

Short communication:

**Study on Blennies fishes (Blenniidae Rafinesque 1810)
from Makoran coastal waters (Southeast of Iran)**

Estekani S.¹; Attaran-Fariman G.^{1*}; Ghasemzadeh J.²

Received: June 2014

Accepted: July 2019

1-Department of Marine biology, Faculty of Marine Science, Chabahar Maritime University, Chabahar, Iran

2-Department of Fisheries, Faculty of Marine Science, Chabahar Maritime University, Chabahar, Iran

*Corresponding author's Email: Gilan.attaran@gmail.com

Keywords: Chabahar, Intertidal, Subtidal, Blenniidae

Introduction

The family Blenniidae comprises 58 genera and 406 species according to Eschmeyer *et al.* (2018). Members of the family Blenniidae are small, scaleless and very agile fishes, inhabiting inshore, sub-tidal rocky substrata, and rock pools of the inter-tidal zone of tropical and sub-tropical marine waters (Randall, 1995). A few species are also reported from brackish and freshwaters (Hastings and Springer, 2009).

Many authors including: Wright *et al.* (1990); Abou-Seedo, (1992); Springer and Williams, (1994); Randall *et al.* (1994); Randall (1995); Regan (1905); Smith (1959); Springer (1988) and Manilo and Bogorodsky, (2003) have studied the intertidal fishes fauna of the Persian Gulf and Oman Sea. Studies on Blenniidae family by Iranian authors have recently. Ghanbarifardi and Malek (2007) and Mehraban and Esmaili (2018) reported on the

permanent intertidal fishes of Persian Gulf and Oman Sea. Attaran Fariman *et al.* (2016) study on phylogeny of the some Blenniidae species from intertidal and subtidal of Oman Sea. Phylogeny of 7 blenniidae species has been studied by Estekani (2014).

The natural habitat, life history and unique characteristics of this family are quite compatible with different habitats and substratum existing along the Makoran coast, hence, it could be expected that quite a diverse number of blenniid species inhabit different niches of this area. Therefore this study was conducted to identify the species of Blenniidae family from intertidal and subtidal of North part of Oman Sea (Makoran coast).

Martials and methods

Specimens of blennies have collected from 10 intertidal and subtidal stations in Chabahar Bay and Makoran coast

from June 2012 to November 2013 (Fig. 1, Table 1). Intertidal samples were taken from rock pools during low tide by scoop and hand nets; and specimens from sub tidal zone were collected by scuba diving up to the depth of 20 meters by hand net. The fresh specimens were photographed in the field in order to record their original coloration, then kept in ice and transferred to the laboratory. All specimens' photos were taken by Estekani (2014) using a digital camera (Canon G-12). Before transferring the samples into 70% ethanol, which causes the specimens to change and lose part

of their coloration, we tried to identify them based on the available identification keys Smith, (1959); Springer, (1967, 1968, 1988); Smith-Vaniz, (1976); Smith, (1986); Springer and Williams, (1994); Randall, (1995); Hastings and Springer, (2009); Lin and Hastings, (2011, 2013); Hundt *et al* (2014). All collected specimens deposited in the Zoological Museum, Chabahar Maritime University, (ZMCMU).

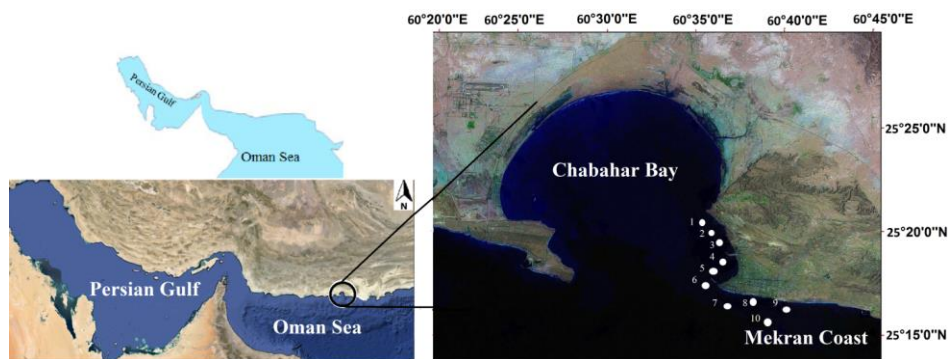


Figure 1: Map of study area with collecting sites.

Table 1: Sampling localities and habitat types.

Station	Global position	Habitat
1- Tis	25°20'N 60°36'E	Tide pool
2- Lipar beach	25°19'N 60°37'E	Rocky
3- Coral protect zone	25°19'N 60°37'E	Coral
4- Kalantari port	25°18'N 60°36'E	Rocky and coral
5- Alghadir port	25°17'N 60°37'E	Rocky and coral
6- Beheshti port	25°17'N 60°35'E	Rocky and coral
7- Reef Seid	25°14'N 60°36'E	Rocky and coral
8- International baharan park	25°16'N 60°40'E	Rocky
9- Ramin	25°15'N 60°45'E	Rocky
10- Artemis Reef	25°15'N 60°40'E	Rocky and coral

Results and dissection

Based on the detail examination of the collected material, fifteen species belonging to nine genera of the family Blenniidae were identified; of these, 7

species were molecular identified (Estekani, 2014). These species are listed in the Table 2 with stars. Systematic status and short descriptions of these fifteen species are given based

on our specimens' examination and their comparison with previous literature and identification keys (Table 2). Of these, three species including; *Parablennius thysanius*, *Entomacrodus striatus* and *Petroscirtes mitratus* are first recorded from northern part of Oman Sea. According to osteological characters, Springer (1968) distinguished two subfamilies: Blenniinae (three tribes Blenniini, Omobranchini and Salariaiini) and Nemophidinae (Smith-Vaniz and Springer, 1971). degraded the subfamily Nemophidinae into a tribe Nemophini without comment while

most recent classifications recognize six tribes of the Blenniidae (Hastings and Springer 2009). Based on Hasting and Springer (2009), 48 comb tooth blenny species, representing four groups and six tribes of the Blenniidae were reported thorough phylogenetic analysis using mitochondrial and nuclear markers. Lin and Hasting (2013) also documented six tribes and two subfamilies for Blenniidae including blenniinae and salariinae. In the present study most of species (12 species) were belonging to the salariinae and only three species were identified from blenniinae subfamily (Table 2).

Table 2: List of identified Blenniidae species from Makoran sea (E.No= the number of examined species; M.No=Museum number; star (*) =shows list of molecular identified species).

Blenniidae species	Common name	Fig. NO.	Sites	E.NO. & M.NO.	Species description
Subfamily: SALARIINAE					
<i>Antennablennius bifilum</i> (Günther, 1861)	Horned blenny	2	8-9	(n= 18) 100-118	Dorsal fin XI-XII 18-20; Anal fin II-17-21; Pectoral fin 14; Pelvic fin I, 3
<i>Antennablennius variopunctatus</i> (Jatzow and Lenz 1898)	Orangedotted blenny	3	1-2-8	(n=17) 118-135	Dorsal fin XII-XIII 19-21; Anal fin II-20-23; Pectoral fin 14; Pelvic fin I, 3.
* <i>Ecsenius pulcher</i> (Murray, 1887)	Gulf blenny	4	3-6-5-10	(n=6) 135-141	Dorsal fin XII; 18-20; Anal fin II, 19-23; Pectoral fin 13-15 (normally 14); Pelvic fin I, 3
<i>Alticus kirkii</i> (Günther, 1868)	Leaping blenny	5	8	(n=6) 141-147	Dorsal fin XVII-20-22; Anal fin II-25-28; Pectoral fin 14; pelvic fin I,3.
* <i>Istiblennius lineatus</i> (Springer and Williams, 1994)	Scarface rockskipper	6	8-9	(n=10) 141-151	Dorsal fin XII-XIII 20-23; Anal fin II-22-24; Pectoral fin 14; pelvic fin I, 3.
* <i>Istiblennius spilotos</i> (Springer & Williams, 1994)	Spotted rockskipper	7	8-9	(n=10) 151-161	Dorsal fin XIII 16-19; Anal fin II 17-19; Pectoral fin 14; Pelvic fin I, 2-4
<i>Istiblennius edentulus</i> (Forster & Schneider, 1801)	Smooth-lipped blenny	8	1	(n=5) 161-166	Dorsal fin XIII 18-23; Anal fin II-20-24; Pectoral fin 14; Pelvic fin I, 3.
<i>Entomacrodus striatus</i> (Valenciennes, 1836)	Reef margin blenny	9	1	(n=4) 166-170	Dorsal fin XII, 4-16; Anal finII, 15-18; Pectoral fin 13-15; Pelvic fin I, 4
* <i>Parablennius pilicornis</i> (Cuvier, 1829)	Ringneck blenny	10	3-6-5-10	(n=4) 170-174	Dorsal fin XII 19-21; Anal fin II-22-23; Pectoral fin 14; Pelvic fin I, 3
<i>Parablennius thysanius</i> (Jordan and Seal, 1907)	Tasseled blenny	11	8	(n=2) 174-176	Dorsal fin XII, 14-15; Anal fin II, 16-17; Pectoral fin 14; Pelvic fin I, 3
* <i>Parablennius cornutus</i> (Linnaeus, 1758)	Horned blenny	12	8	(n=2) 176-178	Dorsal fin XII, 14-15; Anal fin II, 16-17; Pectoral fin 14; Pelvic fin I, 3
* <i>Scartella emarginata</i> (Gunther, 1861)	Maned blenny	13	8	(n=4) 178-182	Dorsal fin XI-XIII 12-16; Anal fin II, 14-18; Pectoral fin 14; Pelvic fin I, 4
Subfamily: Blenniinae					
<i>Omobranchus fasciolatus</i> (Valenciennes, 1836)	Barred Arab blenny	14	1-2	(n=10) 170-180	Dorsal fin XII 18-19; Anal fin II-20-22; Pectoral fin 14; Pelvic fin I, 3
<i>Omobranchus mekarensis</i> (Regan, 1905)	Mekran blenny	15	8	(n=5) 170-175	Dorsal fin XII 20-21; Anal fin II-22-23; Pectoral fin 14; Pelvic fin I, 3
* <i>Petroscirtes mitratus</i> (Rüppell, 1830)	Highfin fangblenny	16	2-3-4	(n=3) 175-178	Dorsal fin X-XII 14-16; Anal fin II, 14-16; Pectoral fin 13-16; Pelvic fin I, 3

This is a new and updated checklist of the family Blenniidae from the intertidal and subtidal habitats of

Chabahar Bay and Makoran coast. Identified species from Chabahar bay are shown in Figs. 2-16.

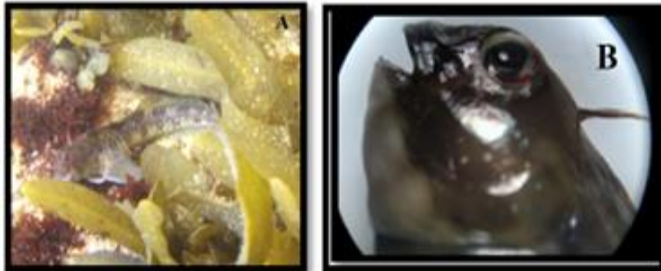


Figure 2: A) *Antennablennius bifilum* 64 mm SL B) Head part (Abundant in the internal zone of exposed rocky shores).

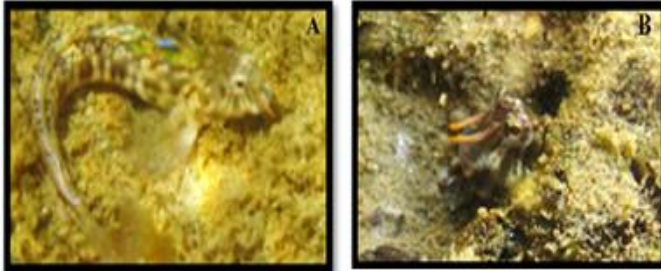


Figure 3: A) *Antennablennius variopunctatus* 56 mm SL B) Head part (Occurs in shallow water with rocky bottom and tide pools).



Figure 4: A) *Ecsenius pulcher* uniform pattern 55 mm SL. B) Head of *Ecsenius pulcher* uniform pattern. C) *Ecsenius pulcher* horizontally bicolored pattern 41mm. D) *Ecsenius pulcher* banded pattern 83 mm SL B. (Occurs in sub tidal water with coral and rocky substratum).

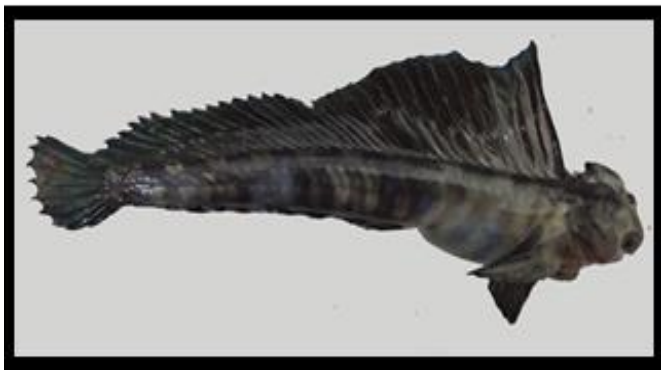


Figure 5: *Alticus kirkii* male 111 mm SL (High abundances in the internal zone of expose rocky shores, often out of water).



Figure 6: A) *Istiblennius pox* male 116 mm SL. B) Numerous and incisiform teeth in *Istiblennius* (Occurs inshore and rocky exposed shore)



Figure 7: A) *Istiblennius spilotos* male 86 mm SL. B) *Istiblennius spilotos* female 70 mm SL. (Occurs inshore and exposed rocky shores)



Figure 8: *Istiblennius edentulous* male 98 mm SL (Occurs inshore on exposed rocky substrata)



Figure 9: *Entomacrodus striatus* 98 mm SL (Occurs in the intertidal zone of lagoons and wave-swept seaward reefs)



Figure 10: A) *Parablennius pilicornis* 78 mm SL B) Head of *Parablennius pilicornis* (High abundances in the sub tidal zone)



Figure 11: A) *Parablennius thysanius* 50 mm SL B) *Parablennius thysanius* (High abundances in the intertidal zone of exposed rocky shores)



Figure 12: *Parablennius cornutus* 60 mm SL (High abundances in the internal zone of expose rocky shores)



Figure 13: *Scartella Emarginata* (High abundances in the internal zone of exposed rocky shores)



Figure14: *Omobranchus fasciolatus* male 56 mm SL (Occurs in shallow water with rocky bottom and tide pools)



Figure 15) *Omobranchus mekarensis* male 44 mm SL (Occurs in shallow water with rocky bottom)



Figure 16: A) *Petroscirtes mitratus* 64 mm SL B) Prominent canine teeth in the lower jaw (High abundances in exposed rocky shores, coral zone and weedy areas)

Chabahar Bay which is located at the northern coast of Oman Sea has a vast area of soft and hard coral reefs, and rocky substrata, which providing ideal habitats for fishes adapted to inshore, sub-tidal and intertidal zones. This beach is very shallow with rock and sandstone bottom and lots of small rock

pools which are covered with sand and mud due to its very mild slope. It has a rich and diverse benthic fauna with patches of corals scattered over a vast area which is being exposed during low tide (Attaran-Fariman and Beygmoradi, 2016). Five Blenniid species including *A. variopunctatus*, *I. pox*, *I. edentulous*,

E. striatus and *O. fasciolatus* were collected in rock pools of this area at low tide. Lipar beach has a rocky substratum in which we collected *A. variopunctatus*, *I. pox*, and *O. fasciolatus* in low tide, but *E. anomalus* was caught in sub-tidal zone of this area. This part encompasses a Coral Protected Area is sub-tidal zone with an average depth of five meters at high tide. Many species have been found at this station including *P. mitratus*, *E. anomalus*, and *E. pulcher*. Sampling stations of Kalantari Port, Alghadir Port and Beheshti Port have similar conditions with rocky bottom with lots of coral, barnacle and oyster beds. *P. pilicornis*, *P. mitratus*, *E. anomalus*, and *E. pulcher* have recorded from these stations. Seied Reef and Artemis Reef stations are deep with rocky bottom, covered with coral reef. *P. pilicornis*, *P. mitratus*, *E. anomalus*, and *E. pulcher* have recorded from these stations. International Baharan Park is an important station with the highest diversity of Blenniids including *S. emarginata*, *P. cornutus*, *P. thysanius*, *O. mekarensis*, *O. fasciolatus*, *I. spilotos*, *I. pox*, and *A. bifilum*. Baharan Park and Ramin sampling sites are located in the Oman Sea with high and steep cliff shores which are exposed to harsh and strong wave action. There are a combination of shallow and deep rock pools in this area, most of which are covered with sea grass, providing an abundant food source for these fishes, which has resulted in high diversity and number of these fishes. Four species including *A. bifilum*, *P. thysanis* *I.*

lineatus and *I. spilotos*, were collected from these stations.

Owfi (2015) Eagderi *et al.* (2019); reported *Antennablennius adenensis* from the Oman Sea and the species *A. hypenetes*; *Hirculops cornifer*; *Istiblennius periophthalmus* and *Mimoblennius cirrosus* from different parts of the Persian Gulf, while these species have not been recorded in the present study. Therefore, it is very likely and possible that more species would be collected and identified in this region in future studies.

Acknowledgments

Thanks to everyone who helped us with this research; I would like to say thanks especially to Dr. Victor G. Springer and Dr. Carole C. Baldwin from National Museum of Natural History, Smithsonian Institution for their helping in the confirm species identification.

References

- Abou-Seedo, F.S., 1992.** Abundance of fish caught by stake-traps (hadra) in the intertidal zone in Doha Kuwait Bay. *Journal of the University of Kuwait (Science)*, 19, 91-9
- Attaran-Fariman, G. and Beygmoradi, A., 2016.** The first report of *Amphipholis squamata* (Delle Chiaje, 1829) (Echinodermata: Ophiuroidea) from Chabahar Bay northern Oman Sea. *Iranian Journal of Fisheries Sciences*, 25(3), 1254-1261.
- Attaran-Fariman, G., Estekani, S. and Gasemzade, G., 2016.** The first study of the phylogenetic relationships of three rare species of

- Blenniids (Fishes: Blenniidae) from Makoran Coast based on the gene sequencing of Cytochrome Oxidase I. *Iranian Journal of Fisheries Sciences*, 25(1): 135-147
- Eagderi, S., Fricke, R., Esmaeili, H.R. and Jalili, P., 2019.** Annotated checklist of the fishes of the Persian Gulf: Diversity and conservation status. *Iranian Journal of Ichthyology*, 6(1), 1-171
- Eschmeyer, W.N., Fricke, R. and Laan, R. van der., 2018.** Catalog of Fishes: Genera, Species, References. <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. Accessed on 07 Aug. 2018
- Estekani, S., 2014.** Identification of some species of blenny fishes (Teleostei: Perciformes), in Chabahar Bay based on the morphological and molecular characters. Thesis for the Master of Science Degree, Chabahar Maritime University. 100 P.
- Ghanbarifardi, M. and Malek, M., 2007.** Permanent intertidal fish from the Persian Gulf and Gulf of Oman, Iran. *Iranian Journal of Animal Biosystematics (IJAB)*, 3, 1-14.
- Hastings, P.A. and Springer, V.G., 2009.** Systematics of the Blennioidei and the included families Dactyloscopidae, Chaenopsidae, Clinidae and Labrisomidae. In *The Biology of Blennies*. (R. A. Patzner, E. J. Gonçalves, P. A. Hastings, and B. G. Kapoor, Eds.) Enfield: Science Publishers. pp. 69-91
- Hundt, P.J., Iglésias, S.P., Hoey, A.S. and Simons, A.M., 2014.** A multilocus molecular phylogeny of combtooth blennies (Percomorpha: Blennioidei: Blenniidae): Multiple invasions of intertidal habitat. *Molecular Phylogenetics and Evolution*, 70, 47-56.
- Lin, H.C. and Hastings, P.A., 2011.** Evolution of a neotropical marine fish lineage (Subfamily: Chaenopsinae, Suborder: Blennioidei) based on phylogenetic analysis of combined molecular and morphological data. *Molecular Phylogenetics and Evolution*, 60, 236-248.
- Lin, H.C. and Hastings P.A., 2013.** Phylogeny and biogeography of a shallow water fish clade (Teleostei: Blenniiformes). *BMC Evolutionary Biology*, 13, 210.
- Manilo, L.G. and Bogorodsky, S.V., 2003.** Taxonomic composition, diversity and distribution of coastal fishes of the Arabian Sea. *Journal of Ichthyology*, v. 43(suppl. 1), S75-S149.
- Mehraban, H.R. and Esmaeili, H.R., 2018.** Comb-tooth blennies of the intertidal zones of Persian Gulf and Makran sea: Morphology, taxonomy, distribution and conservation status (Blenniiformes: Blenniidae). *Iranian Society of Ichthyology*, 5(3), 192-211.
- Owfi, F., 2015.** A review on systematic and taxonomic of the Persian Gulf fish species, based on geographical distribution pattern and habitat diversity, using by GIS. Thesis for the Ph.D degree. Eslamic Azad

- university Science And Research Branch. 150 P.
- Randall, J.E., Downing N., McCarthy, L.J., Stanland, B.E. and Tarr, A.B., 1994.** Fifty one new records of fishes from the Persian Gulf. *Fauna of Arabia*, 14, 220-258.
- Randall, J.E., 1995** Coastal fishes of Oman. United States: Crawford House Publishing Pty Ltd. Oman. pp. 312-323.
- Regan, C.T., 1905.** On fishes from the Persian Gulf, the Sea of Oman, and Karachi, Collected by Mr. F.W. Townsend. *Journal of the Bombay Natural History Society*, 16, 318-333.
- Smith, J.L.B, 1959.** Fishes of the families Blenniidae and Salariidae of the western Indian Ocean. Ichthyological Bulletin of the J.L.B. *Smith Institute of Ichthyology*, 14, 229-252
- Smith-Vaniz, W.F., 1976.** The saber-toothed blennies, tribe Nemophini (Pisces: Blenniidae). *Monographs of the Academy of Natural Sciences of Philadelphia*, 19, 1-196.
- Smith, M.M., 1986.** Megalopidae. In: M.M. Smith, P.C. Heemstra (Eds.). *Smiths' sea fishes*. Springer-Verlag, Berlin. pp. 155-156.
- Smith-Vaniz, W.F. and Springer, V.G., 1971.** Synopsis of the tribe Salariini, with description of five new genera and three new species (Pisces: Blenniidae). *Smithsonian Contributions to Zoology*, 73, 1-72.
- Springer, V.G., 1967.** Revision of the Circumtropical shore fish genus *Entomacrodus* (Blenniidae: Salariinae). *Proceedings of the United States National Museum*, 122(3582), 1-150.
- Springer, V.G., 1968.** Osteology and classification of the fishes of the family Blenniidae. *Bulletin of the United States National Museum*, 284, 1-85.
- Springer, V.G., 1988.** The indo-Pacific Blenniid fish genus *Ecsenius*. Washington, D.C.: Smithsonian Institution Press.
- Springer, V.G. and Williams, J.T., 1994.** The indo-west Pacific Blenniid fish genus *Istiblennius* reappraised: A revision of *Istiblennius*, *Blenniella*, and *Paralticus*, new genus. *Smithsonian Contributions to Zoology*, 565, 1-193.
- Wright, J.M., Clayton, D.A. and Bishop, J.M., 1990.** Tidal movements of shallow water fishes in Kuwait Bay. *Journal of Fish Biology*, 37, 959-74.