Cestoda, Acanthocephala). Benthic invertebrate group like Protozoa, Porifera, Placozoa, Mexozoa, Cnidaria, Hydrozoa, Entoprocta, Xenacoelomorpha, Platyhelminthes, Gnathostomulida, Rotifera, Gastrotricha, Nematoda, Acanthocephala, Kinorhyncha, Loricifera, Annelida, *Aphroditidae, Polynoidae, Pholoidae, Sigalionidae, Phyllodocidae, Glyceridae, Goniadidae, Lacydonidae, Nephtyidae, Nereidae, Hesionidae, Parergodrilidae, Pilargidae, Syllidae, Sphaerodoridae, Amphinomidae, Euphrosinidae, Spintheridae, Nerillidae, Eunicidae, Onuphidae, Dorvilleidae, Oenonide, Lumbrineridae, Aberrantidae, Spinonidae, Phyllodocidae, Uncispionidae, Trochochaetidae, Magelonidae, Chaetopteridae, Longosomatidae, Cirratulidae, Acrocirridae, Ctenodrilidae, Cossuridae, Arenicolidae, Capitellidae, Maldanidae, Ctenodrilidae, Cossuridae, Arenicolidae, Capitellidae, Maldanidae, Flabelligeride, Fauveliopsidae, Sternaspidae, Oweniidae, Opheliidae, Scalibregmatidae, Orbiniidae, Paraonidae, Terebellomorpha, Sabellariidae, Sabellidae, Serpulidae, Siboglinidae, Protodrillidae, Polygordidae, Oligochaeta, Hirudinea, Myzostomidae, Echiur. Arthropoda: Remipedia, Cephalocarida, Mystacocarida, Cladocera, Ostracoda, Cirripedia, Tantulocarida, Copepoda, Leptostraca, Stomatopoda, Mysidacea, Amphipoda, Isopoda, Tanaidacea, Cumacea, Decapoda, Acari, Pycnogonida, Myriapoda, Insecta, Tardigrada. Mollusca: Caudofoveata, Solenogastres, Monoplacophora, Polyplacophora, Scaphopoda, Gastropoda, Bivalvia, Cephalopoda, Brachiopoda, Cycliophora, Phoronida, Bryozoa, Chaetognatha, Echinodermata, Hemichordata, Chordata, Ascidiacea, Cehalochordata*, fish, reptile and mammals. Protozoa, Cnidaria, Ctenophora, Nemertea, Rotifera, Annelida, Arthropoda, Mollusca, Phoronida, Bryozoa, Chaetognatha, Echinodermata, Hemichordata, Chordata, Tunicata and Fish. Benthic algae and plant identification viz., Cyanophyceae, Xanthophyceae, Bacillariophyceae, Phaeophyceae, Rhodophyta, Chlorophyta, Charophyta and Tracheophyta. Thoothukudi fish landing centre, India is being assisted to rich biodiversity in-depth study of by-catch fauna and flora.

Sea Moth, *Pegasus volitans* Linneaus,1766 (72 mm in TL and weighing 10 g) the said species was collected as an incidental by-catch in the deep sea trawl fisheries off Thoothukudi coast of Gulf of Mannar. Despite the fact that examining by-catch specimen catches landed by larger trawlers, which operated in deeper waters off Thoothukudi, one specimen of Sea Moth, *P. volitans* Linneaus,1766, the said species was collected as an incidental by-catch in the deep sea trawl fisheries off Thoothukudi coast of Gulf of Mannar, Southeast Coast of India.

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Description

Slender Seamoths are somewhat flattened, with a slender, tapered body and a long tapered snout. Although capable of rapid colour change to match the surroundings, the body is usually brownish with a darker reticulated pattern.

Taxonomy

Family: Pegasidae
Class: Actinoptergii
Order: Gasterosteiformes
Genus: *Pegasus*
Species: *Volitans*
Pegasus volitans Linneaus, 1766
Day, 1889; 508 p
Munro, 1955, 352 p
Venkateswarlu, 1980: 10(1), 55-58

Materials examined

The present specimen of Sea Moth, *Pegasus volitans* Linneaus,1766 (72 mm in TL and weighing 10 g) the said species was caught together in trawls at (08° 27.963'N 78° 23.450'E), Kuzhyll Kuli at a depth of 185 M, as an incidental by-catch in the deep sea trawl fisheries off Thoothukudi coast of Gulf of Mannar, India (Figs. 1 and 2).

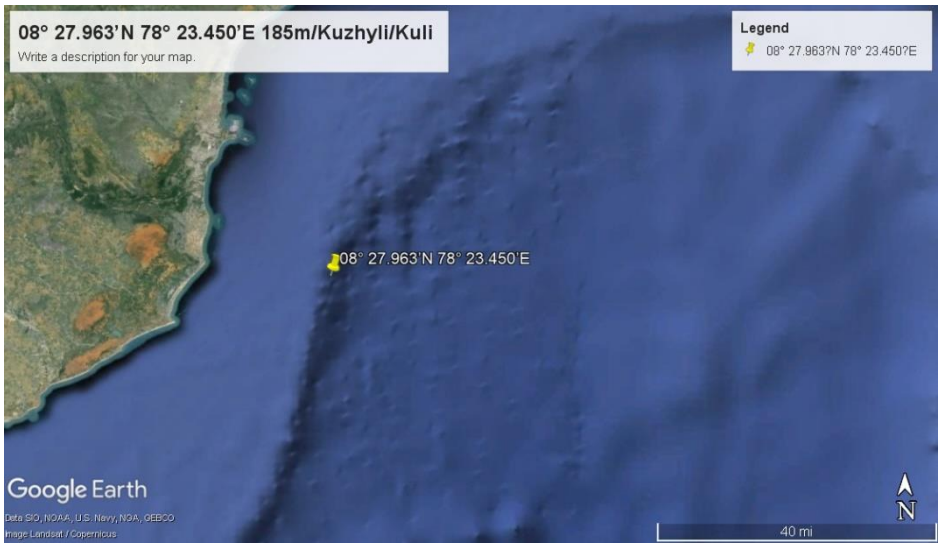

Figure 1: Overview map of the Gulf of Mannar coast, showing the sampling site of Thoothukudi coast of Gulf of Mannar, India, (08° 27.963'N 78° 23.450'E)/Kuzhyll Kuli at a depth of 185 M.

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Figure 2: Dorsal View - *Pegasus volitans* Linneaus, 1766.

Remarks

Sea Moth, *Pegasus volitans* Linneaus,1766 is described and sample examined consent quite well with the original description and figures provided by Day (1889), Johnstone (1904), Munro (1955), recorded *Pegasus* (*Parapegasus*) *volans* (Linnaeus) and *Pegasus draconis natans* (Linnaeus) from Ceylon waters. The present specimen of Sea Moth, *P. volitans* was reported on the occurrence off Thoothukudi coast of Gulf of Mannar, India.

Distribution

The present report showing of the species to be extended on this occurrence of *P. volitans* off Thoothukudi coast of Gulf of Mannar, Indo-West Pacific: Delagoa Bay, Mozambique to Saudi Arabia (Persian Gulf) and throughout Gulf of Manaar to Bay of Bengal; along the east coast of Myanmar; north to Japan, south to tropical Australia and Papua New Guinea.

References

Day, F., 1889. Fishes. Vol. I. p. 1-548. In W.T. Blanford (ed.). The fauna of British India including Ceylon and Burma. Taylor and Francis, London.

Osterhage, D., Pogonoski, J.J., Appleyard, S.A. and White, W.T., 2016. Integrated taxonomy reveals hidden diversity in northern Australian fishes: A new species of seamoth (Genus *Pegasus*). *Plos One*, March 2, pp.1-26. DOI:10.1371/journal.pone.0149415. e Collection 2016

FAO, 2003. The Ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook. Prepared by Garcia S, Zerbi A, Aliaume C, Chi T, Lasserre G. FAO Fisheries Technical Paper no. 443. Food and

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Agriculture Organization of the United Nations, Rome.

Hall, M.A., Alverson, D.L. and Metuzals., K.I., 2000. By-catch: problems and solutions. *Marine Pollution Bulletin*, 41, 204–19. DOI:10.1016/S0025-326X(00)00111-9

Johnstone, J., 1904. Report on the marine fishes collected by Prof. Herdman, at Ceylon, in 1902. *Report to the Government of Ceylon on the pearl oyster fisheries of the Gulf of Mannar*, 2(**15**), 201-222. DOI:10.1007/s10344-011-0570-6

Munro, I.S.R., 1955. The marine and fresh water fishes of Ceylon. Halstead Press, Sydney, 351 P.

Palsson, W.A. and Pietsch, T.W., 1989. Revision of the acanthopterygian fish, family Pegasidae (Order Gasterosteiformes). *Indo-Pacific Fishes*, 18, 1–38.

Osterhage, D., Pogonoski, J.J., Appleyard, S.A. and White, W.T., 2016. Integrated taxonomy reveals hidden diversity in nortern Australian fishes: A new species of seamoth (Genus *Pegasus*). *PLoS One*, 11(**3**), e0149415. DOI:10.1371/journal.pone.0251680

Pietsch, T.W., 1978. Evolutionary relationships of the sea moths (Teleostei: Pegasidae) with a classification of gasterosteiform families. *Copeia*, 3, 517–529. http://doi.org/10.2307/1443620

Stiller, J., Short, G., Hamilton, H., Saarmann, N., Longo, S. and Wainwright, P., 2022. Phylogenomic analysis of Syngnathidae reveals novel relationships, origins of endemic diversity and variable diversification rates. *BMC Biology*, 20(**1**), 75. http://org/10.1186/s12915-022-01271-w

Venkataramani, V.K., Vaitheeswaran, T., Jawahar, P. and Santhanam., R., 2004. Marine ornamental fishes of Gulf of Mannar (Monograph). ICAR/NATP/CGP/ publication. 115 P.

Venkateswarlu, T. and Verghese, G., 1980. Occurrence of the Bat-fish, *Pegausu draconis* L. Pegasiformes: Pegasidae) in Lakshadweep (India). *Acta Ichthyologica et Piscatoria*, 10(**1**), 55-58.

Zhang, R.R., Wang, X., Wan, S.M., Ma, S.B. and Lin, Q., 2020. A new species of Pegasus (Syngnathiformes: Pegasidae) from the South China Sea. *Zootaxa*, 4894(**4**), 521−534. DOI:10.11646/zootaxa.4894.4.2

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