



Short communication

First record of *Alosa fallax* (Lacépède, 1803) (Teleostei: Clupeiformes:Clupeidae) in the Azores Archipelago, Portugal (NE Atlantic).

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ABSTRACT

This note reports the first record of *Alosa fallax* (Lacépède, 1803) in the Azores Archipelago (NE Atlantic, Portugal). Being an anadromous species, this occurrence is quite unexpected since there are no suitable breeding habitats for this species in these volcanic islands, isolated and river less. Although *A. fallax* is known to migrate offshore, it has never been previously reported in oceanic environments.

We discuss this occurrence and theorize on the possibility of the species' being found in Madeira, another Macaronesian Archipelago, albeit much older and closer to European coasts and thus more suitable to be crossed by *A. fallax* during their migration routes in pelagic environments.

With this record, the number of Clupeid fishes for Azorean waters increases to two, the other being the well known and resident *Sardina pilchardus*.

INTRODUCTION

The twaite shad, *Alosa fallax* (Lacépède, 1803), is a well known Clupeidae widely distributed in the Northeast Atlantic, from the southern coasts of Scandinavia to off Morocco, including the Mediterranean and Black Seas (Whitehead 1985; Froese & Pauly 2012).

A. fallax populations are being negatively affected by several human activities, such as river and coastal pollution, dam constructions and overfishing (Collares-Pereira et al. 1999). Consequently it is a matter for conservation concerns and classified on the Portuguese Vertebrate Red List as “Vulnerable” (Costa et al. 2001; Cabral et al. 2006), although globally considered of “Least Concern” status for IUCN (Freyhof & Kottelat, 2008). It is listed in Appendix III of the Bern Convention (2002) and in Annexes II and V of the EU Habitats Directive (2007).

Alosa fallax is a marine pelagic anadromous species performing short distance migrations up to rivers for spawning between May and June (Pina et al. 2003; Alexandrino et al. 2006). Successively, larvae migrate downstream and the 1 year-olds spend several months in estuaries before the journeying to the sea (Jolly et al. 2012).

A. fallax feeds on small fish, euphausiids, mysids, isopods, copepods and insects (Whitehead 1984, 1985; Assis et al. 1992; Oesmann & Thiel 2001).

The occurrence of *A. fallax* has never been reported for the Azores archipelago (Santos et al. 1997; Porteiro et al. 2010).

MATERIAL AND METHODS

This specimen (Fig. 1) was caught at a depth of 45 m, 2,3 nm off the SE coast of Terceira Island (Azores), the 8th November, 2010.



Fig. 1. First specimen of *Alosa fallax* (Lacépède, 1803) found in Azorean waters (Catalogue number ALOFAL-UAç-DCA-1/10). Photo by F. Chauvin, editing by R.P.V.



The specimen shows a characteristic dark spot posterior to the gill opening, followed by eight horizontal spots along the flank just anterior and below the dorsal fin base. Its main descriptive measurements, morphometrics and meristics (see below) are in agreement with diagnostic species' data from Whitehead (1984), Rochard & Elie (1994) and Kottelat & Freyhof (2007):

Total length: 38.6cm

Fork length: 32.1cm (83% of TL)

Standard length: 30.0cm (78% of TL)

Gillrakers on the first arc (total): 78

The possibility of a misidentification with other clupeids was carefully checked using a photo database and the adequate meristics and biometric data for clupeid fish (see Froese & Pauly, 2013). After this process, and with all data available cross checked, every possible misidentification was discarded. Another clupeid besides *Sardina pilchardus* (Walbaum, 1792), in this case *Sardinella maderensis* (Lowe, 1838) was given as a possible occurrence in these waters (Santos et al. 1997). However, the above mentioned cross check definitively separated these two species and confirmed *A. fallax* as the correct identified species.

The specimen is preserved frozen in the Laboratory of Veterinary Anatomy of the Department of Agricultural Sciences (University of the Azores) under the provisional catalogue number, ALOFAL-UAç-DCA-1/10.

RESULTS AND DISCUSSION

The number of gillrakers is a distinctive feature between the recognized subspecies (Quignard & Douchement, 1991). Although, the number of gillrakers counted in our specimen does not fit with those from Whitehead's (1984) diagnosis and the author gives no references to subspecies with more than 45 gillrakers (except for *Alosa a. lacustris* (76) - now considered a synonym *A. agone* (Scopoli, 1836)), Kottelat & Freyhof 2007 indicate 30-80 gill rakers in the first arc as a diagnostic characteristic of *A. fallax*. Kottelat (1997) strongly recommends the reclassification as species for some of the presently valid subspecies and one must take note that hybrids may well interbreed (Quignard & Douchement 1991; Alexandrino et al. 1996). In fact, the whole genus *Alosa* Linck, 1790, represents a continuous challenge for many taxonomists and ichthyologists (Jolly et al. 2012).

The occurrence of *A. fallax* in the Azores was totally unexpected even when one considers its strongly migratory habits (Whitehead, 1985; Stankus, 2009). This occurrence is even more peculiar since there are simply no estuaries in the Azores and, apparently, the specimen was isolated. According to de Groot (2002) and Astthorsson & Palsson (2006) these types of erratic/unexpected occurrences could be related with changes in the marine environment.

Moreover, this new record increases to two the number of Clupeiformes' species known to occur in Azorean waters, the other being *Sardina pilchardus* (Santos et al.



1997; Porteiro et al. 2010). It is also plausible that *A. fallax* will soon be detected in Madeira Archipelago due to its proximity to the species' southern limit records.

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