

**FIRST RECORD OF THE INDO-PACIFIC YELLOWTAIL BARRACUDA,  
*SPHYRAENA FLAVICAUDA* (ACTINOPTERYGII: PERCIFORMES: SPHYRAENIDAE),  
IN THE WESTERN MEDITERRANEAN**

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**Abstract.** One specimen of the yellowtail barracuda, *Sphyraena flavicauda* Rüppell, 1838, is recorded for the first time in the Western Mediterranean, on the eastern coast of Algeria. The specimen had a TL of 39.5 cm and was caught in February 2019. Its morphometric characteristics are described and the chronology of its spread in the Mediterranean is given. This species is the ninth Lessepsian migrant fish reported from Algeria.

**Keywords:** yellowtail barracuda, *Sphyraena flavicauda*, Lessepsian migration, Mediterranean, Algeria.

## INTRODUCTION

The family Sphyraenidae is represented by a single genus that accommodates 28 species (Froese and Pauly 2019). Five species are found in the Mediterranean: *Sphyraena sphyraena* (Linnaeus, 1758), *Sphyraena viridensis* Cuvier, 1829, *Sphyraena chrysotaenia* Klunzinger, 1884, *Sphyraena flavicauda* Rüppell, 1838, and *Sphyraena obtusata* Cuvier, 1829. The latter three are Lessepsian migrants arrived from the Red Sea via the Suez Canal (Quignard and Tomasini 2000, Shakman and Kinzelbach 2007).

The yellowtail barracuda, *Sphyraena flavicauda*, is widely distributed in tropical and subtropical Indo-West Pacific from South Africa to Micronesia; north to southern Japan and Red Sea. However, its exact range is uncertain because of confusion with *S. obtusata* (see Senou 2001). In the Mediterranean, *S. flavicauda* was first recorded in Israel on 13 May 1991 (1 specimen, 325 mm TL) (Golani 1992) where its distribution and abundance have been estimated as limited (Golani 1998, Golani et al. 2002). In 1998, it was common and exploited in Alexandria, Egypt (Allam et al. 1999) and eastern Libya (Ben Abdallah et al. 2003). In June 2001, Bilecenoglu et al. (2002) captured two individuals (332–337 mm SL) in Antalya Bay, Turkey. Two years later, 5 individuals (224–334 mm SL) were reported around the island of Rhodes (Greece) at the depth of 30–50 m (Corsini et al. 2005). The last record in 2014 comes from Tunisia where 5 individuals (3 females and 2 males, 296–343 mm TL) were caught in the Gulf of Gabès where the species is considered to be established (Ounifi-Ben Amor et al. 2016).

Inshore-pelagic *S. flavicauda* is a commercially important species throughout its native geographical distribution area where it can reach 60 cm TL (common size = 40 cm TL). Inhabiting coral reefs or bays, it is usually seen during the day in large schools (Senou 2001) eating fish and large invertebrates (Golani et al. 2002, Osman et al. 2019). In Egyptian Mediterranean waters, it also consumes fish, especially *Engraulis encrasicolus* (Linnaeus, 1758) (see Allam 1999), reaches its first sexual maturity at 25.5 and 28.0 cm TL in males and females, respectively and lays its eggs between May and September with a mean fecundity between 84 197 and 260 549 eggs (28.0–40.0 cm TL) (Allam et al. 2004).

In this paper, we report for the first time the presence of the yellowtail barracuda, *Sphyraena flavicauda*, in the southwest Mediterranean, off the eastern coasts of Algeria.

## MATERIAL AND METHODS

On 19 February 2019, one of the authors (KMH) collected from a fishmonger in the city of Annaba a 39.5 cm TL (258 g TW) individual of *S. flavicauda*. Caught by small trades in Chétaibi region, 60 km west of Annaba (Fig. 1), this specimen was mingled with other individuals of the same size belonging to the congener species *S. sphyraena*.

The specimen was identified to species following Golani (1992) and Senou (2001). It was distinguished from the two indigenous sphyraenids (*S. sphyraena* and *S. viridensis*) by the location of the pectoral fin above the pelvic fin and from the Red Sea immigrant *S. chrysotaenia* by the pectoral fin not reaching the vertical line of dorsal fin

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origin, scaleless suborbital, dorsal fin height shorter than postorbital and dark margin on the caudal fin. Compared to the Lessepsian migrant *S. obtusata* reported in Libya by Shakman and Kinzelbach (2007), *S. flavicauda* has a body with 2 brownish-yellow longitudinal stripes (visible only when the fish is fresh); the tips of its pectoral fins not reaching to the origin of the first dorsal fin.

Meristic counts and metric measurements were performed basically according to Bauchot (1987), properly adapted and completed. The specimen was preserved in alcohol and deposited at the ichthyologic collection of the Marine Bioresources Laboratory at Annaba University, Algeria.

## RESULTS

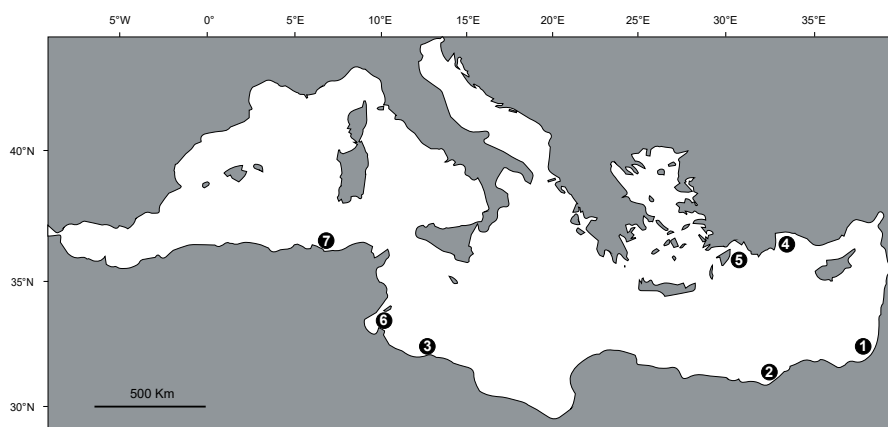
The individual we are reporting (Fig. 2) featured the following meristic characters: D1: V; D2: I + 9; A: II + 9; P: 12; V: I + 5; LL: 86; gill rakers: 2. Metric characters are given in Table 1. Body is very elongated with two well-separated dorsal fins, the first with 5 spines. The second dorsal fin origin is slightly in front of anal fin origin. The pelvic fin The beneath tip of pectoral fin. The origin of pelvic fins is well before first dorsal-fin origin (Fig. 2). The caudal fin is forked. The head is large, slightly flattened dorsally with pointed snout. A single row of 4–5 sharp teeth are present on the palatine and a row of small teeth on premaxilla. The individual is gray in color on the back

with white belly and a touch of yellow-gray on the flank. Two brown longitudinal stripes were very visible when the fish was fresh, but only the lower stripe persisted (Fig. 2). Caudal fin is yellow with upper, lower and posterior black margin.

## DISCUSSION

The morphology of the caught individual, as well as its meristic and metric characteristics, confirms its belonging to the species *S. flavicauda*. Our description fits perfectly with the descriptions of Senou (2001) and Golani et al. (2002). Body ratios are comparable to those given by Corsini et al. (2005) for the 5 individuals caught around Rhodes island (SE Aegean Sea, Greece): TL/SL = 1.14, TL/Height of caudal peduncle = 7.9, TL/Head length = 3.95, SL/Height of caudal peduncle = 6.9, SL/Head length = 3.45, Head length/Eye diameter = 5.55.

*Sphyraena flavicauda* is the ninth Lessepsian immigrant fish recorded in Algeria, after *Pomadasys stridens* (Forsskal, 1775) (see Chalabi 1999), *Siganus luridus* (Rüppel, 1829) (see Chalabi 1999), *Atherinomorus forskalii* (Rüppel, 1838) (see Massuti et al. 2004), *Fistularia commersonii* Rüppel, 1838 (see Kara and Oudjane 2009), *Hemiramphus far* (Forsskal, 1775) (see Kara et al. 2012), *Synagrops japonicus* (Döderlein, 1883) (see Hannachi et al. 2015), *Lagocephalus sceleratus* (Gmelin, 1789) (see Kara et al. 2015), and *Etrumeus*



**Fig. 1.** Map pointing out the capture area of *Sphyraena flavicauda* on Algerian coasts (7) and chronology of first records in the Mediterranean (1 = Golani 1992; 2 = Allam et al. 1999; 3 = Ben Abdallah et al. 2003; 4 = Bilecenoglu et al. 2002; 5 = Corsini et al. 2005; 6 = Ounifi-Ben Amor et al. 2016)



**Fig. 2.** Specimen of *Sphyraena flavicauda* caught at Chetaibi, Algeria in February 2019 showing the position of the dorsal, pectoral, and ventral fins and the lower brownish-yellow longitudinal strip

**Table 1**  
Main metric characteristics of the specimen of *Sphyraena flavicauda* caught at Chetaibi, eastern Algeria

Metric characters	Value [cm]
Total length	39.5
Standard length	34.5
Fork length	36.0
Head length	10.0
Eye diameter	1.8
Preorbital length	4.7
Postorbital length	3.8
Superior maxillary length	3.8
Prepectoral length	10.3
Postpectoral length	13.8
Predorsal 1 length	15.0
Predorsal 2 length	24.0
First dorsal fin length	1.7
Second dorsal fin length	3.4
Body depth	5.0
Body width	3.2
Preanal length	24.0
Anal fin length	2.8
Preventral length	12.5
Ventral fin length	3.0
Height of caudal peduncle	2.2
Thickness of caudal peduncle	0.9
Inter-dorsal length	7.4

*golani* DiBattista, Randall et Bowe, 2012 (see Stamouli et al. 2017). Two species (*F. commersonii* and *L. sceleratus*) are considered established (Grimes et al. 2018).

The individual of *S. flavicauda* caught in the Chetaibi region would have arrived from the Gulf of Gabès in Tunisia after traveling a distance of about 1000 km. This locality is the nearest occurrence site for this species in the central Mediterranean where it is established (Ounifi-Ben Amor et al. 2016). This hypothesis is the most probable, given the progression of this species in the Mediterranean (Fig. 1). It would have arrived according to a stepping stone model with intermediary populations settling.

About forty years after entering the eastern Mediterranean (Golani 1992) and 6 years after having colonized the site closest to our locality in the south of Tunisia (Ounifi-Ben Amor et al. 2016), *S. flavicauda* arrived in Western Mediterranean by its south-eastern coast. This demonstrates the uncontested tendency of the species to extend its distribution toward the west where the risk of its establishment and its potential to become an important species must be seriously considered. The observed increase of the mean annual temperature of the Mediterranean waters (Masson-Delmotte et al. 2019) will definitely favor the increase of the number of individuals and the progressive geographical dispersal of the species as it was predicted for other taxa (Koukouras et al. 2010).

*Sphyraena flavicauda* feed mostly on native Mediterranean fishes. Its most abundant prey is the anchovy *Engraulis encrasicolus* (see Allam et al. 1999,

Osman et al. 2019). Since this species is very important to the ecological balance and to local fisheries in the Western Mediterranean, the potential negative effect of the yellowtail barracuda on the local fish communities deserves particular attention. The progressive occurrence and establishment of this species are expected to generate negative effects on fisheries, especially on small-scale fisheries because of their socio-economic and ecological sensitivity (Barange et al. 2018).

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