

NEW RECORDS OF RED SEA IMMIGRANTS IN THE EASTERN MEDITERRANEAN (1)

by

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Three new Red Sea immigrants have been found among fishes collected in recent years along the Mediterranean coast of Israel and adjacent areas. They belong to families that are represented in the Mediterranean Sea by native species as in the case of the Clupeidae and Pomadasyidae or by an earlier immigrant as in the case of the Theraponidae. (BEN-TUVIA, 1971). There is every reason to assume that these three Red Sea fishes are Suez Canal immigrants. They have not been found among collections made during the period 1960-1969 and we may assume that their spreading in to the eastern Mediterranean along the Egyptian-Israeli coast has taken place in recent years.

There is no way to determine when the first wave of these immigrants succeeded in establishing a beachhead at the Mediterranean end of the Suez Canal. However, it is obvious from their sudden appearance that only recently have populations of these fishes spread eastward towards the coast of Israel and been present in sufficient numbers to be caught by commercial and experimental fishing gear.

Two of these colonizing species (*Herklotsichthys punctatus* and *Rhonciscus stridens*) were found to be common in the Gulf of Suez, Gulf of Aqaba and the Suez Canal. However, there is no record of *Autisthes puta* from the northern Red Sea or Suez Canal.

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An extensive survey of the fish fauna in the Bardawil Lagoon made by the author during the years 1970 - 1975 indicates that this hypersaline shallow sea water body on the Mediterranean coast of Sinai, close to the northern end of the Suez Canal, serves as a transit area in the process of colonization. The number of fishes of Red Sea origin in the lagoon is considerably higher than generally in the eastern Mediterranean Sea. It is also worth noting that two Red Sea immigrants *Crenidens crenidens* and *Autisthes puta* have been found until now in the lagoon only and not in the Mediterranean Sea proper.

All the material used in this paper is preserved in the Zoological Museum, The Hebrew University of Jerusalem (BEN-TUVIA, 1976). If not otherwise stated, the fish were measured in standard length (from tip of snout to the base of caudal fin).

CLUPEIDAE

Herklotsichthys punctatus (Rüppell). fig. 1.

Clupea punctata Rüppell, 1837, Neue Wirbelth, Fische, p. 78, pl. 21, fig. 2 (Red Sea).

This small clupeid was caught in experimental beach-seines in two localities: Palmahim (south of Tel Aviv) and in the Bardawil Lagoon, northern Sinai. From the number of specimens collected we may assume that *Herklotsichthys punctatus* is not rare in the shallow, coastal waters of this area. Its presence adds a third clupeoid of Red Sea origin (*Dussumieria acuta* and *Etrumeus teres* of Dussumieridae are the two others) raising the total number of clupeoids in the eastern Mediterranean to eight. Of those the circum-tropical and subtropical *Sardinella aurita* is the common commercial species. It can be assumed that since *Sardinella aurita* is a cosmopolitan fish it will compete successfully with related forms from other zoogeographical areas in cases where such competition develops as a result of the Suez Canal immigration.

The description, systematic position and distribution of *Herklotsichthys punctatus* has been given by WHITEHEAD (1965). This fish is widely spread through the Indo-Pacific from Japan and Australia up to East Africa and the Red Sea. TILLIER (1902) was the first to report it from the Suez Canal. *Herklotsichthys punctatus* can be distinguished from other clupeoids of the Mediterranean and the Red Sea by the presence of a row of small dark dots along the back, low number of gillrakers (29-38 on the lower part of the first arch) and a low number (42-44) of vertebrae, as counted on 11 specimens from the eastern Mediterranean.

WHITEHEAD (1973) quoted LOSSE (1968) who separated the material from East Africa into form A and B. The Mediterranean specimens resemble form A in the depth of body and the presence of a midlateral orange line. However, as yet no full systematic comparison is available between populations of various geographical areas.

MATERIAL EXAMINED

Mediterranean : 3 specimens, 44-57 mm, 8 January 1974, Bardawil Lagoon (HUJF 6742); 7 specimens, 57-76 mm, 12 May 1975, Palmachim (HUJF 7705); 1 specimen, 64 mm, 17 December 1975, found in stomach of *Dicentrarchus punctatus* 224 mm long, Bardawil Lagoon (HUJF 8301).

Red Sea : 165 specimens, 54-96 mm, coast of Ethiopia, Gulf of Suez and Gulf of Aqaba.

THERAPONIDAE

Autisthes puta (Cuvier). fig. 2.

Therapon puta Cuvier (In Cuvier and Valenciennes) 1829, Hist. nat. Poiss., III, p. 131 (Pondichéry, India).

This fish has been found in the Bardawil Lagoon on the northern coast of Sinai during an extensive study of the local fish populations in the years 1973-1975. In total, 81 specimens, 32-133 mm long, have been collected in experimental beach-seines and among commercial catches. However, no specimens have been found, so far, in other localities along the Mediterranean coast and thus, there is a possibility that this fish, as in the case of another Red Sea immigrant *Crenidens crenidens*, is confined to the hypersaline Bardawil Lagoon (LOURIE and BEN-TURIA, 1973).

The presence of juvenile specimens, 32-69 mm, during the months of October-November may indicate that the spawning season occurs towards the ends of summer. No data are available to conclude whether the spawning takes place in the Lagoon or outside the Lagoon in the open Mediterranean Sea. It is interesting to note that CUVIER (*in* CUVIER and VALENCIENNES, 1829, III, p. 131) remarks that the fish is common in salt ponds in the vicinity of the Harbour of Pondichery.

In using the generic name *Autisthes*, I am following MONRO (1955) who classifies the theraponid fishes of Ceylon into *Therapon jarbua* (Forsskal), *Eu-*

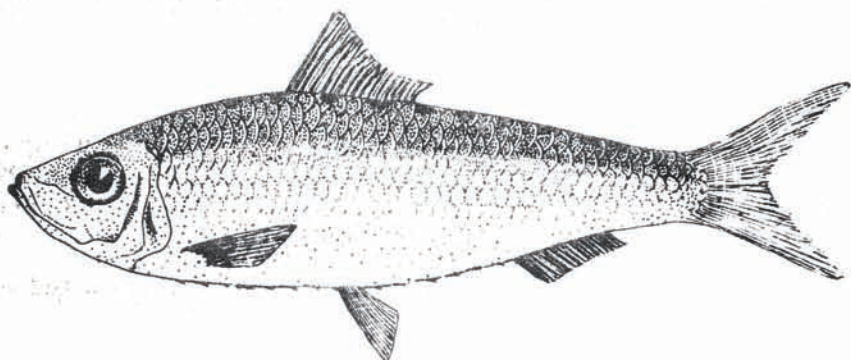


FIG. 1. *Herklotsichthys punctatus* (Rüppell), St.1. 74 mm.

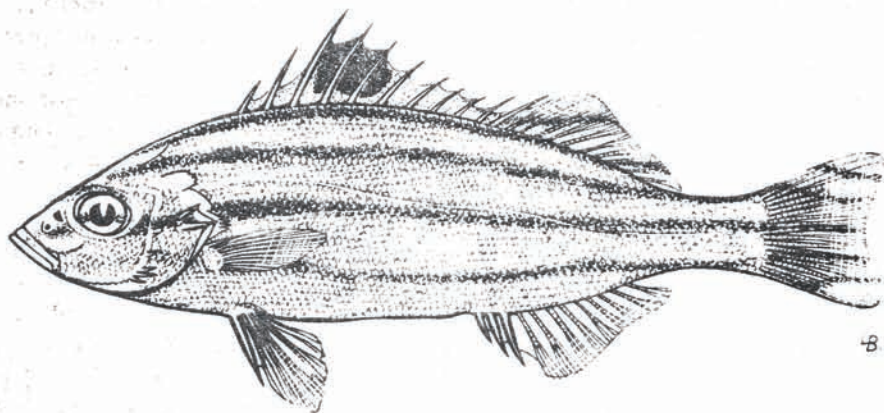


FIG. 2. *Autisthes puta* (Cuvier), St.1., 116 mm.

therapon theraps (Cuvier), *Autisthes puta* (Cuvier) and *Pelates quadrilineatus* (Bloch). This division is justified by the considerable differences between these species in dentition, number of scales in lateral line, serration of preopercle and other characters. All four species occur in the Red Sea and two of them, *Pelates quadrilineatus* and *Autisthes puta* have, in recent years, invaded the eastern Mediterranean. *Autisthes puta* is widely spread through the West Pacific and Indian Ocean including the southern Red Sea but no material has been reported from the Gulf of Aqaba or Gulf of Suez and Suez Canal. KLUNZINGER (1871, 1884) examined Ehrenberg's specimens from the Red Sea preserved in the Berlin Museum. No precise locality is given but according to BOTROS (1971) the collections were made at Djedda and Gomfuda on the east coast of the Red Sea and at Massawa on the west coast. I collected two juvenile specimens (E62-4083) from the Dahlak Archipelago, Coast of Ethiopia.

Adults of *Autisthes puta* can be distinguished from other theraponids by a combination of the following characters: teeth conical in bands, posterior edge of preopercle serrated, length of eleventh dorsal spine about a third of the length of the twelfth spine, 80-93 scales along the lateral line, four dark longitudinal lines along the body extending into the caudal fin and soft dorsal, and a large dark blotch on the spiny dorsal juveniles with 7 longitudinal lines number of vertebrae 25, counted on 29 specimens from the Mediterranean Coast.

MATERIAL EXAMINED

Mediterranean (Bardawil Lagoon): 1 specimen, 33 mm, 30 October 1973 (HUJF 6719); 1 specimen, 113 mm, 15 Nov. 1973 (HUJF 6733); 4 specimens, 32-62 mm, 10 October 1974 (HUJF 7349); 3 specimens, 58-65 mm, 10 October 1974 (HUJF 8123); 1 specimen, 122 mm, 30 October 1974 (HUJF 7371); 4 specimens, 52-69 mm, November 1974 (HUJF 7582); 25 specimens, 33-67 mm, 12 November 1974 (HUJF 8122); 26 specimens, 32-60 mm, 12 November 1974 (HUJF 8190); 16 specimens, 106-133 mm, 27 July 1976 (HUJF 8313).

Red Sea: 2 specimens, 74-77 mm, Coast of Ethiopia.

POMADASYIDAE

Rhonciscus stridens (Forsskal)⁽¹⁾, figure 3.

Sciaeniscus stridens Forsskal, 1775, *Descript. Animal.*, p. 50 (Djidda). No type specimen preserved (Klausewitz and Nielsen, 1965).

(1) Cette espèce est appelée *Pomadasyus stridens* par C. ROUX in Clofnam (HUREAU et MONOD, ed., 1973) et par N. MOUNEIMNE dans le présent numéro de *Cybium* (Note du rédacteur).

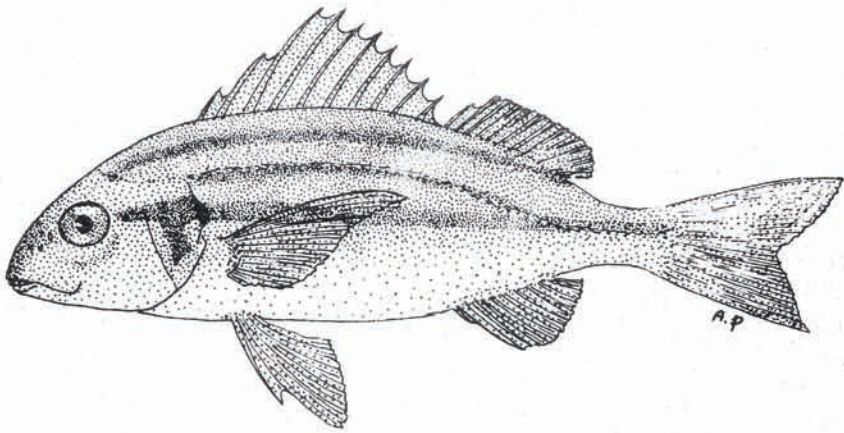


FIG. 3. *Rhonciscus stridens* (Forsskal), St.1. 115 mm

Two specimens of *Rhonciscus stridens* were caught by commercial trammel net in Haifa Bay. Three additional specimens were caught by trawl off Rafiah, south of Gaza, at depth of 20 m. This fish seems to appear nowhere in commercial quantities in the Mediterranean Sea but apparently is well established in the eastern Mediterranean since the collected specimens were caught by various fishing gear and in different localities, but in recent years only. One specimen was caught according to TORCHIO (1969) at «largo di Natarella di Savona», Gulf of Genova in 1968 which indicates the possibility that this fish has reached the West Mediterranean Basin. However, additional evidence is needed to assert that a population of this tropical fish is established in this comparatively cold region of the Mediterranean Sea.

Three species of Pomadasyidae have been reported from the Mediterranean Sea (TORTONESE, 1975), namely *Plectorhynchus mediterraneus* (Guichenot), *Parapristipoma octolineatum* (Valenciennes) and *Pomadasys bennetti* (Lowe). Among them only the last one occurs along the coast of Israel. The family is represented in the Red Sea by about 12 species but their relationship to the Indo-Pacific species is in some cases obscure and needs further clarification.

R. stridens is common in the Gulf of Aqaba, Gulf of Suez and along the coast of Ethiopia. It dominated the catches during exploratory trawling in the Gulf of

Suez in November 1972 at depth of 35-55 m (BEN-TUVIA and GROFIT, 1973). Ninety-three fish were measured from a random sample of the catch in the Gulf of Suez showing the total length to be in the range between 100 and 145 mm with a modal value of 120 mm. Its biology in the Gulf of Suez has been studied by LATIF and SHENOUDA (1972).

This fish is known from the western Indian Ocean and the Red Sea. Several authors (TILLIER, 1902; STEINITZ and BEN-TUVIA, 1972) reported it to be common in the Suez Canal.

Distinguished from other pomadasyids by 3-4 golden-brown longitudinal bands and a dark opercular blotch on the path of the mid-band. Number of vertebrae 26, counted on 6 Mediterranean and 15 Red Sea specimens.

MATERIAL EXAMINED

Mediterranean : 1 specimen, 102 mm, 1 December 1971, Haifa Bay (HUJF 8121); 3 specimens, 110-128 mm, 10 January 1973, Rafiah (HUJF 6270); 1 specimen, 15 March 1976, Haifa Bay (HUJF 8302).

Red Sea : 295 specimens, 17-131 mm, Coast of Ethiopia, Gulf of Suez and Gulf of Aqaba.

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