

Short Communication

Southernmost record of *Coryphaena hippurus* Linnaeus, 1758 (Coryphaenidae) in the southwest Atlantic Ocean, off Mar del Plata, Argentina

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ABSTRACT. This paper reports the presence of the common dolphinfish, *Coryphaena hippurus*, in Argentinian waters for the first time, with a specimen collected by experienced sport fishermen near Mar del Plata (38°S). This finding also represents the first record of a species from the Coryphaenidae family in Argentinian waters. The collection of these specimens coincided with sightings of other rarely-seen pelagic and oceanic fish species during the same period, providing further evidence supporting the influx of subtropical fish species from warmer Brazilian waters. These observations highlight the need for continued monitoring of fish populations and their distribution and the ecological dynamics within the region.

Keywords: *Coryphaena hippurus*; mahi-mahi; range extension; regional tropicalization; warm coastal drift; Brazil Current

The common dolphinfish, *Coryphaena hippurus* Linnaeus, 1758, commonly known as mahi-mahi or dorado, is a highly migratory pelagic fish found in tropical and subtropical waters worldwide (Collette et al. 2011). Thermal conditions strongly influence the species' distribution and abundance, typically occurring in waters ranging from 21-30°C and never below 20°C (Farrell et al. 2014, Moltó et al. 2020). *C. hippurus* forms schools near coastal areas and can be found in open waters at depths of up to 262 m (Gibbs Jr. & Collette 1959, Perle et al. 2020). It exhibits rapid growth rates, reaching 725 mm within the first year, early maturation at around four months, extended spawning events lasting three to four months, and a relatively short lifespan of about four years (Beardsley 1967, Oxenford 1999, Ditty 2006, Schlenker et al. 2021). As males grow, their head profile becomes ver-

tical and develops a bony crest, while females retain the common curved head profile and do not undergo the same morphological transformation (Roberts et al. 2015). The tongue has a small, oval-to-round tooth patch, and the pelvic fins fit into a body groove that extends to the anus (Roberts et al. 2015). Attaining a maximum size of 200 cm in total length and 40 kg in total weight (Collette et al. 2011), *C. hippurus* feeds on smaller fishes, zooplankton, crustaceans, and squid (Oxenford & Hunte 1999, Tripp-Valdez et al. 2010, Varela et al. 2017). They are preyed upon by dolphins and large pelagic species like tunas and billfishes (Oxenford 1999, Pitman & Stinchcomb 2002). Due to its desirability, recreational and commercial fisheries target *C. hippurus* across its range, underscoring its significance as a valuable resource (Palko et al. 1982, Oxenford 1999). Evidence-based on biological and

morphological characteristics strongly suggests the existence of multiple populations worldwide (Oxenford & Hunte 1986, Duarte-Neto et al. 2008, Lessa et al. 2009).

On April 4, 2023, sport anglers aboard the S/V Proa al Sol caught a *C. hippurus* specimen (Fig. 1a-b). The specimen measured 397 mm in total length (336 mm fork length and 314 mm standard length) and weighed 350 g (INIDEP Ichthyo-logical collection N°867). Radiography of the specimen confirmed the presence of 31 vertebrae (Fig. 1c), and a tooth patch on the tongue was identified (Fig. 1d). This rare capture occurred near the Levante Bank, approximately 18 nm off the coast of Mar del Plata, Argentina. The occurrence of this species in these coastal areas was previously unknown. Coincidentally, on the same day, the anglers also caught a specimen of skipjack tuna *Katsuwonus pelamis* (Linnaeus, 1758), commonly referred to as 'barrilete' (Fig. 1e). This finding suggested the presence of warmer oceanic waters, which was subsequently confirmed through daily surface water satellite imagery. Notably, a significant plume of warmer surface waters (>26°C) was observed along the coastal regions of northern Argentina just before the day of the catch, highlighting the influence of warmer waters originating from Brazil (Fig. 2).

Although previous ichthyological reports have acknowledged the presence of *C. hippurus* in the region (Menni et al. 1984, Figueroa 2019), these records correspond to catches made within Uruguayan waters. In Uruguay, *C. hippurus* is commonly encountered in tuna fisheries and other pelagic fisheries (e.g. Marin et al. 1998). However, these catches have predominantly occurred in oceanic waters beyond the continental shelf. In contrast, the catches reported in this study occurred in coastal areas. Therefore, *C. hippurus* in these coastal regions is considered infrequent and might be attributed to warmer oceanic waters originating from the Brazil Current. This phenomenon is well-documented to transpire during the summer-autumn period, characterized by the maximum advection of these warmer waters towards the northern coasts of Argentina due to an increase in prevailing northeasterly winds (Balech 1986). Moreover, the size of the specimen indicates it is in an early stage of development, likely within a few months of life (Lessa & Santana 2016). This finding suggests the possibility of unknown spawning areas within a southern Brazilian stock (Duarte-Neto et al. 2008, Lessa et al. 2009).

Occurrences of tropical and subtropical fish species along the coasts of Uruguay and northern Argentina are frequent towards the end of the austral summer and the



Figure 1. Photographs illustrating the capture of a common dolphinfish (*Coryphaena hippurus*) specimen in coastal waters near Mar del Plata, Argentina. a-b) Showcase the dolphinfish specimen, while c) display its radiography, d) provide a close-up photograph of its tooth patch. Additionally, e) depicts a co-occurring skipjack tuna (*Katsuwonus pelamis*) specimen.

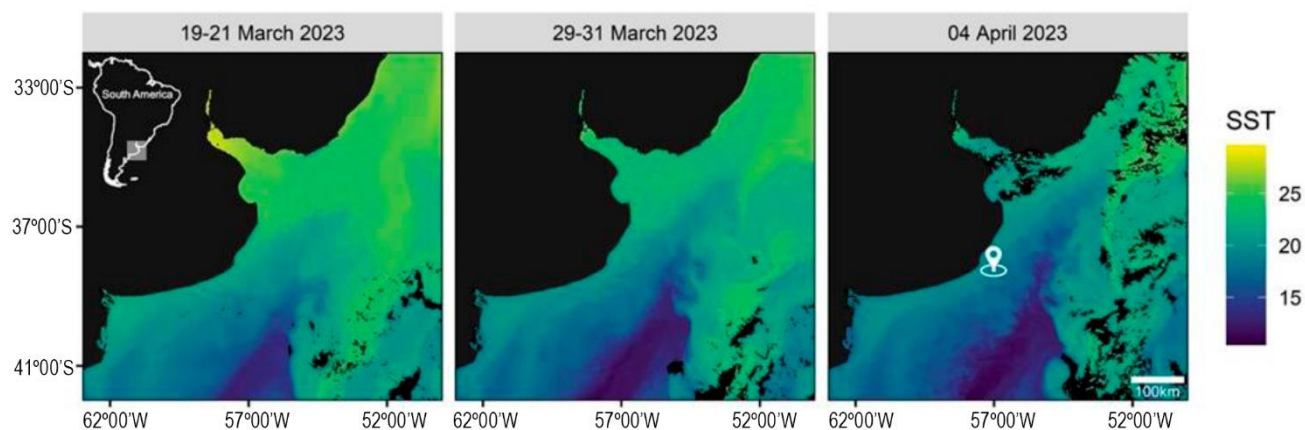


Figure 2. Daily sea surface temperature (SST, °C) distribution during common dolphinfish (*Coryphaena hippurus*) capture period near Mar del Plata, Argentina. The plots illustrate the influence of warmer waters originating from Brazil. Three-day averages are shown in the first two plots to ensure a comprehensive representation and minimize the impact of cloud cover, providing improved visualization. The location of the catch is indicated in the final plot. Black cells indicate missing data caused by cloud cover. Data was sourced from Coastalwatch (<https://coastwatch.pfeg.noaa.gov/>) at a 0.02° resolution.

beginning of the austral autumn (i.e. March-April), coinciding with peak seasonal sea surface temperature values. This phenomenon arises from the combination of prevailing NNE winds (Guerrero et al. 1997) and the southward influx of subtropical waters from the Brazilian continental shelf, stretching from Cabo Frío in Brazil to Bahía Blanca in Argentina (Palma et al. 2004, 2008). Additionally, the low discharge of freshwater from the Río de la Plata during this period acts as a physical barrier, favoring the southward distribution of tropical and subtropical species by minimizing the presence of low-salinity waters. This transport of marine fauna from tropical and subtropical regions to temperate latitudes aligns with the Warm Coastal Drift (WCD) hypothesis proposed by Balech (1986). Over the past two decades, numerous teleost species of tropical and subtropical origin, as well as other marine organisms, have been documented in temperate waters, providing further support for the WCD hypothesis (e.g. Scenna et al. 2006, Segura et al. 2009, Izzo et al. 2010, Solari et al. 2010, Bogan & Di Martino 2011, Milessi et al. 2012, 2013, 2015, Delpiani et al. 2013, Bruno et al. 2014, Trobbiani et al. 2014, Spath et al. 2015, Leoni et al. 2016, De Wysiecki et al. 2018). This trend is likely attributable to regional tropicalization, where tropical and subtropical environmental conditions are increasingly observed in areas previously characterized by temperate conditions (Cheung et al. 2012, Milessi et al. 2015). These individual observations play a crucial role in establishing and acknowledging a phenomenon that has been extensively documented in oceanographic studies

and in the fields of ecology and biology (Bertrand et al. 2019, Gianelli et al. 2023).

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