Merluccius tasmanicus Matallanas & Lloris 2006 is a junior synonym of M. australis (Hutton 1872) (Gadiformes: Merlucciidae) based on morphological and molecular data

MARIANA Y. DELI ANTONI1,3, SERGIO M. DELPIANI1, ANDREW L. STEWART2, MARIANO GONZÁLEZ-CASTRO1 & JUAN M. DÍAZ DE ASTARLOA1
1Grupo de Biotaxonomía Morfológica y Molecular de Peces (BIMOPE), Instituto de Investigaciones Marinas y Costeras (IIMyC, CONICET-UNMdP), Funes 3350, Mar del Plata 7600, Argentina. Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Av. Rivadavia 1917, CABA C1033AAJ, Buenos Aires, Argentina. E-mail: deliantoni@mdp.edu.ar; sdelpiani@mdp.edu.ar; gocastro@mdp.edu.ar; astarloa@mdp.edu.ar
2Museum of New Zealand Te Papa Tongarewa, PO Box 467, Wellington, New Zealand. E-mail: AndrewS@tepapa.govt.nz
3Corresponding author

Abstract

The high intraspecific variation among and the conservative external morphology of Merluccius spp. have resulted in serious identification difficulties. Four hundred and twenty fresh and preserved specimens of Merluccius were analyzed, including the type series of Merluccius australis, M. tasmanicus and M. hubbsi; specimens of M. hubbsi from Argentina, Brazil and Uruguay, and individuals of M. australis from Argentina and New Zealand were examined. The nomenclatural status of the type specimens of M. australis is discussed and the designation of a lectotype and a paralectotype is proposed. The comparative study of morphology, meristic, traditional and landmark-based morphometry, both external and internal, and through DNA-based Barcoding molecular tools demonstrates that Merluccius tasmanicus is a junior synonym of Merluccius australis. Meristic and morphometric characters of types of M. tasmanicus completely overlap those of M. australis, whereas M. hubbsi show fewer scales along the lateral line, total vertebrae, second dorsal and anal-fin rays. A trend of a longer snout and wider head in M. australis and M. tasmanicus, and larger eyes and longer pelvic fins, in M. hubbsi was observed. While discriminant characters were found in the internal elements (hyomandibula, urohyal and sagitta otolith) between M. hubbsi and M. australis, none were observed between M. australis and those reported for M. tasmanicus. DNA barcoding analyses found no evidence of the existence of other species of Merluccius besides M. hubbsi and M. australis.

Key words: Merluccius spp., meristics, morphometry, DNA barcoding, Argentina, New Zealand, lectotype, paralectotype

Introduction

The Genus Merluccius is one of the most heavily exploited demersal fishes worldwide (Whitaker 1980; Inada 1981a; Cohen et al. 1990; Pitcher & Alheit 1995; Moyle & Cech 1996; Lloris et al. 2003). In Argentinean waters, Merluccius spp. have been one of the most valuable fishery resource (Bezzi & Dato 1995), representing about 40% of the total fish catch in recent years (MAGyP 2010; 2011), and currently regarded as overexploited (FAO 2010; Vaz-dos-Santos et al. 2010). The New Zealand hake fishery has traditionally consisted of bycatch of the much larger hoki (Macruronus novaezealandiae (Hector) fishery (Colman 1995), but in recent years it has also become an important target fishery (Ballara 2012).

The correct specific identification is essential for most biological studies (Vecchione & Collette 1996; Lleonart et al. 2006), and is necessary to design effective fishery management strategies (Stauffer & Kocovsky 2007). Incorrect identifications, the use of outdated names, or the application of misleading names can have considerable economic and environmental consequences (Fischer 2013). Several detailed taxonomic studies of merluccids have been published (Inada 1981a; Cohen et al. 1990; Lloris et al. 2003). Nevertheless, the high intraspecific variation