

# The family Bramidae (Perciformes) from the Canary Islands (Northeastern Atlantic Ocean), with three new records

by

Gustavo GONZÁLEZ-LORENZO\* (1, 2), José F. GONZÁLEZ-JIMÉNEZ (1),  
Alberto BRITO (2) & José A. GONZÁLEZ (3)



© SFI  
Received: 25 Apr. 2013  
Accepted: 14 Nov. 2013  
Editor: P. Béarez

**Abstract.** – An account of the species of the family Bramidae (Teleostei, Perciformes) from the Canary Islands is given. *Pterycombus brama*, *Taractes asper* and *Taractes rubescens* are recorded for the first time in the Canaries, which brings to six the number of bramid species recorded in the area. Available data on distribution, habitat, and morphometry of the studied species are presented.

**Résumé.** – La famille Bramidae (Perciformes) des îles Canaries (océan Atlantique centre-oriental), avec trois nouveaux signalements.

Une liste des espèces de la famille des Bramidae (Teleostei, Perciformes) présentes aux îles Canaries est fournie. *Pterycombus brama*, *Taractes asper* et *Taractes rubescens* sont signalées pour la première fois aux îles Canaries, portant à six le nombre de bramidés dans la zone. Les données disponibles sur la distribution, l'habitat et la morphométrie sont présentées.

## Key words

Bramidae  
*Pterycombus brama*  
*Taractes asper*  
*Taractes rubescens*  
Canary Islands  
Eastern Atlantic

Most bramids are oceanic epi- and mesopelagic perciform fishes in warm and temperate waters of the Atlantic, Indian and Pacific Oceans; only *Eumegistus* is bathypelagic, found in zones of more than 1300 m of depth (Mead, 1972; Haedrich, 1981; Froese and Pauly,

2013). Pomfrets probably travel in small schools and some (i.e. *Brama*) undertake extensive migrations; they feed mostly on small fish and squid. They are excellent food fishes (Haedrich, 1981).

According to Eschmeyer (2013), the family Bramidae is represented by 20 species distributed around the World Ocean, and grouped in seven genera: *Brama* (8 species), *Eumegistus* (2 species), *Pteraclis* (3 species), *Pterycombus*, *Taractes*, and *Taractichthys* (2 species each), and *Xenobrama* (1 species). Of these, nine species are found in the Eastern Atlantic Ocean and the Mediterranean Sea (Mead, 1972; Haedrich, 1981, 1986; Bauchot, 1987; Gomes, 1990; Froese and Pauly, 2013; Eschmeyer, 2013): *Brama brama* (Bonnaterre, 1788), *Brama caribbea* Mead, 1972, *Brama dussumieri* Cuvier, 1831, *Pteraclis carolinus* Valenciennes, 1833, *Pterycombus brama* Fries, 1837, *Pterycombus petersii* (Hilgendorf, 1878), *Taractes asper* Lowe, 1843, *Taractes*

*rubescens* (Jordan & Evermann, 1887), and *Taractichthys longipinnis* (Lowe, 1843).

In the Eastern Central Atlantic, *Brama* and *Taractichthys* are caught incidentally on longlines and with pelagic and bottom trawls, but there is a special fishery for *B. brama* in the Canary Islands and off Northwestern Spain (Haedrich, 1981). In the Mediterranean Sea, *B. brama* is caught with a variety of fishing gears by small-scale fisheries, recreational anglers, and as a by-catch of the artisanal and semi-industrial fisheries in Sicily. This species is regularly to rarely present on the Mediterranean European fish markets (Bauchot, 1987).

Until the present paper, only three species of bramids have been recorded in the Canary Islands (Fig. 1): *P. carolinus* (Mead, 1964), *B. brama* and *T. longipinnis* (e.g. Brito, 1991; Brito *et al.*, 2002; Brito and Sancho, 2003). In these accounts, only their habitat and bathymetric distribution were given, therefore they remain poorly known in several morphological and biological aspects.

Following a series of surveys off the Canary Islands, *P. brama*, *T. asper*, and *T. rubescens* (Fig. 2) were caught for the first time from this region and new data on other existent bramids were gathered, which are herein presented.

(1) Instituto Español de Oceanografía, Centro Oceanográfico de Canarias, vía Espaldón, parcela 8, Dársena Pesquera, 38180 Santa Cruz de Tenerife, Spain. [pepegj@ca.ieo.es]

(2) Bioecomac, Universidad de La Laguna, Avda. Astrofísico F. Sánchez s/n, La Laguna, 38205 Santa Cruz de Tenerife, Spain. [abrito@ull.es]

(3) G. I. en Ecología Marina Aplicada y Pesquerías, Universidad de Las Palmas de Gran Canaria / Instituto Canario de Ciencias Marinas, Carretera de Taliarte s/n, 35214 Telde, Las Palmas, Spain. [solea@iccm.rcanaria.es]

\* Corresponding author [jacio.gustavo@gmail.com]

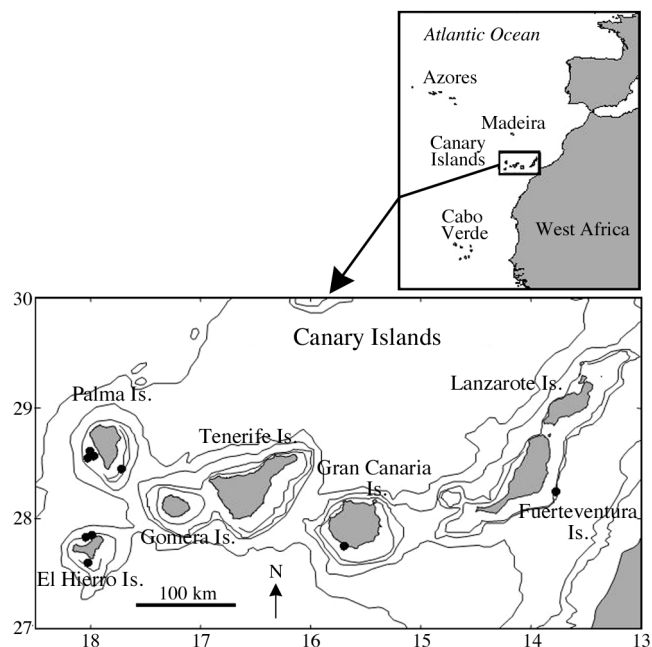


Figure 1. - The Canary Islands. Collection locations (●).

**MATERIAL AND METHODS**

Most of the specimens studied were collected during experimental fishing cruises onboard research or fishing vessels around the Canary Islands. Other material was provided

by local artisanal fishermen since they were rare specimens, and finally a few fresh specimens were bought at the local fish markets with absolute certainty that they came from local fisheries.

Specimens were caught by handline (HL), drifting surface longlines (SLL), and bottom longlines (BLL), regularly used by the Canary artisanal fleet and also during fishing operations for monitoring the Marine Reserve of the island of El Hierro from 2008 to 2010 (González-Lorenzo *et al.*, 2010). Small specimens of *B. brama* were also trawled between 40 and 600 m of depth using an experimental pelagic net (1 cm mesh-size) during the cruise CETOBAPH in April 2012. In order to enable counting the longitudinal scale series, small specimens were stained by using a Coomassie Brilliant Blue R-250 staining solution kit.

Voucher specimens were deposited in the collections of the ‘Museo de Ciencias Naturales de Tenerife’ (TFMC) and the ‘Centro Oceanográfico de Canarias’ of the Spanish Institute of Oceanography (IEO). Additional unpreserved material was included in the present account, whenever relevant to depth range or biological information.

Counts and measurements were made following Hubbs and Lagler (1958). Other counts and terminology were based on Mead (1972). Other abbreviations are as follows: TL, total length; SL, standard length.

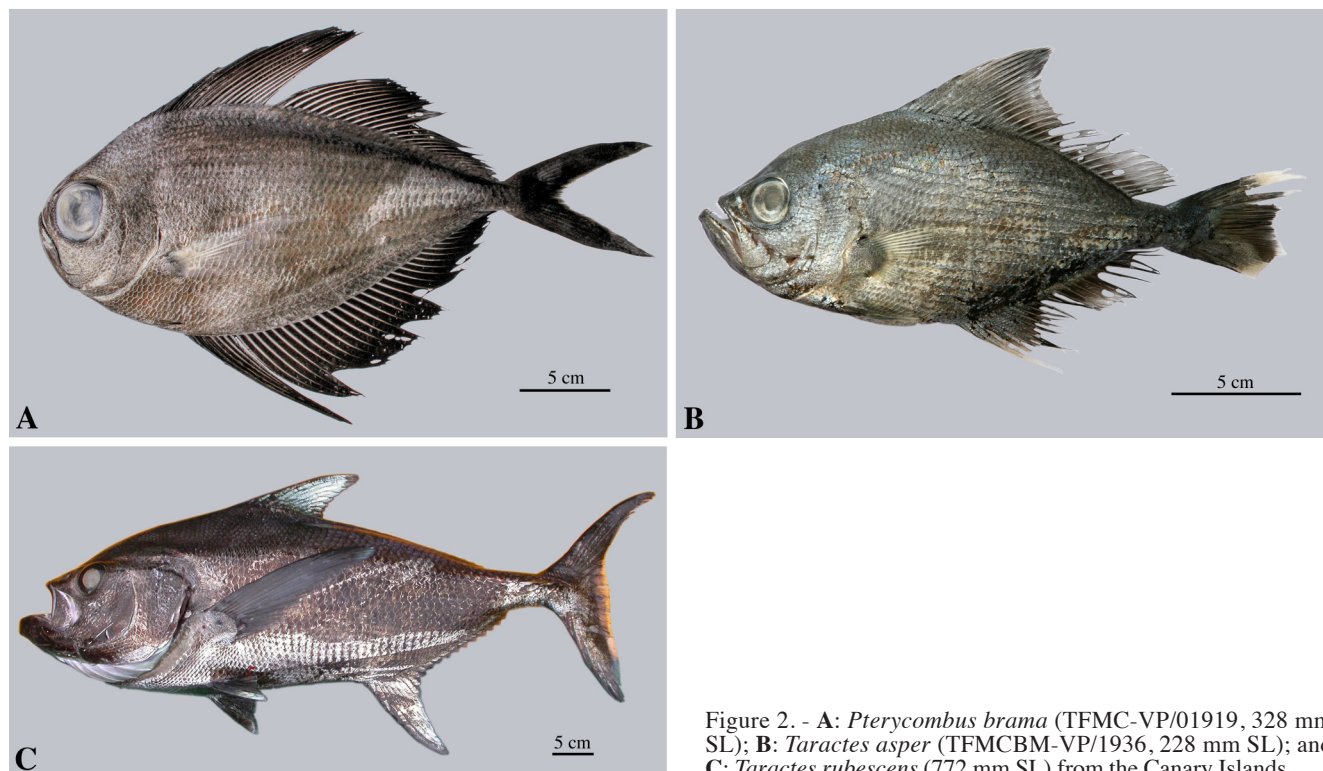


Figure 2. - **A:** *Pterycombus brama* (TFMC-VP/01919, 328 mm SL); **B:** *Taractes asper* (TFMCBM-VP/1936, 228 mm SL); and **C:** *Taractes rubescens* (772 mm SL) from the Canary Islands.

## RESULTS

### *Brama brama* (Bonnaterre, 1788)

*Material examined.* - Seven specimens (spms) caught off La Palma in April 2012, cruise CETOBAPH, with pelagic trawl between 28°32'N 17°59'W and 28°35'N 18°00'W: TFMC-VP/1937, 129 mm TL, 94 mm SL, TFMC-VP/1938, 95 mm TL, 70 mm SL, 138-194 m, sta. LP5, 11 May 2012; TFMC-VP/1939, 124 mm TL, 89 mm SL, 415-442 m, sta. LP6, 11 May 2012; TFMC-VP/1940, 81 mm TL, 57 mm SL, 410-620 m, sta. LP9, 13 May 2012; TFMC-VP/1941, 56 mm TL, 39 mm SL, 40-206 m, sta. LP12, 14 May 2012.

*Additional material.* - Cruise EMBELHIERRO-1009, Oct 2009, 35 spms, 470-840 mm TL, off El Hierro, 460-600 m, fishing operations for alfonosinos *Beryx* spp., HL. Cruise CETOBAPH, May 2012, pelagic trawl, 3 spms deposited in the collection of the IEO at Tenerife with no register number: 125-181 mm TL, 87-135 mm SL, off La Palma, 28°32'N 17°59'W (sta. LP2) and 28°35'N 18°00'W (sta. LP7), 40-620 m; 1 spm, 100 mm TL, 69 mm SL, off El Hierro, 27°38'N 18°02'W (sta. EH1), 30-190 m.

*Remarks.* - An oceanic epipelagic (at night time) and mesopelagic species ranging from surface down to about 1000 m of depth (Smith, 2003), usually between 0-200 m (McMillan *et al.*, 2011), widespread in the Atlantic, Indian and South Pacific oceans (e.g. Mead and Haedrich, 1965; Last and Moteki, 2001; Carvalho-Filho *et al.*, 2009; Froese and Pauly, 2013). In the Eastern Atlantic, it has been recorded from central Norway (Haedrich, 1986) southward to Algoa Bay, South Africa (Smith, 2003), including the Mediterranean and the Macaronesian archipelagos (Froese and Pauly, 2013). This highly migratory species has specific temperature requirements (Mead, 1972; see Discussion).

The presence of small specimens (39-135 mm SL) of *B. brama* among the material examined was especially considered as these size-classes do not normally appear in fish markets; they were identified according to descriptions and characteristics given by Mead (1972), Thompson and Russell (1996) and Last and Moteki (2001). Their most significant meristic measurements were: 35-37 dorsal rays, 29-31 anal rays, 21-22 pectoral rays, 82-85 scales on lateral series, and 16-18 gillrakers.

*Brama brama* was first recorded in the Canary Islands by Valenciennes (1837-1844, as *Brama raii*), where it is the most abundant bramid. This is a secondary species of small-scale fisheries with artisanal gear (handlines, vertical longlines and surface longlines) around the Canaries, especially when it rises up to midwater and surface at night. Although common when it approaches the islands in autumn and winter (Franquet and Brito, 1995), the level of captures remains low. Uiblein *et al.* (1998) reported a scientific collection of adults using bottom longlines at 278-882 m, suggesting that the species may also belong to the benthopelagic commu-

nity. During the recent cruise CETOBAPH off the Canaries in 2012, small individuals were caught with pelagic trawls between 30 and 620 of depth.

### *Pteraclis carolinus* Valenciennes, 1833

*Material examined.* - None.

*Remarks.* - This species is known to occur offshore in warm mesopelagic waters from surface to about 400 m of depth, with a restricted distribution in both the Western (Sargasso Sea) and Eastern Atlantic Ocean, including off Madeira and off the West African coast between 20°N and 25°N (Mead, 1972; Haedrich, 1986; Gomes, 1990; Carvalho-Filho *et al.*, 2009; Froese and Pauly, 2013).

The first, and so far unique record, of this species from the Canary Islands was done by Mead (1964), based on two individuals (15.5 and 19.1 mm SL) caught 3.5 to 5 miles off the Western coast of Tenerife in 1961 during the Discovery II cruise, with a mesopelagic trawl from 170 m to surface over depth of 1160-1700 m. After this date, this species was cited from the Northwestern coast of Africa between 21°N and 25°N and also from the Northern nearby waters of Madeira (Mead, 1972; Haedrich, 1986; Gomes, 1990), but it was not included in the ichthyological checklists for the Canaries made by Brito (1991), Brito *et al.* (2002) and Brito and Sancho (2003).

### *Pterycombus brama* Fries, 1837

*Material examined.* - TFMC-VP/01919, 1 spm, 426 mm TL, 328 mm SL, off Punta de la Entallada, Fuerteventura, 28°14'N 13°50'W, 450-500 m, 30 Mar. 2009, on a HL in the artisanal fishery for alfonosinos *Beryx* spp.

*Remarks.* - A pelagic oceanic species inhabiting Atlantic temperate and tropical waters from 67°N to 1°S and from 98°W to 36°E (e.g. McEachran and Fechhelm, 2005; Froese and Pauly, 2013), between 25 and 400 m of depth (Muus and Nielsen, 1999). In the East Atlantic Ocean, it has been recorded from Norway and Iceland (Jonsson, 1992) to South of the Cap Lopez, West of Mayumba (Gulf of Guinea) (Gomes, 1990), including the coasts of Sweden, British Isles and NW Spain (e.g. Mead, 1972; Bañón *et al.*, 2010; Froese and Pauly, 2013). The Mediterranean record – with no locality or bibliographic reference – by Carvalho-Filho *et al.* (2009) [these authors took this record from Scott and Scott (1988)] needs further confirmation. It is a seasonal migrant (Haedrich, 1986).

This is the first record for this amphi-Atlantic species from the Canary Islands. The present material was collected between 450 and 500 m of depth. Apart from the voucher specimen, at least two more individuals were caught and photographed at this locality – the Canary coast nearest to the African continent – at 500-600 m. These findings enlarge the vertical distribution range of this species within the mesopelagic community.

Table I. - Selected counts and body proportions of *Pterycombus brama* compared with *P. petersii*.

| Body proportions and counts | Present study                | Mead (1972)               |                        |                       |  |
|-----------------------------|------------------------------|---------------------------|------------------------|-----------------------|--|
|                             | Canary Islands<br>1 specimen | West Africa<br>1 specimen | NW Spain<br>1 specimen | Norway<br>4 specimens | <i>P. petersii</i><br>2 spec. (incl. holotype) |
| Standard length (SL mm)     | 328                          | 353                       | 268                    | 284-314               | 244-277  |
| In %SL                      |                              |                           |                        |                       |  |
| Head length                 | 25.6                         | 28.9                      | 25.2                   | 23.8-27.2             | 23.2-25.4                                      |
| Pre-dorsal length           | 17.4                         | 21.7                      | 17.4                   | 18.9-21.7             | 15.8-20.1                                      |
| Pre-anal length             | 27.7                         | 40.2                      | 35.8                   | 34.6-40.4             | 32.1-35.1                                      |
| Fork length                 | 106.7                        | –                         | 111.8                  | 110-114               | 110.7-111.5                                    |
| Body depth                  | 44.5                         | 48.0                      | 41.2                   | 42.2-46.7             | 38.9-43.3                                      |
| Eye diameter (horizontal)   | 9.7                          | 10.5                      | 7.8                    | 8.4-10.5              | 7.7-8.4  |
| Longest dorsal ray          | 34.8                         | 22.4                      | 39.2                   | 29.1-39.4             | 41.4-63.5                                      |
| Longest anal ray            | 36.0                         | 20.8                      | 40.7                   | 31.7-41.4             | 42.2-58.0                                      |
| Counts                      |                              |                           |                        |                       |  |
| Dorsal-fin rays             | 50                           | 51                        | 51                     | 46-52                 | 49-49  |
| Anal-fin rays               | 42                           | 41                        | 43                     | 41-42                 | 40-41  |
| Gill rakers                 | 8 (1+1+6)                    | 7                         | 7                      | 8-10                  | 8-8  |

Table II. Selected counts and body proportions of *Taractes asper*.

| Body proportions and counts | Present study                | Mead (1972)                  | Thompson and Russell (1996)   | Mead (1972)                 |
|-----------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|
|                             | Canary Islands<br>1 specimen | East Atlantic<br>5 specimens | Gulf of Mexico<br>5 specimens | West Pacific<br>3 specimens |
| Standard length (SL mm)     | 228                          | 270-308                      | 332.5-377                     | 383-400                     |
| In %SL                      |                              |                              |                               |                             |
| Head length                 | 32.0                         | 29.8-32.8                    | 30.9-31.7                     | 30.7-32.5                   |
| Pre-dorsal length           | 39.0                         | 32.8-42.0                    | 40.5-42.9                     | 39.3-40.2                   |
| Pre-anal length             | 50.0                         | 57.6-62.4                    | 56.7-59.2                     | 59.7-62.2                   |
| Pre-pectoral length         | 28.5                         | 30.8-33.0                    | 29.7-31.6                     | 31.0-35.4                   |
| Pre-pelvic length           | 27.2                         | 33.9-37.0                    | 34.5-36.6                     | 35.4-39.8                   |
| Pectoral-fin length         | 28.5                         | 28.5-32.9                    | 29.8-35.6                     | 31.3-33.3                   |
| Pelvic-fin length           | 18.9                         | 14.5-16.7                    | 17.2-19.0                     | 13.8-17.7                   |
| Caudal-peduncle length      | 7.0                          | –                            | 13.9-15.8                     | –                           |
| Caudal-peduncle depth       | 7.9                          | 7.1-8.2                      | 7.2-7.8                       | 7.1-7.5                     |
| Body depth                  | 43.4                         | 38.7-44.5                    | 41.3-45.1                     | 42.2-45.5                   |
| Eye diameter (horizontal)   | 9.7                          | 7.8-10.5                     |                               |                             |
| Counts                      |                              |                              |                               |                             |
| Dorsal-fin rays             | 32                           | 33-34                        | –                             | 32-33                       |
| Anal-fin rays               | 25                           | 25-26                        | –                             | 24-25                       |
| Scales in lateral series    | 43                           | 43-45                        | –                             | 45-46                       |
| Gill rakers                 | 1+1+6                        | 1+1+6-7                      | –                             | 1+1+6-7                     |

Selected body proportions and meristics of the material studied are shown in table I and compared with Mead (1972) data taken from other adult specimens of the same species and from *P. petersii*. The Canarian specimen agrees in almost all respects with the comparative material. The only major difference found was in the pre-anal length, 27.7% SL in the Canarian material vs 34.6-40.4% for *P. brama* and 32.1-35.1% for *P. petersii* from other areas (Tab. I). In our specimen, the longest dorsal ray is 34.8% in SL, which agrees

with the range given for *P. brama* (22.4-39.4%) but differs from *P. petersii* (41.4-63.5%) (Tab. I). Carvalho-Filho *et al.* (2009) pointed out that values over 50% in SL differentiate juvenile of *P. brama* from *P. petersii*.

#### ***Taractes asper* Lowe, 1843**

*Material examined.* - TFMCBMVP/1936, 1 spm, 285 mm TL, 228 mm SL, El Río, La Palma, 28°31'N 17°44'W, 450 m, 12 Jun. 2012, on a BLL in the artisanal fishery for alfon-

sinos *Beryx* spp.

**Remarks.** - A pelagic oceanic species inhabiting circumglobal tropical to temperate waters at 72°N-35°S, 180°W-180°E, between 1 and 140 m of depth (Mundy, 2005; Froese and Pauly, 2013). In the Eastern Atlantic Ocean it is known from Northern Norway and Iceland to Madeira, including the coasts of Germany, British Isles and NW of Spain, to Cape Province, South Africa (e.g. Mead and Maul, 1958; Mead, 1972; Haedrich, 1986; Smith, 2003; Bañón *et al.*, 2010). It is a highly migratory species (Froese and Pauly, 2013).

According to Thompson and Russell (1996), this species and *T. rubescens* are sympatric, the latter species preferring higher latitudes.

This is the first record for this rare and widespread species from the Canary Islands. The present material was caught at a depth of 450, which enlarges considerably its vertical range extending its habitat from the epi- to the mesopelagic community.

Selected body proportions and meristics of the material studied are shown in table II and compared with data available from literature. The Canarian specimen agrees in almost all respects with Mead (1972) and Thompson and Russell (1996) specimens, except for some minor differences in the pre-anal, pre-pelvic, and caudal peduncle lengths (Tab. II). The small size of our specimen may eventually explain these discrepancies. Mead (1972) pointed out that changes accompanying growth between 169 and 300 mm SL include the transformation of a truncate caudal fin to a concave one, the formation of anterior lobes in the dorsal and anal fins, a relative shortening of the paired fins and the further posterior displacement of the ventral fin, among others.

#### ***Taractes rubescens* (Jordan & Evermann, 1887)**

**Material examined.** - TFMC-VP/764, 1 spm, 831 mm TL, 669 mm SL, off Arguineguín, SW Gran Canaria, 5 Mar. 2002, SLL; TFMC-VP/1382, 1 spm, 768 mm TL, 586 mm SL, off Puerto Rico, SW Gran Canaria, 15 Oct. 2004, SLL. Both specimens caught on surface by the local artisanal fleet.

**Additional material.** - 1 spm, 890 mm TL, 772 mm SL, off Punta de la Dehesa, El Hierro, 27°47'N 18°07'W, 14 Oct. 2009, on a HL; examined and identified at the local fish market. One more specimen, identified from a photograph, caught at El Hierro in 2006 at 400-500 m of depth, also on a HL.

**Remarks.** - An oceanic pelagic to benthopelagic species widely distributed in circumglobal tropical waters, between surface and 600 m of depth (Yoshida, 1973; Masuda *et al.*, 1984; Carvalho-Filho *et al.*, 2009; Froese and Pauly, 2013). In the Eastern Atlantic Ocean it is known from the Azores (Santos *et al.*, 1997), Madeira (Haedrich, 1986) and off West Africa (Mauritania and Namibia) (e.g. Mead, 1972; Lloris

*et al.*, 1991; Froese and Pauly, 2013). Although it is widespread in the World Ocean, this species is rare and often solitary (Carvalho-Filho *et al.*, 2009).

This is the first record for this species from the Canary Islands. The present material was collected between surface and 400-500 m of depth, confirming its habitat in both the epipelagic and benthopelagic communities. The two specimens from El Hierro were caught as by-catch in the artisanal fishery for the alfonsino *Beryx splendens* Lowe, 1834 (Berycidae), a benthopelagic fish found in groups on rocky substrata, close to or within 5-20 m of slopes at a depth between 200 and 1240 m; and also found in 10-50 m dense shoals above seamounts (see Busakhin, 1982). The 772 mm SL specimen from El Hierro is apparently the biggest ever recorded [700 mm SL in FishBase, 742 mm SL in Thompson and Russell (1996)].

Selected body proportions and meristics of the material studied are shown in table III and compared with data available from literature. The Canarian specimens agree in almost all respects with the material from Western Atlantic and from both Eastern and Western Pacific Oceans. The only major difference found shows that the Canarian specimens have slightly smaller pre-dorsal length, pre-pelvic length and body depth (Tab. III). Last and Moteki (2001) proposed that values of pectoral-fin length over 36% in SL separate *T. rubescens* from *T. asper*. The Canarian material values (33.9-34.9%) are within Thompson and Russell (1996) range (the most complete data series) (Tab. III). Lloris (1986) also gives values of 26.8-32.4% SL for 3 individuals of *T. rubescens* from Namibia ranging 315-410 mm SL. These differences in the proportions of pectoral-fin length may be due to the low number of specimens of this rare species measured and/or to intra-specific variability. All Canarian specimens have a keel in the caudal peduncle as a result of a series of 4 or 5 transformed scales; this characteristic (not present in *T. asper*) combined with body proportions and counts is enough to warrant the correct identification of the Canarian specimens.

#### ***Taractichthys longipinnis* (Lowe, 1843)**

**Material examined.** - 2 spms, TFMC-VP/1049, 727 mm TL, 561 mm SL, Arguineguín, SW Gran Canaria, 27°43'N 15°48'W, 5 Mar. 2002, SLL; TFMC-VP/1048, 1 spm, 643 mm TL, 516 mm SL, Arguineguín, SW Gran Canaria, 27°41'N 15°48'W 24 Jan. 2004, HL. Both voucher specimens were collected in the framework of the FishTrace project.

**Additional material.** - 2 spms, 704-742 mm TL, 536-557 mm SL, both from same locality, data and project of the above first voucher, SLL; 1 spm, 850 mm TL, 680 mm SL, Arguineguín, SW Gran Canaria, 27°43'N 15°48'W, 4 Jun. 2004, SLL; 2 spms, 630-835 mm TL, El Hierro, 530-580 m, cruise EMBELHIERRO-0608, Jun. 2008; 3 spms, 640, 780

Table III. - Selected counts and body proportions of *Taractes rubescens*. \*: Ranges from authors probably due to a partial inclusion of data taken from the second specimen found.

|                             | Present study  | Mead (1972)    | Thompson and Russell (1996) | Mead (1972)  | Puentes <i>et al.</i> (2001) |
|-----------------------------|----------------|----------------|-----------------------------|--------------|------------------------------|
|                             | Canary Islands | Gulf of Mexico | Gulf of Mexico              | West Pacific | Colombian Pacific            |
| Body proportions and counts | 3 specimens    | 1 specimen     | 22 specimens                | 1 specimen   | 1 specimen                   |
| Standard length (SL mm)     | 599-772        | 620            | 305-742                     | 690          | 430                          |
| In %SL                      |                |                |                             |              |                              |
| Head length                 | 28.1-29.9      | 30.2           | 28.0-32.8                   | 30.8         | 34.7                         |
| Pre-dorsal length           | 34.9-37.0      | 41.6           | 38.1-44.7                   | 38.8         | 45.3                         |
| Pre-anal length             | 49.7-50.1      | 61.3           | 30.8-67.2                   | 63           | 67.4                         |
| Pre-pectoral length         | 29.2-32.3      | 31.4           | 28.5-32.1                   | 34.1         | 34.9                         |
| Pre-pelvic length           | 28.4-33.3      | 35.2           | 31.6-37.5                   | 39.1         | 37.2                         |
| Pectoral-fin length         | 33.9-34.9      | 38.2           | 32.1-41.7                   | 39.7         | 43.0                         |
| Pelvic-fin length           | 13.1-14.4      | 9.7            | 12.4-15.6                   | 11.2         | 17.7                         |
| Caudal-peduncle length      | 10.0-10.9      | –              | 15.3-19.8                   | –            | –                            |
| Caudal-peduncle depth       | 6.0-6.8        | 6.1            | 5.9-7.0                     | 7.0          | 7.9                          |
| Body depth                  | 33.9-41.3      | 39.5           | 35.8-41.2                   | 38.4         | 44.2                         |
| Eye diameter (horizontal)   | 5.3-6.5        | 6.8            | 5.2-6.8                     | 5.5          | 7.4                          |
| Counts                      |                |                |                             |              |                              |
| Dorsal-fin rays             | 30-30          | 31             | –                           | 31           | 28-29 (*)                    |
| Anal-fin rays               | 21-21          | 22             | –                           | 22           | 20                           |
| Scales in lateral series    | 46-48          | 45             | –                           | 41           | 49-50 (*)                    |
| Gill rakers                 | 2+1+7          | 3+1+6          | –                           | 1+1+7        | 2+1+7                        |

and 800 mm TL, El Hierro, 450-600 m, cruise EMBELHI-ERRO-0308, Mar. 2008. All specimens from El Hierro were caught on HL for alfonosinos *Beryx* spp.

*Remarks.* - An oceanic epipelagic (at night time) and mesopelagic Atlantic species distributed in temperate to tropical waters (up to 10°C) between 47°N and 17°N, from surface to about 500 m of depth (MacMillan *et al.*, 2011), usually at 42-200 m (Carvalho-Filho *et al.*, 2009; Froese and Pauly, 2013). In the Eastern Atlantic Ocean it is known from Iceland and Norway southward to off Pointe Noire, Gulf of Guinea and Namibia, including the Macaronesian archipelagos; questionably reaching False Bay, South Africa (Smith, 2003); absent from the Mediterranean (e.g. Mead, 1972; Bañón *et al.*, 2010; Froese and Pauly, 2013). It is a highly migratory species, often solitary but occasionally found in small schools close to shore (Carvalho-Filho *et al.*, 2009).

According to Smith (2003), all records of this species for the Indian and Pacific Oceans (Paulin, 1981; Thompson and Russell, 1996; Last and Moteki, 2001; Hatooka, 2002; Thompson, 2002) are based on misidentifications of *Taractichthys steindachneri* (Döderlein, 1883).

The first record of this species from the Canary Islands is due to Brito (1991). The present material was caught with handlines 50-100 m above the seafloor in 600 m of depth (González-Lorenzo *et al.*, 2010), confirming its habitat in both the epi- and mesopelagic communities. Off the Canaries, it is seasonally common when approaching the islands during its migration in autumn and winter, together

with *B. brama*. The species inhabits oceanic waters, mainly in midwater on the insular slopes, ascending towards the surface during night-time. It usually forms schools (Franquet and Brito, 1995) and it is caught with handlines, vertical longlines and drifting surface longlines (at night). In the Canary Islands waters, *T. longipinnis* is caught sporadically and seems to be less abundant than *B. brama*. Most probably, the catches of this species will grow with the increasing use of drifting surface longlines (Franquet and Brito, 1995).

## DISCUSSION

Five genera and six species of the family Bramidae occur off the Canaries, representing 83% and 60% respectively of the known genera and species of pomfrets in the Eastern Atlantic Ocean and the Mediterranean Sea.

As bramids are oceanic migratory species with a wide geographical distribution and the Canary ichthyological fauna is well-known (Brito, 1991; Brito *et al.*, 2002; Brito and Sancho, 2003), the present new records for this region can be explained by the low use of drifting surface longlines and the absence of pelagic or midwater trawling around the Canary Islands. Anyway, at least *Brama brama* and *Taractichthys longipinnis* are not abundant species. Also, very few scientific surveys using this type of fishing gear – which is the case of the cruise CETOBAPH – have been conducted to date.

Table IV. - Presence and absence of the Atlantic bramids off the Macaronesian archipelagos (Northeastern Atlantic Ocean) to date.

| Main reference                   | Azores<br>Santos <i>et al.</i> (1997) | Madeira<br>Haedrich (1986) | Canaries<br>this study | Cape Verde<br>Reiner (2005) |
|----------------------------------|---------------------------------------|----------------------------|------------------------|-----------------------------|
| <i>Brama brama</i>               | X                                     | X                          | X                      | X                           |
| <i>Pteraclis carolinus</i>       |                                       | X                          | X                      |                             |
| <i>Pterycombus brama</i>         | X                                     | X                          | X                      | X                           |
| <i>Taractes asper</i>            | X                                     | X                          | X                      |                             |
| <i>Taractes rubescens</i>        | X                                     | X                          | X                      | X                           |
| <i>Taractichthys longipinnis</i> | X                                     | X                          | X                      | X                           |

Within the archipelagos of the Macaronesian region *sensu lato*, the bramids are represented, from North to South, as follows: the Azores (5 species) (Santos *et al.*, 1997), the Madeira archipelago (6 species) (Haedrich, 1986), the Canary Islands (6 species) (this work), and the Cape Verde Islands (4 species) (Reiner, 2005) (Tab. IV).

According to Mead (1972), *B. brama* has specific temperature requirements and in water masses with surface temperature above 23.8°C it seems to be replaced by *B. dussumieri*, a congeneric form with apparently similar pantropical distribution but smaller in size. In the last thirty years there has been a trend toward increasing the temperature of the sea surface in the area of the Canary Islands (Santos *et al.*, 2012), with records over 24°C. In this scenario the appearance of *B. dussumieri* would not be surprising and its presence would be an evidence of the change in the distribution of species due to global warming in the Atlantic. This phenomenon ('tropicalization') has been observed in the Canaries for species with less dispersal ability than in the present case (Falcón *et al.*, 2002; Brito *et al.*, 2005).

In general, except for *B. brama*, descriptions of bramid species as well as their known meristic and morphometric information are based on a few number of specimens. For this reason most authors consider pomfrets as rare species. As a consequence, it is difficult to make decisions about the taxonomical importance of the different characters and there is a need to gather more information covering the ontogenetic series of the different species. As an example, our data on pectoral fin length for *T. rubescens* are not valid to distinguish this species from *T. asper*, as proposed by Last and Moteki (2001).

Despite allometric changes have been observed in some bramid species during its development (Mead, 1972), discrepancies recorded in morphometric data when comparing adult specimens of the same species or from closely related species seem to be due to the few number of individuals. For *T. rubescens*, the present work apparently includes the biggest specimen ever recorded.

Some bramid species are considered to be excellent food fishes for human consumption (Haedrich, 1981). These species are traditionally assessed and monitored by FAO as transzonal and highly migratory resources (García *et al.*, 1995).

In the Eastern Central Atlantic and the Mediterranean Sea, *B. brama* is caught incidentally with many types of fishing gear as by-catch, except off Northwest Spain where there is a targeted fishery based on surface longlines, yielding noticeable catches for this species (e.g. Mead, 1972; Haedrich, 1981).

Contrary to what Haedrich (1981) and several authors have published, there is not a specific fishery for *B. brama* around the Canary Islands, where this species is incidentally caught as by-catch by the small-scale fisheries mainly directed to other target species inhabiting the benthopelagic community. Catches reported by FAO since 1970s from the Canaries are most probably referred to the Spanish longliners operating in nearby or adjacent waters to the Canaries, between Cap Ghir (Morocco) and Cape Bojador (Western Sahara) (Vázquez, 1980), where this species is also caught by the industrial bottom-trawl fleet (García *et al.*, 1995).

**Acknowledgements.** – The authors are indebted to researchers and technical personnel participating in cruises and projects which supported this work. FISHTRACE 2003-2006 (QLRI-CT-2002-02755) was co-funded by FP5 of the European Commission. Cruises EMBELHIERRO of the project RESMARCAN 2008-2010, of the Spanish Institute of Oceanography (IEO), were co-funded by an agreement with the Spanish Ministry of Fisheries. This work was also supported by the project "Cetáceos, Oceanografía y Biodiversidad de las Aguas Profundas de La Palma y El Hierro" (grant number CETOBAPH-CGL2009-1311218) funded by the "Ministerio de Ciencia e Innovación" of the Spanish Government. Thanks are also due to the masters and crews of the R/V 'Cornide de Saavedra' and other collaborators: Chano Rodríguez Noda, crew of the F/V 'Adoney' from Fuencaliente, La Palma, and fishermen from La Restinga, El Hierro. Special thanks to Dr. Jacinto Barquín and Alejandro Escánez (University of La Laguna), Pablo Martín-Sosa (IEO), and Jaime Rodríguez. Our gratitude for the 'Museo de Ciencias Naturales de Tenerife' (TFMC), especially to Alejandro Vera.

## REFERENCES

- BAÑÓN R., VILLEGAS-RÍOS D., SERRANO A., MUCIENTES G. & ARRONTE J.C., 2010. - Marine fishes from Galicia (NW Spain): an updated checklist. *Zootaxa*, 2667: 1-27.
- BAUCHOT M.L., 1987. - Poissons osseux. Bramidae. In: Fiches FAO d'identification des espèces pour les besoins de la pêche. (Rév. 1). Méditerranée et mer Noire. Zone de pêche 37. Vol. 2. Vertébrés (Fischer W., Bauchot M.L. & Schneider M., eds), pp. 1000-1001. Rome: FAO.
- BRITO A., 1991. - Catálogo de los Peces de las Islas Canarias. 230 p. La Laguna: Lemus.

- BRITO A. & SANCHO A., 2003. - Phylum Chordata, Clase Osteichthyes. In: Lista de Especies marinas de Canarias (Algas, Hongos, Plantas y animales) (Moro L., Martín J.L., Garrido M.J. & Izquierdo I., eds), pp. 118-131. La Laguna: Gobierno de Canarias / Gesplan.
- BRITO A., PASCUAL P.J., FALCÓN J.M., SANCHO A. & GONZÁLEZ G., 2002. - Peces de las Islas Canarias. Catálogo comentado e ilustrado. 419 p. La Laguna: Lemus.
- BRITO A., FALCÓN J.M. & HERRERA R., 2005. - Sobre la tropicalización reciente de la ictiofauna litoral de las Islas Canarias y su relación con cambios ambientales y actividades antrópicas. *Vieraea*, 33: 515-525.
- BUSAKHIN S.V., 1982. - Systematics and distribution of the family Berycidae (Osteichthyes) in the World Ocean. *J. Ichthyol.*, 22(6): 1-21.
- CARVALHO-FILHO A., MARCOVALDI G., SAMPAIO C.L.S., PAIVA M.I.G. & DUARTE L.A.G., 2009. - First report of rare pomfrets (Teleostei: Bramidae) from Brazilian waters, with a key to Western Atlantic species. *Zootaxa*, 2290: 1-26.
- ESCHMEYER W.N. (ed.), 2013. - Catalog of Fishes. Genera, Species, References. (<http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>). Electronic version accessed 16 Apr. 2013.
- FALCÓN J.M., BRITO A., PASCUAL P., GONZÁLEZ-LORENZO G., SANCHO A., CABRERA M., BÁEZ A., MARTÍN-SOSA P. & BARQUÍN J., 2002. - Catálogo de los peces de la Reserva Marina de La Graciosa e Islotes al norte de Lanzarote. Tropicalización reciente del poblamiento íctico. *Rev. Acad. Canar. Cienc.*, 14(3-4): 119-138.
- FRANQUET F. & BRITO A., 1995. - Especies de Interés pesquero de Canarias. 143 p. Santa Cruz de Tenerife: Consejería de Pesca y Transportes, Gobierno de Canarias.
- FROESE R. & PAULY D. (eds), 2013. - FishBase. World Wide Web electronic publication. [www.fishbase.org](http://www.fishbase.org), version (Feb. 2013).
- GARCÍA S.M., CADDY J.F., CSIRKE J., DIE D., GRAINGER R. & MAJKOWSKI J., 1995. - Examen de la situation mondiale des espèces de grands migrateurs et des stocks chevauchants. FAO Doc. Tech. Pêches, 337, 74 p. Rome: FAO.
- GOMES J., 1990. - Bramidae. In: Check-List of the Fishes of the Eastern Tropical Atlantic (CLOFETA), Vol. 2 (Quéro J.C., Hureau J.C., Karrer C., Post A. & Saldanha, L., eds), pp. 758-764. Lisbon: JNIC; Paris: SEI; Paris: UNESCO.
- GONZÁLEZ-LORENZO G., CANSADO S., MARTÍN-SOSA P., FALCÓN J.M., BOZA C., RODRÍGUEZ J.E., VILLEGAS N. & GONZÁLEZ-IRUSTA J.M., 2010. - Seguimiento científico de la Reserva Marina de La Restinga (El Hierro, Islas Canarias). Resultados de las campañas de embarques de observadores-muestreadores "EMBELHIERRO" 2008-10. Memoria científico-técnica final. 64 p. Santa Cruz de Tenerife: Centro Oceanográfico de Canarias, Instituto Español de Oceanografía.
- HAEDRICH R.L., 1981. - Bramidae. In: FAO Species Identification Sheets for Fishery Purposes. Eastern Central Atlantic; Fishing Areas 34, 47 (in part), Vol. 1 (Fischer W., Bianchi G. & Scott W.B., eds), 11 p. Ottawa: FAO.
- HAEDRICH R.L., 1986. - Bramidae. In: Fishes of the North-Eastern Atlantic and the Mediterranean, Vol. 2 (Whitehead P.J.P., Bauchot M.L., Hureau J.C., Nielsen J. & Tortonese E., eds), pp. 847-853. Paris: UNESCO.
- HATOOKA K., 2002. - Bramidae. In: Fishes of the Japan with Pictorial Keys to the Species, English edition, Vol. 1 (Nakabo T., ed.), pp. 813-816. Tokyo: Tokai Univ. Press.
- HUBBS C.L. & LAGLER K.F., 1958. - Fishes of the Great Lakes region. *Cranbrook Inst. Sci. Bull.*, 26: 1-213.
- JONSSON G., 1992. - Icelandic Fishes. 568 p. Reykjavik: Fiolvi. [In Icelandic]
- LAST P.R. & MOTEKI M., 2001. - Bramidae. In: FAO Species Identification Guide for Fishery Purposes. The Living Marine Resources of the Western Central Pacific. 5. Bony Fishes Pt 3 (Menidae to Pomacentridae) (Carpenter K.E. & Niem V.H., eds), pp. 2824-2836. Rome: FAO.
- LLORIS D., 1986. - Monografías de Zoología marina, 1. 434 p. Instituto de Ciencias del Mar de Barcelona, Consejo Superior de Investigaciones Científicas. Barcelona.
- LLORIS D., RUCABADO J. & FIGUEROA H., 1991. - Biogeography of the Macaronesian ichthyofauna (The Azores, Madeira, the Canary Islands, Cape Verde and the African enclave). *Bol. Mus. Mun. Funchal*, 43(234): 191-241.
- MASUDA H., AMAOKA K., ARAGA C., UYENO T. & YOSHINO T., 1984. - The Fishes of the Japanese Archipelago. 1. 437 p. (text). Tokyo: Tokai Univ. Press.
- McEACHRAN J.D. & FECHHELM J.D., 2005. - Fishes of the Gulf of Mexico. 2. Scorpaeniformes to Tetraodontiformes. 1004 p. Austin: Univ. of Texas Press.
- McMILLAN P.J., FRANCIS M.P., JAMES G.D., PAUL L.J., MARRIOTT P.J., MACKAY E., WOOD B.A., GRIGGS L.H., SUI H. & WEI F., 2011. - New Zealand fishes. 1: a field guide to common species caught by bottom and midwater fishing. *N.Z. Aquat. Environ. Biodivers. Rep.*, 68: 1-329.
- MEAD G.W., 1964. - Report on the fishes taken in Madeiran and Canarian waters during the summer-autumn cruises of the "Discovery II", 1959 and 1961. II. The identity of the North Atlantic fanfish, *Pteraclis*. *Bol. Mus. Mun. Funchal*, 18(70): 114-120.
- MEAD G.W., 1972. - Bramidae. Dana-Report No. 81: 166 p. Copenhagen: Andr. Fred. Høst & Søn.
- MEAD G.W. & HAEDRICH R.L., 1965. - The distribution of the oceanic fish *Brama brama*. *Bull. Mus. Comp. Zool.*, 134(2): 29-68.
- MEAD G.W. & MAUL G.E., 1958. - *Taractes asper* and the systematic relationships of the Steinegeriidae and Trachyberycidae. *Bull. Mus. Comp. Zool.*, 119(6): 393-417.
- MUNDY B.C., 2005. - Checklist of the fishes of the Hawaiian Archipelago. *Bishop Mus. Bull. Zool.*, 6: 1-704.
- MUUS B.J. & NIELSEN J.G., 1999. - Sea Fish. Scandinavian Fishing Year Book. 340 p. Denmark: Hedehusene.
- PAULIN C.D., 1981. - Fishes of the family Bramidae recorded from New Zealand. *N.Z. J. Zool.*, 8(1): 25-31.
- REINER F., 2005. - Peixes do Arquipélago de Cabo Verde. 340 p. Instituto Nacional de Desenvolvimento das Pescas, República de Cabo Verde. Mindelo.
- SANTOS F., de CASTRO M., GÓMEZ-GESTEIRA M. & ÁLVAREZ I., 2012. - Differences in coastal and oceanic SST warming rates along the Canary upwelling ecosystem from 1982 to 2010. *Cont. Shelf Res.*, 47: 1-6.
- SANTOS R.S., PORTEIRO F.M. & BARREIROS J.P., 1997. - Marine fishes of the Azores. Annotated checklist and bibliography. A catalogue of the Azorean marine ichthyodiversity. *Arquipélago - Life Mar. Sci.*, (Suppl. 1): 1-244.
- SCOTT W.B. & SCOTT M.G., 1988. - Atlantic fishes of Canada. *Can. Bull. Fish. Aquat. Sci.*, 219: 731.
- SMITH M.M., 2003. - Bramidae. In: Smiths' Sea Fishes (Smith M.M. & Heemstra P.C., eds), pp. 633-636. Cape Town: Struik publishers.
- THOMPSON B.A., 2002. - Bramidae. In: The Living Marine Resources of the Western Central Atlantic. 3: Bony Fishes Pt 2 (Opistognathidae to Molidae), Sea Turtles and Marine Mammals (Carpenter K.E., ed.), pp. 1469-1472. Rome: FAO.



- THOMPSON B.A. & RUSSELL S.J., 1996. - Pomfrets (family Bramidae) of the Gulf of Mexico and nearby waters. *Publ. Espec. Inst. Esp. Oceanogr.*, 21: 185-198.
- UIBLEIN F., BORDES F., CASTILLO R. & RAMOS A.G., 1998. - Spatial distribution of shelf- and slope-dwelling fishes collected by bottom longline off Lanzarote and Fuerteventura, Canary Islands. *Mar. Ecol.*, 19(1): 53-66.
- VALENCIENNES A., 1837-1844. - Ichtyologie des îles Canaries, ou histoire naturelle des poissons rapportés par Webb & Berthelot. *In: Histoire naturelle des Îles Canaries* (Webb P.B. & Berthelot S.). Paris, pp. 1835-1850: v. 2 (pt 2): 1-109, 26 pls.
- VÁZQUEZ A., 1980. - Sobre la biología y pesca de la castañeta (*Brama brama*). *Inv. Pesq.*, 44(2): 241-252.
- YOSHIDA H.O., 1973. - *Taractes rubescens* and *Taractichthys steindachneri* from Hawaiian waters. *Fish. Bull.*, 71(3): 900-902.