



CHAPTER 2.1.10.8: PLAIN BONITO	AUTHOR: N. ABID	LAST UPDATE: April 2021 Original: French
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2.1.10.8 Description of plain bonito (BOP)

1. Names

1.a. Classification and taxonomy

Species name: *Orcynopsis unicolor* (Geoffroy, Saint-Hilaire 1817)

ICCAT species code: BOP

ICCAT names: Plain bonito (English), Palomette (French), Tasarte (Spanish).

According to Collette and Nauen (1983), plain bonito is classified as follows:

- Phylum: Chordata
- Sub-phylum: Vertebrata
- Superclass: Gnathostomata
- Class: Osteichthyes
- Subclass: Actinopterygii
- Order: Perciformes
- Suborder: Scombroids
- Family: Scombridae

1.b. Common names

The list of vernacular names used in different countries, according to ICCAT, FAO, Fishbase (www.fishbase.org) is presented below. The list is not exhaustive, and some local names may not be included.

Algeria: Bonite plate, Palomète

Benin: Salomon

Croatia: Pastirica atlantska

Denmark: Ustribet pelamide

Finland: Juovaton sarda

France: Palomète

Germany: Einfarb-Pelamide, Glatter Bonito, Ungestreifter Pelamide

Greece: Orkinopalamida, Palamida monóchromi

Guinea: Makréni

Italy: Palamita bianca, Palamitu

Malta: Plamtu bla rigi

Mauritania: Iril, Palomète, Tasarte, Sipon

Morocco: Palomette

Netherlands: Boniter, Bonito

Norway: Ustripet pelamide

Poland: Orcyn

Portugal: Palmeta, Palometa

Romania: Palamida argintie, Palometa

Russia: Odnotsvetnyj bonito, Odnotsvetnyj tunets, Palometa

Senegal: Palomète, Sipon

Serbia: Pastirica atlantska

Spain: Tasarte, Tasarte ojon

Sweden: Ostrimmad pelamid, Ostrimmig pelamid

Togo: Adzuda, Dzadu, Maquerreau-bonite

Tunisia: Qalaqt

Türkiye: Ak palamut, Akpalamut balığı

United Kingdom: Plain bonito

USA: Plain bonito

2. Identification



Figure 1. Drawing of an adult *Orcynopsis unicolor* (Scandinavian Fishing Year Book).

Characteristics of *Orcynopsis unicolor* (Figures 1 and 2)

Plain bonito is a small tuna species. The maximum size indicated in the Atlantic is 130 cm fork length. It is a female that was caught in Cap Manuel, near Dakar, on 19 January 1950 (Postel, 1950a, Postel, 1956, Collette and Nauen, 1983, Quigley, 2012). The heaviest species (female) was also caught close to Dakar, in Anse Bernard, on 20 May 1950, weighing 13.1 kg (Postel, 1956, Quigley, 2012). The usual size is 90 cm fork length and about 4-5 kg (Collette and Nauen, 1983). In the Mediterranean, the maximum age and size published for this species is 4 years and 80 cm, respectively (Hattour, 2000, Postel, 1956).

Colouring:

- Blue-black back with a slight marbling pattern laterally;
- No stripes or prominent patches; silver lower flanks;
- The first three quarters of the first dorsal fin is black, the second dorsal fin and the dorsal fins are dark;
- Some yellow on the anal fin.

External:

- Body relatively short and deep, highly compressed;
- Relatively large snout, upper jaw reaches the upper edge of the eye;
- 2 tooth patches on the upper side of the tongue;
- 18 to 27 large conical teeth in the upper jaw; 12 to 21 in the lower jaw;
- 12 to 17 gill rakers on the first arch;
- Olfactory rosette comprises from 25 to 28 lamellae;
- Interorbital width 23.9 to 31% of the head length;
- Close dorsal fins, the first fin is short and high with 12 to 14 spines and an almost rectilinear contour, the second with 12 to 15 rays followed by 7 to 9 finlets;
- Anal fin with 14 to 16 rays followed by 5 to 8 finlets;
- Short pectoral fins with 21 to 23 rays;

- Small forked interpelvic process;
- Body naked behind the well-developed corselet except for a band of scales along the base of the dorsal fins
- Panels of scaling around the base of the pectoral, pelvic and anal fins;
- Slender caudal peduncle, with a developed lateral keel between two smaller keels on each side.

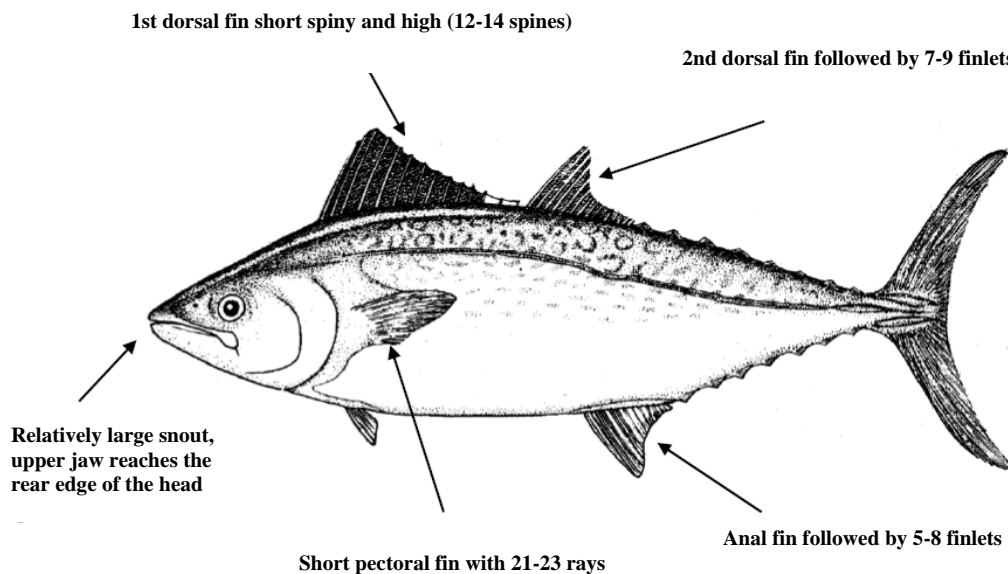


Figure 2. Summary of main characteristics of *Orcynopsis unicolor* (Collette and Nauen, 1983).

Internal:

- Swim bladder absent;
- Spleen not visible in ventral view, concealed by the liver;
- Liver with a long right lobe and a short left lobe which tends to merge with the middle lobe;
- Vertebrae, 17 or 18 precaudal plus 19 to 21 caudal, in total 37 to 39.

3. Biology and population studies

3.a Habitat preferences

Plain bonito is a marine fish; pelagic-neritic and oceanodromous that mainly populates the temperate subtropical waters below the latitudes between 60°N - 13°S and longitudes between 18°W - 36°E (Riede, 2004). Juveniles can be found in waters up to 30°C. The small schools of this species, which are often associated with birds, swim at the surface, with the first dorsal fin out of the water like sharks (Collette and Nauen, 1983). This species is mainly found on the continental shelf (Lloris and Rucabado, 1998).

Temperature is one of the main environmental factors that determine the distribution of tunas. This species prefers waters with temperatures ranging between 12 and 23 °C (Kaschner *et al.*, 2016).

3.b Growth

No growth study on plain bonito has been carried out in the Atlantic. In the Mediterranean, Hattour (2000) has determined the relationship between age and fork length of plain bonito caught, by examining the otoliths of 108 individuals of sizes between 31.5 cm and 79 cm. The Von Bertalanfy parameters estimated on this basis are summarised in **Table 1**. It is observed that females attain a greater maximum size than males (Postel, 1954, Collette and Nauen, 1983).

Table 1. Growth parameters of plain bonito (L_{∞} in cm, K in y^{-1} , t_0 in y).

Growth parameters			Area	Country	Method	Reference
L_{∞}	K	t_0				
93	0.386	-0.376	Mediterranean	Tunisia	Otoliths	Hattour, 2009

3.c. Length-weight relationships

There are few length-weight relationships published for plain bonito in the Atlantic and Mediterranean. The equations published for the two sexes combined are summarised in **Table 2**.

Table 2. Different length-weight relationships published for plain bonito.

Equation	N	LF (cm)	Area	Country	Reference
$Pt = 0,009330xLF3,050$	-	-	-	-	Froese <i>et al.</i> 2014
$Pt = 0,010640xLF3,056$	107	8-79	Mediterranean	Tunisia	Hattour (2000 & 2009)
$Pt = 0,00004010xLF2,795$	189	29-107	Eastern Atlantic	Senegal	Diaha <i>et al.</i> , 2015

3.d Sexual maturity

In the eastern Atlantic, Collette and Nauen, 1983 estimated that plain bonito reaches its sexual maturity at a fork length of 70-80 cm. In the Mediterranean, a more recent study has shown that the size at first maturity (L50%) of this species is established at 44.3 cm for both sexes combined. Males and females become mature at a length of 45 cm and 43.5 cm, respectively. This size corresponds to an age of 2 years (Anon. 2008, Hattour, 2009).

3.e Sex ratio

In the Mediterranean, the sex ratio of plain bonito is near 1 (Hattour, 2009). In the tropical eastern Atlantic the sex ratio is also close to 1 (Postel, 1956). Sex does not appear to play any role in the determination of any difference in size distribution (Hattour, 2009).

3.f Reproduction and first life stages

The eggs and larvae of plain bonito are pelagic (Collette, 1986). A female weighing 5 to 6 kg carries 500,000 to 600,000 eggs (Postel, 1950b).

Based on the monthly evolution of the gonadosomatic relationship, Dieuzeide (1954) found that plain bonito in the Atlantic spawns from July to September. In the Mediterranean, more recent results have shown that this species spawns between May and September (Anon., 2008, Hattour, 2009).

3.g Migrations

There is no information available on migrations of this species.

3.h Diet

Plain bonito is a piscivorous fish (Chabanaud and Monod, 1927) and voracious (Dieuzeide, 1954). It mainly feeds on small schools of pelagic fish including anchovy, sardinella, Jack and mackerel (Collette and Nauen, 1983, Hattour, 2009).

The diet of this species is much less varied than that of *Euthynnus alletteratus* and *Sarda sarda*. (Postel, 1956, Hattour, 2009). In the Mediterranean, Clupeidae, Carangidae, Engraulidae are the preferential prey of plain bonito. Its diet can also include cephalopods (Hattour, 2009).

3.i Physiology

In Senegalese waters, adults live in waters with a temperature below 20°C. In August and September, juveniles withstand temperatures close to 30°C. In the first case the salinity is slightly higher 35 ‰, in the second case, it can decrease, with heavy rain, to below 34 ‰. It would appear that for this species, eurythermia and euryhalinity decrease with age (Postel, 1956).

3.j Behaviour

Plain bonito is a coastal fish. It congregates in schools of some twenty metres in diameter which generally cross below the 30 m isobath. These schools are noticed by birds that fly over them. The association *Sternes-Orcynopsis* is common. It is likely due to these two predators pursuing the same prey (Postel, 1956).

3.k Natural mortality

There is no information available on this biological parameter.

3.l Conversion factors

There is no information available in this area.

4. Distribution and exploitation

4.a Geographic distribution

The distribution of plain bonito is limited to the eastern Atlantic and the Mediterranean. As a matter of fact, it has been reported in the North, in the Oslofjord (Norway), down to southern Dakar (Senegal), but the range centres on the southern Mediterranean Sea (Golani *et al.*, 2006, Di Natale *et al.*, 2009). Plain bonito is not known in Madeira, the Canaries or in the Cabo Verde islands (Postel, 1950b, Postel, 1956, Collette & Chao, 1975) (**Figure 3**).

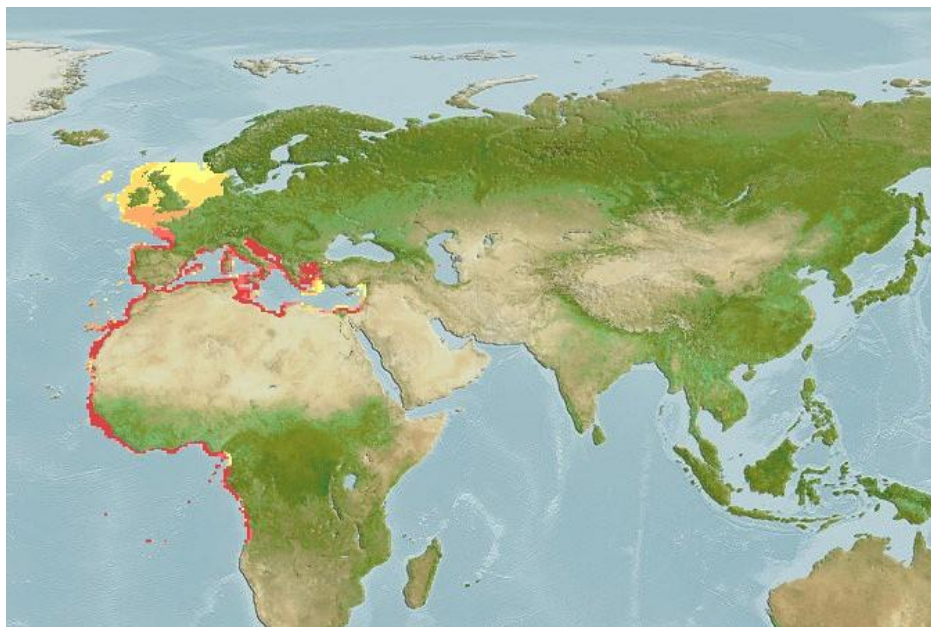


Figure 3. Geographic distribution of plain bonito (Source: www.aquamaps.org, version 10/2019).

4.b Populations/Stock structure

As for other small tunas, there is currently no information available on the stock structure of plain bonito. As a matter of fact, due to its low economic value, conventional tagging of this species has never been carried out within the context of national and regional research programmes (Anon., 2019). Unlike other small tuna species, no genetic study has been carried out on this species in the Mediterranean (Vinas and Pla, 2009; Viñas *et al.* 2019). The statistical and biological information currently available does not allow assessment of the state of the stocks of this species (ICCAT, 2019). The exploitation status of plain bonito has been classified by the IUCN as least concern (Collette *et al.* 2011).

4.c Description of fisheries: catches and effort

In the eastern Atlantic, plain bonito is mainly taken as bycatch by purse seiners and longliners targeting tropical tunas. It is also targeted by the artisanal fisheries using handline, surface gillnets and trammel nets. In the Mediterranean, this species is mainly taken as bycatch by purse seine and longline fleets targeting bluefin tuna; it is also caught to a lesser extent by traps (Hattour *et al.* 2005). Plain bonito is also targeted by an artisanal fleet using surface gillnet, trammel net and handline. It is important to highlight that since 2005, the catches of plain bonito taken by the artisanal fleet in the Mediterranean have not been reported to ICCAT (ICCAT, 2019). While plain bonito is pelagic, it can be taken as bycatch by trawlers in the eastern Atlantic (Maurin, 1968).

During the period 1990-2019, annual catches reported for plain bonito fluctuate between a minimum of 32 t in 2006 and a maximum of 2240 t in 2015 (Figure 4). These fluctuations may not reflect the real trends in catches of this species due to underreporting by member countries. The average catch of this species during the period 1990-2019 is around 700 t, 82% from the eastern Atlantic, compared to just 18% from the Mediterranean (ICCAT, 2019).

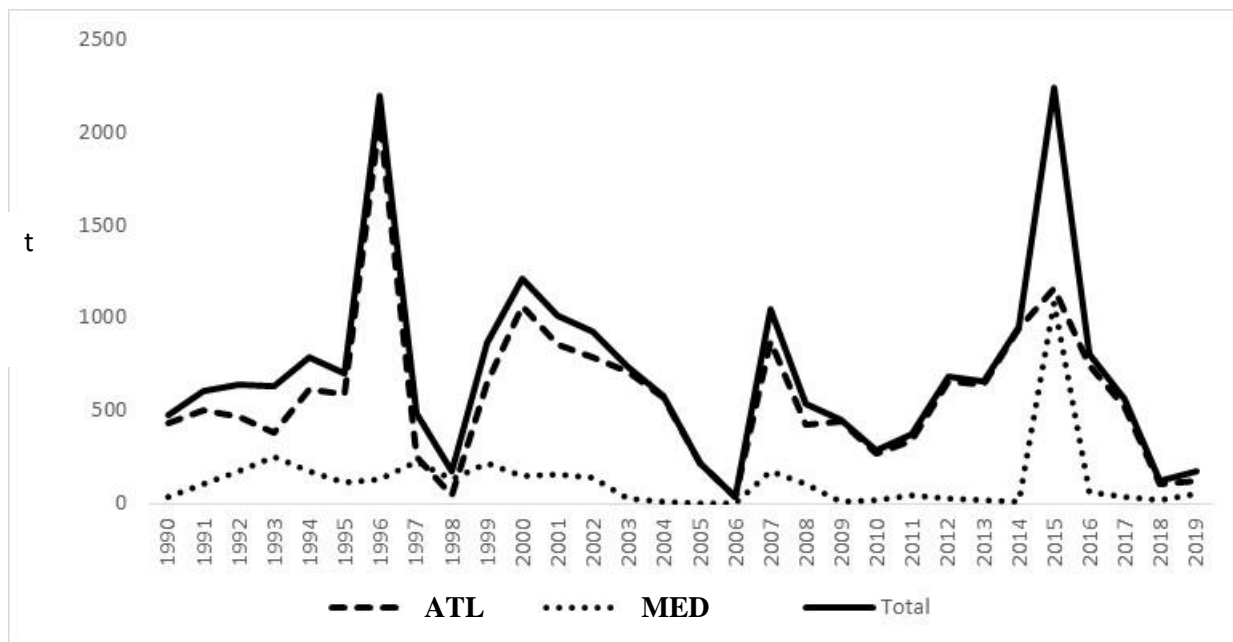


Figure 4. Evolution of total catches (t) of plain bonito (*Orcynopsis unicolor*) in the Atlantic and Mediterranean between 1990 and 2019.

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