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## The Indian scad (*Decapterus russelli*), (Osteichthyes: Carangidae), a new Indo-Pacific fish invader of the eastern Mediterranean

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**SUMMARY:** The Indian scad, *Decapterus russelli*, is recorded for the first time from the Mediterranean. The presence of this Indo-Pacific species on the Mediterranean coast of Israel is evidently due to migration from the Red Sea via the Suez Canal. The collection of six specimens in the Mediterranean suggests that this species is well established in the Levant.

**Keywords:** *Decapterus russelli*, Mediterranean, first record, Lessepsian migration.

**RESUMEN:** UNA NUEVA ESPECIE DE PEZ INDO-PACÍFICO INVASORA EN EL MEDITERRÁNEO, LA MACARELA ÍNDICA (*DECAPTERUS RUSSELLI*), (OSTEICTIOS: CARANGIDAE). – La macarela índica, *Decapterus russelli*, se recolectó por primera vez en el Mediterráneo. La presencia de especies Indo-Pacíficas en la costa Mediterránea de Israel se debe evidentemente a migración desde el mar Rojo vía el Canal de Suez. La captura de seis especímenes en el Mediterráneo sugiere que esta especie está bien establecida en el Levante.

**Palabras clave:** *Decapterus russelli*, Mediterráneo, primera cita, migración Lessepsiana.

On 13 December 2005 six specimens of *Decapterus russelli* (Rüppell, 1830) of 148-158 mm standard length (SL) (Fig. 1) were captured by trammel net in the vicinity of Haifa Bay, Israel. The specimens were deposited in the Hebrew University Fish Collection (HUJ) and received the catalogue number HUJ 19422. With the current reported species *Decapterus russelli*, the current number of Lessepsian fish migrant species recorded in the Mediterranean has reached 65.

### DESCRIPTION OF THE MEDITERRANEAN SPECIMENS

Body elongate and slightly compressed, its depth 18.8-22.7% from SL. Head length (HL) 26.7-28.5%

of SL. Pointed snout (34.1-38.3% of HL), moderate eye (23.8-27.9% of HL), eyelid transparent, covering most of the eye except for the centre of the pupil, wide interorbital space (25.0-29.8% of HL). Two dorsal fins, first triangular with 8 spines, second with one spine and 31-32 rays and a well-separated finlet. Anal fin with two separate spines and one spine followed by 24-26 rays with a separate finlet. Acute pectoral fin with 20-22 rays, 77.2-85.9% of head length, reaching the vertical line between last spine of first dorsal fin and first spine of second dorsal fin. Pelvic fin with one spine and 5 rays. Eight to 10 rakers on the first upper gill arch and 32-36 on the lower, totalling 40-46. The largest gill raker (9<sup>th</sup>-11<sup>th</sup> below the arch angle) subequal to the largest gill filaments. Upper jaw reaches back almost to the vertical of eye, its upper margin

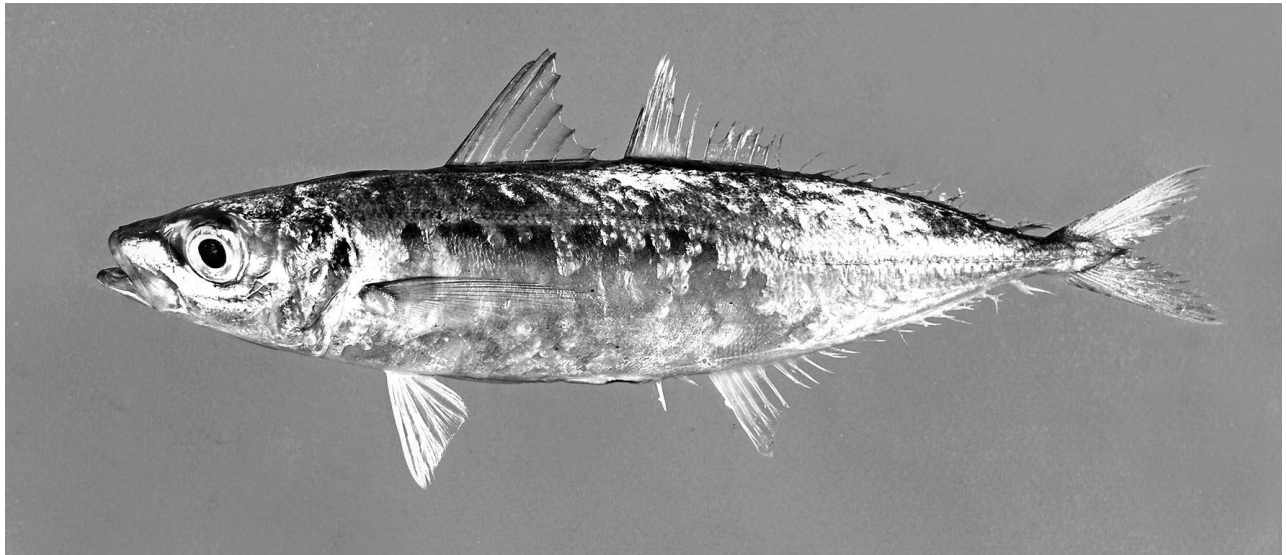


FIG. 1. – *Decapterus russelli* (HUIJ 19422), 150 mm SL, from the Mediterranean, Haifa Bay, coast of Israel.

straight while the posterior edge is slightly concave. Small teeth in both jaws. The anterior part of the lateral line with small 44-52 scales curves slightly downward under the 9<sup>th</sup>-12<sup>th</sup> dorsal rays. The posterior lateral line with 34-36 scutes, the highest being 21.4-24.2% of head length. No scales in front of the straight part of the lateral line. The margin of the shoulder girdle (cleithrum), located behind the gill filaments, with two papillae, the lower one slightly larger than the upper (Fig. 2).

The colour is bluish-green to metallic grey on the dorsal surface, becoming silvery-white on the belly. A black spot on the upper opercular margin. Dorsal and pectoral fins with dark grey spines and rays and a hyaline, almost transparent membrane. Pelvic and anal spines and rays white with transparent membrane. Caudal fin and most of the straight portion of the lateral line yellowish.

The meristic, morphological characters and colour agree with the description of *Decapterus russelli* given by Smith-Vaniz (1984), Randall (1995) and others.

**Remarks.** Three species of the genus *Decapterus* occur in the Red Sea: *D. macarellus* (Cuvier, 1833), *D. macrosoma* Bleeker, 1851 and *D. russelli* (see: Smith-Vaniz, 1984 and Goren and Dor, 1994). The last species can be distinguished from the first two by the lower number of lateral line scales (77-102, as compared to 110-138 in *D. macarellus* and 110-120 in *D. macrosoma*). In addition, the number of scales in front of the scutes on the straight part of the lateral line in the first two species ranges from 18-36

and 14-29, respectively, while in *D. russelli* the number ranges from 0-4.

*Decapterus russelli* has a wide Indo-Pacific distribution from the Red Sea and east Africa to Japan and Australia (Smith-Vaniz, 1984). It was recorded from the Gulf of Suez by several authors (Rüppell, 1830; Norman, 1935) as *Caranx russelli* and as *Decapterus kiliche* by Bertin and Dollfus (1948) and Demidov and Viskrebentsev (1970). Steinitz (1927) reported *Caranx kiliche* Cuvier and Valenciennes 1833, which is now considered as a junior synonym, off the Mediterranean coast of Palestine/pre-state Israel; his presumed misidentification (Tortonese, 1952; Golani *et al.*, 2002) was repeated by several authors (see: Ben-Tuvia, 1966). Until the present report, no specimen of *D. russelli* had been reported in the Mediterranean.



FIG. 2. – Shoulder girdle (cleithrum) of *Decapterus russelli* (154 mm SL) from Haifa Bay, Israel, showing the two papillae.

Therefore, the present report constitutes the first record of a species of the genus *Decapterus* in the Mediterranean. *Decapterus russelli* is the second Lessepsian carangid in the Mediterranean. The first, *Alepes djedaba* (Forsskål, 1775), was first recorded in the Mediterranean by Steinitz (1927) under its synonym *Caranx calla* and is currently very common along the coast of the Levant (Golani *et al.*, 2002). Recently another Indo-Pacific carangid, *Carangoides bajad* (Forsskål, 1775), was reported by Öztürk (2005), based on a photograph taken presumably from the Turkish coast of Fethiye region, Aegean Sea. However, the other specimens shown in the background of this photograph (e.g. *Caesio* sp. and a yellow pomacentrid) are not known in the Mediterranean, which casts doubt on the source of this photograph. Therefore, the author refrains from including *C. bajad* as a member of the Mediterranean ichthyofauna until further proof of its collection in the new region.

*Decapterus russelli* can be distinguished from all Mediterranean carangids by the combination of having enlarged scute-like scales only on the posterior straight portion of the lateral line, two papillae on the shoulder girdle (Cleithrum) and both dorsal and anal finlets.

*Decapterus russelli* is a coastal schooling species inhabiting mainly open water not deeper than 100 m (Smith-Vaniz, 1984). It reaches the size of 39 cm and feeds on small invertebrates drifting in the water.

The finding of six specimens strongly suggests that this species has established a self-sustaining population in the Mediterranean. It was probably overlooked by earlier studies in this region, due to certain external similarities to species of the genera *Trachurus* and *Caranx*.

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