

Confirmation of the presence of *Heniochus acuminatus* (Linnaeus, 1758) (Chaetodontidae) and *Pomacanthus maculosus* (Forsskål, 1775) (Pomacanthidae) in Iraqi marine waters, Arabian Gulf

L. A. Jawad, M. Al–Mukhtar & M. S. Faddagh

Jawad, L. A., Al–Mukhtar, M. & Faddagh, M. S., 2014. First record of *Heniochus acuminatus* Linnaeus, 1758) (Chaetodontidae) and *Pomacanthus maculosus* (Forsskål, 1775) (Pomacanthidae) in Iraqi marine waters, Arabian Gulf. *Arxius de Miscel·lània Zoològica*, 12: 124–129, Doi: <https://doi.org/10.32800/amz.2014.12.0124>

Abstract

Confirmation of the presence of Heniochus acuminatus (Linnaeus, 1758) (Chaetodontidae) and first record of Pomacanthus maculosus (Forsskål, 1775) (Pomacanthidae) in Iraqi marine waters, Arabian Gulf. — Two specimens (116, 119 mm TL) of *Heniochus acuminatus* (Linnaeus, 1758) and four specimens (171–190 mm TL) of *Pomacanthus maculosus* (Forsskål, 1775) were collected from Iraqi marine waters of the Arabian Gulf. These findings confirm the presence of *H. acuminatus* and establish the first record of *P. maculosus* from Iraqi waters. The samples were captured by hook and line off the coasts of Al–Fao City Peninsula, southern Iraq. Arabian Gulf. morphometric and meristic data are provided and compared with data from other parts of the world.

Key words: *Heniochus acuminatus*, *Pomacanthus maculosus*, Basrah, Range extension, Iraq.

Resumen

Confirmación de la presencia de Heniochus acuminatus (Linnaeus, 1758) (Chaetodontidae) y primer registro de Pomacanthus maculosus (Forsskål, 1775) (Pomacanthidae) en aguas marinas de Iraq, golfo Pérsico. — Se recolectaron dos especímenes de 116 y 119 mm TL de *Heniochus acuminatus* (Linnaeus, 1758) y cuatro especímenes de 171 a 190 mm TL de *Pomacanthus maculosus* (Forsskål, 1775) en aguas del golfo Pérsico, lo que confirma la presencia de *H. acuminatus* y constituye el primer registro de *P. maculosus* en las aguas marinas de Iraq. Los ejemplares fueron capturados con sedal y anzuelo en las costas de la península de Al–Fao, al sur de Iraq, en el golfo Pérsico. Se aportan los datos morfométricos y merísticos de los ejemplares y se comparan con los registrados en otras partes del mundo.

Palabras clave: *Heniochus acuminatus*, *Pomacanthus maculosus*, Basora, Extensión de la distribución, Iraq.

Resum

*Confirmació de la presència d'*Heniochus acuminatus* (Linnaeus, 1758) (Chaetodontidae) i primer registre de *Pomacanthus maculosus* (Forsskål, 1775) (Pomacanthidae) en aigües marines de l'Iraq, golf Pèrsic.*— Es van recol·lectar dos espècimens de 116 y 119 mm TL d'*Heniochus acuminatus* (Linnaeus, 1758) i quatre espècimens de 171 a 190 mm TL de *Pomacanthus maculosus* (Forsskål, 1775) en aigües del golf Pèrsic, la qual cosa confirma la presència d'*H. acuminatus* i constitueix el primer registre de *P. maculosus* a les aigües marines de l'Iraq. Els exemplars van ser capturats amb fil i ham a les costes de la península d'Al-Fao, al sud de l'Iraq, al golf Pèrsic. S'aporten les dades morfològiques i mètriques dels exemplars i es comparen amb les registrades en altres llocs del món.

Paraules clau: *Heniochus acuminatus*, *Pomacanthus maculosus*, Bàssora, Extensió de la distribució, Iraq.

Received: 24/02/2014; Conditional acceptance: 09/07/2014; Final acceptance: 25/07/2014

Laith A. Jawad¹, Manukau, Auckland, New Zealand, Mustafa Al-Mukhtar & Mustafa S. Faddagh, Marine Science Centre, University of Basrah, Iraq.

Corresponding author: L. A. Jawad. E-mail: laith_jawad@hotmail.com

Introduction

Members of the butterfly fish group are varied and abundant marine perciform fishes with remarkable coloration, found on reefs throughout shallow, tropical seas. Members of the Chaetodontidae family, noted for their coloration and body shape (Fessler & Westneat, 2007), have drawn the attention of scientists to study their taxonomy and biology (Ferry-Graham et al., 2001). There are ten genera and 117 species within the family Chaetodontidae (Allen & Erdmann, 2012). *Chaetodon* is the most diverse genus with 89 species. The genus *Heniochus* comprises eight species (Eschmeyer, 2014).

Due to their anatomical similarities, species of this family have been included within the family Chaetodontidae (Allen & Erdmann, 2012) but controversy has arisen on this issue. On the basis of molecular studies, the two families were considered sister taxa (Bellwood et al. 2004, 2010), but Near et al. (2013) and Hodge et al. (2013) consider that they are non-sister taxa as the nodes separating them in their phylogenetic tree have low support.

The family Pomacanthidae (common name angelfishes) has six genera and 84 species. The genus *Pomacanthus* contains 13 species (Eschmeyer, 2014).

Although the marine fish fauna of Iraq has been documented in the last few decades (Khalaf, 1961; Mahdi, 1971; Al-Daham, 1982; Al-Hassan & Al-Badri, 1986; Al-Hassan & Miller, 1987; Hussain et al., 1988), the marine ichthyofauna is still far from being fully known and documented. A considerable amount of taxonomic work is waiting to be done (Jawad, 2012). Such delay in the progress of ichthyological investigation in the Iraqi marine waters is mainly due to the political unrest in the area.

Several programs have recently been started to survey fish biodiversity in Iraqi waters of the Arabian Gulf. The aim is to build a list of species that are present in the northwest part of the Arabian Gulf.

The two species reported in the present study showed a narrow (*P. maculosus*) to wide range of distribution (*H. acuminatus*) (Froese & Pauly, 2014; Hodge et al., 2013). Both species have been recorded previously from the Arabian Gulf waters, but their presence in the Iraqi waters has not been published to date. This is an important record as it confirms the presence of both species in the Iraqi marine waters of the Arabian Gulf. So far, no other

species within the genera *Pomacanthus* and *Heniochus* have been detected in this area. Although these two species have been recorded previously in Arabian Gulf waters, confirmation of these and any other coral reef associated species in local waters will support the present efforts of the Iraqi government to evaluate, protect and maintain the coral reef habitats in the Iraqi marine waters (Ali, 2013). The coral reef habitats were neglected from being a protected area and under consideration as a national park for the last decades (Mohammed, 2012). Therefore, the results obtained in the present study will be significant for the conservation of the coral reef habitats project in Iraq.

Studied material

On 21st January 2014 two specimens of *Heniochus acuminatus* and four specimens of *Pomacanthus maculosus* (figs. 1, 2) were caught by hook and line from the Fao City Peninsula, south of Iraq, Arabian Gulf. The morphometric and meristic details of the two species were recorded according to Fischer & Bianchi (1984) and are shown in table 1. The specimens were then fixed in 10% formaldehyde solution and preserved in 70% ethanol for deposit in the fish collection of the Marine Science Centre, University of Basrah, Iraq.

The specimens of the present two species are identical to the general description of these species (Randall, 1995).

H. acuminatus is characterised by the following set of characters: body deep and snout pointed; fourth dorsal spine very long; caudal fin truncate; body white with two pairs of diagonal black bands; snout and interorbital space black; caudal fin and posterior part of



Fig. 1. *Heniochus acuminatus*. Total length, 125 mm.

Fig. 1. *Heniochus acuminatus*. Longitud total, 125 mm.



Fig. 2. Two specimens of *Pomacanthus maculosus*. Total length, 170–190 mm, with one specimen of *H. acuminatus* in the middle and three specimens of *Acanthopagrus bifasciatus* (Sparidae).

Fig. 2. Dos especímenes de *Pomacanthus maculosus*. Longitud total, 170 y 190 mm, con un espécimen de *H. acuminatus* entre los dos anteriores y tres especímenes de *Acanthopagrus bifasciatus* (Sparidae).

Table 1. Morphometric and meristic characters of *Heniochus acuminatus* and *Pomacanthus maculosus* collected from the Iraqi marine waters, Arabian Gulf: TL. Total length; HL. Head length; SL. Standard length.

Tabla 1. Características morfológicas y merísticas de los Heniochus acuminatus y Pomacanthus maculosus recolectados en aguas iraquíes del golfo Pérsico: TL. Longitud total; HL. Longitud de la cabeza; SL. Longitud estándar.

	<i>Heniochus acuminatus</i> (n = 4)	<i>Pomacanthus maculosus</i> (n = 2)
Morphometric characters		
TL	116–119	171, 190
SL (% in TL)	101–104 (87–88)	142, 186 (83,98)
HL (% in SL)	31–34 (31–33)	36, 56 (25,30)
Eye diameter (% in HL)	7–10 (23–29)	9, 12 (25,21)
Preorbital length (% in HL)	13–17 (42–45)	13, 16 (36,29)
Postorbital length (% in HL)	20–21 (65–67)	22, 29 (61,52)
Predorsal fin length (% in SL)	45–48 (45–46)	40, 53 (28,29)
Postdorsal fin length (% in SL)	88–91 (87–88)	130, 154 (92,83)
Prepectoral fin length (% in SL)	26–34 (26–31)	32, 43 (23,23)
Preanal fin length (% in SL)	39–45 (39–42)	81, 98 (57,53)
Postanal fin length (% in SL)	71–95 (71–75)	133, 154 (63,83)
Maximum body depth (% in SL)	49–64 (49–52)	89, 99 (63,53)
Caudal peduncle depth (% in SL)	10–13 (10–13)	22, 34 (16,18)
Pectoral fin length (% in SL)	22–25 (22–24)	38, 43 (27,23)
Meristic characters		
Dorsal fin spines	XI	XII
Dorsal fin rays	24–26	22
Anal fin spines	III	III
Anal fin rays	16–18	20
Pectoral fin rays	17–18	19

dorsal fin yellow. It differs from *Heniochus diphreutes* in having 11 spines in the dorsal fin, more protruding snout length, triangular breast shape, and the 2nd black band ending at the middle of the anal fin, versus 12 dorsal fin spines, less protruding snout, more rounded breast, and the 2nd black band ending at the corner of the anal fin.

Pomacanthus maculosus has the following characters: body compressed; posterior margin of preopercle serrated with spines on ventral margin; posterior portion of dorsal and anal fins elevated with middle rays extended into a filament directed posteriorly; caudal fin rounded; body blue with irregular yellow bar in the middle with some dark curved markings running dorso–posteriorly on head and body; black, vertically elongated spots on posterior part of head and nape; posterior parts of dorsal and anal fins with irregular blue lines; irregular marks of pale blue on caudal fin.

Remarks

The length of the two specimens of longfin bannerfish, *H. acuminatus* obtained in this study is below the range of the size reported for this species (200 mm TL) (Randall, 1995).

There is no consensus concerning the presence of this species in the waters of the Arabian Gulf. Fischer & Bianchi (1984) reported the presence of this species in the fishing area number 51, Western Indian Ocean, but the name of the country was not given. Carpenter et al. (1997) mentioned its presence on the western coasts of the Arabian Gulf waters but did not state the country in which it was obtained. Steene (1978) also found the species in Arabian Gulf waters, but no specific mention was given to Iraqi waters. The present record confirms its presence in Iraqi waters.

The length of the four specimens of *P. maculosus* (171–190) is less than that reported for this species (500 mm SL) by Sommer et al. (1996).

Pomacanthus maculosus, as in the case of *H. acuminatus*, has been reported by Fischer & Bianchi (1984) to be present in the Arabian Gulf area in general and by Carpenter et al. (1997) to be present in the western coasts of the Arabian Gulf, but the name of the country is not given. Allen (1985) reported its presence in the waters of Bahrain, Saudi Arabia, and Qatar. Randall (1995) stated that this species is unusually abundant in the Arabian Gulf and Sea of Oman. This species is mentioned in the IUCN Red List as native to the Iraqi marine waters (Pyle et al., 2010), but this information has not been scientifically published. The present study confirms its presence in Iraqi marine waters.

The present record of *H. acuminatus* and *P. maculosus* is the result of extensive ichthyological collections and represents confirmation of these two genera in Iraqi waters.

Lack of previous records of *H. acuminatus* and *P. maculosus* from the Iraqi marine waters might be due to two possibilities: (i) lack of sampling in the area preventing the regular detection of these species that had been overlooked in the past; and (ii) specimens of fish species dealt with in the present study might originate from the ballast water as the Iraqi marine waters are very busy with oil tankers and commercial vessels.

Acknowledgements

We would like to thank Marine Science Centre, Basrah University for giving us the opportunity to study and publish on the presence of these species and to Dr. David Smith, Smithsonian Institution, USA for reading the manuscript and for his valuable advice and suggestions.

References

- Al-Daham, N. K., 1982. Ichthyofauna of Iraq and the Arab Gulf: a check-list. *Basrah Natural History Publication*, 4: 1–102.
- Al-Hassan, L. A. J. & Al-Badri, M. E. H., 1986. First record of some fishes from Khor al-Zubair, Khor Abdullah and Shatt al-Arab, Basrah, Iraq. *Cybium*, 10: 295–297.
- Al-Hassan, L. A. J. & Miller, P. J., 1987. *Rhinogobius brunneus* (Gobiidae) in the Arabian Gulf. *Japanese Journal of Ichthyology*, 33: 405–408.
- Ali, F. G., 2013. Coral reef of the Iraqi marine waters: present status and conservation plan. Report presented for the government of Iraq, Baghdad.
- Allen, G. R., 1985. *Butterfly and angelfishes of the world*. Vol. 2., 3rd edit., Mergus Publishers, Melle, Germany.
- Allen, G. R. & Erdmann, M. V., 2012. Reef fishes of the East Indies. Volumes I–III. Tropical Reef Research. Perth, Australia.

- Bellwood, D. R., Van Herwerden, L. & Konow, N., 2004. Evolution and biogeography of marine angelfishes (Pisces: Pomacanthidae). *Molecular Phylogenetics and Evolution*, 33: 140–155.
- Bellwood, D. R., Klanten, S., Cowman, P. F., Pratchett, M. S., Konow, N. & Van Herwerden, L., 2010. Evolutionary history of the butterflyfishes (F. Chaetodontidae) and the rise of coral feeding fishes. *Journal of Evolutionary Biology*, 23: 335–349.
- Carpenter, K. E., Krupp, F., Jones, D. A. & Zajonz, U., 1997. The living marine resources of Kuwait, eastern Saudi Arabia, Bahrain, Qatar, and the United Arab Emirates. FAO species identification guide for fishery purposes, Food and Agriculture Organization of the United Nations (FAO), Rome.
- Eschmeyer, W. N. (Ed.), 2014. *Catalog of fishes*. Updated internet version of 04 January 2014. Catalogue databases of CAS cited in FishBase (website).
- Ferry–Graham, L. A., Wainwright, P. C., Hulseay, D. D. & Bellwood, D. R., 2001. Evolution and mechanics of long jaws in butterflyfishes (Family Chaetodontidae). *Journal of Morphology*, 248: 120–143.
- Fessler, J. L. & Westneat, M. W., 2007. Molecular phylogenetics of the butterflyfishes (Chaetodontidae): Taxonomy and biogeography of a global coral reef fish family. *Molecular Phylogenetics and Evolution*, 45: 50–68.
- Fischer, W. & Bianchi, G. (Eds.), 1984. FAO species identification sheets for fishery purposes. *Western Indian Ocean. Fishing area 51. Volumes 1–6*. Food and Agriculture Organization of the United Nations (FAO), Rome.
- Froese, R. & Pauly, D. (Eds.), 2014. FishBase. World Wide Web electronic publication. Available at: www.fishbase.org, version (07/2010) (Accessed on January 2014).
- Hodge, J. R., Read, C. I., Bellwood, D. R. & Van Herwerden, L., 2013. Evolution of sympatric species: a case study of the coral reef fish genus *Pomacanthus* (Pomacanthidae). *Journal of Biogeography*, 40: 1676–1687.
- Hussain, N. A., Naama, A. K. & Al–Hassan, L. A. J., 1988. Annotated check–list of the fish fauna of Khor al–Zubair, North West of the Arabian Gulf, Iraq. *Acta Ichthyologica et Piscatoria*, 18: 17–23.
- Jawad, L. A., 2012. History of the Study of the Fish Fauna of Iraq. *Water Research and Management*, 2: 11–20.
- Khalaf, K. T., 1961. *The marine and freshwater fishes of Iraq*. Al–Rabitta Press, Baghdad.
- Mahdi, N., 1971. Additions to the marine fish fauna of Iraq. Iraq Natural History Museum, Special Publication 28: 1–47.
- Mohammed, H. N., 2012. *The status of the coral reef habitats in the northern western part of the Arabian Gulf*. Report presented to the Iranian Fisheries company.
- Near, T. J., Dornburg, A., Eytan, R. I., Keck, B. P., Smith, W. L., Kuhn, K. L., Moore, J. A., Price, S. A., Burbrink, F. T., Friedman, M. & Wainwright, P. C., 2013. Phylogeny and tempo of diversification in the superradiation of spiny–rayed fishes. *Proceedings of the National Academy of Sciences*, 110: 12738–12743.
- Pyle, R., Rocha, L. A. & Craig, M. T., 2010. *Pomacanthus maculosus*. The IUCN Red List of Threatened Species. Version 2014.1 www.iucnredlist.org. (Downloaded on 20 July 2014).
- Randall, J. E., 1995. *Coastal fishes of Oman*. Crawford House Publishing Pty Ltd, Bathurst, Australia.
- Sommer, C. W., Schneider, W. & Poutiers, J.–M., 1996. *FAO species identification field guide for fishery purposes. The living resources of Somalia*. FAO, Rome.
- Steele, R. C., 1978. *Butterfly and angelfish of the world*, vol. 1. A. H. & Reed Pty Ltd., Australia.