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RECENT RECORDS OF CRITICALLY ENDANGERED COMMON GUITARFISH *RHINOBATOS RHINOBATOS* (LINNAEUS, 1758) IN THE NORTHERN MEDITERRANEAN

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ABSTRACT

The Common Guitarfish, Rhinobatos rhinobatos*, a demersal elasmobranch listed as Critically Endangered on the IUCN Red List, has experienced severe population declines across its range, particularly in the northern Mediterranean, where it is widely considered locally extinct. This study reports two new records of* R. rhinobatos *from the Gulf of Taranto, on the Italian side of the Ionian Sea, representing the first confirmed sightings in this region in several decades. Given the species' vulnerability to unselective coastal fishing practices and the ongoing pressure in shallow marine habitats, these records are of considerable conservation significance. They highlight the urgent need to map critical habitats, refine bycatch mitigation measures, and reevaluate the species' regional conservation status. The detection of this species in areas previously thought to be devoid of it offers a rare opportunity to develop targeted management actions for its recovery.*

Key words: *Rhinobatos rhinobatos*, Critically Endangered, Mediterranean Sea, Elasmobranch conservation, Gulf of Taranto

RITROVAMENTI RECENTI DI PESCE CHITARRA *RHINOBATOS RHINOBATOS* (LINNAEUS, 1758), SPECIE IN PERICOLO CRITICO DI ESTINZIONE NEL MEDITERRANEO SETTENTRIONALE

SINTESI

Il pesce chitarra, Rhinobatos rhinobatos*, un elasmobranco demersale classificato come "in pericolo critico" nella Lista Rossa dell'IUCN, ha subito un grave declino della popolazione in tutto il suo areale, in particolare nel Mediterraneo settentrionale, dove è ampiamente considerato estinto a livello locale. Questo studio riporta due nuovi avvistamenti di* R. rhinobatos *nel Golfo di Taranto, sul versante italiano del Mar Ionio, che rappresentano i primi avvistamenti confermati in questa regione da diversi decenni. Data la vulnerabilità della specie alle pratiche di pesca costiera non selettiva e alla pressione continua sugli habitat marini poco profondi, questi avvistamenti rivestono una notevole importanza dal punto di vista della conservazione. Essi evidenziano l'urgente necessità di mappare gli habitat critici, perfezionare le misure di mitigazione delle catture accessorie e rivalutare lo stato di conservazione regionale della specie. Il ritrovamento di questa specie in aree che in precedenza si ritenevano prive di essa offre una rara opportunità per sviluppare azioni di gestione mirate al suo recupero.*

Parole chiave: *Rhinobatos rhinobatos*, in pericolo critico di estinzione, Mediterraneo, conservazione degli elasmobranchi, Golfo di Taranto

INTRODUCTION

Guitarfishes are cartilaginous fishes, members of the order Rhinopristiformes (Chondrichthyes: Elasmobranchii), which includes the families Rhinobathidae, Glaucostegidae and Pristidae (Barone *et al*., 2022). Formerly included in a single family Rhinobatidae (Serena, 2005), guitarfishes have undergone major revisionary changes in classification over recent years: the giant guitarfishes (Glaucostegidae) have been placed into their own family and genus, and the remaining genus, *Rhinobatos*, split into three genera (*Acroteriobatus*, *Rhinobatos* and *Pseudobatos*) (Ebert and Dando, 2020; Barone *et al*., 2022). These taxonomic revisions are critical for accurate species identification, historical data interpretation, and the application of conservation regulations. Globally, the family Rhinobatidae currently includes 39 species (Fricke *et al*., 2024; Van der Laan *et al*., 2024), but only Common Guitarfish *Rhinobatos rhinobatos* (Linnaeus, 1758) is present in the Mediterranean Sea (Barone *et al*., 2022).

Guitarfishes have already been identified as being amongst the most vulnerable of elasmobranch families (Kyne *et al*., 2024) as out of the 39 species belonging to the Family Rhinobatidae, 23 are assessed as threatened under the IUCN Red List of Threatened Species, including ten as Critically Endangered (CR). Common Guitarfish is targeted and caught as bycatch worldwide in a range of industrial and artisanal gears, including demersal trawl, longline, and gillnet. The meat is consumed locally and traded regionally as a dried or dried and smoked product, while the fins likely enter international trade (Bradai & Soldo, 2016). Severe population declines have been observed in many regions, and it is suspected that the Common Guitarfish has undergone severe population reduction. According to Bradai and Soldo (2016) the generation length of the common guitarfish is 13.5 years, and given evidence for local extinction in parts of the Mediterranean Sea and intense and continued fishing pressure in the region in the absence of any effective, enforced fisheries management that might protect the species or its habitat, it is suspected to have declined in the Mediterranean Sea by at least 50% over three generations (40.5 years).

Considering the aforementioned and considering that fishing pressure in shallow coastal habitats, which are the main habitats of the species, is unlikely to decrease, *R. rhinobatos* is assessed as Critically Endangered on a global level (Jabado *et al*., 2021). In the Mediterranean, the common guitarfish is assessed as Endangered (Bradai & Soldo, 2016), which may suggest a relatively better status compared to other regions. However, this could be due to the regional assessment being older than the global one. Even at the time of the Mediterranean assessment, it was noted that with more accurate, species-specific data in the future, the species might require uplisting to a higher threat category as that assessment was a conservative estimate based on limited information (Bradai & Soldo, 2016).

R. rhinobatos is a medium-sized guitarfish that inhabits coastal, sandy bottom habitat from the intertidal zone to about 100 m throughout coastal subtropical waters in the entire Mediterranean Sea and the eastern Atlantic from the Bay of Biscay in France to Angola (Capapé *et al*. 1975; Bradai & Soldo, 2016; Newell, 2017). It is widespread in the Mediterranean Sea, but most common along the southern and eastern coasts. It is subjected to fishing pressure throughout most of its range in inshore coastal habitats, mainly by small scale and subsistence fisheries. In the northern Mediterranean Sea (in European countries bordering the Mediterranean Sea), guitarfishes were historically quite common, but the Common Guitarfish's absence during research trawl surveys conducted from the Alboran to Aegean Sea and absence from landings from other northern Mediterranean regions suggest that it is now possibly locally extinct (Bradai & Soldo, 2016). Soldo and Lipej (2022) reported Common Guitarfish as historically present in the Adriatic Sea but considered it as regionally extinct nowadays. Psomadakis *et al*. (2009) also consider *R. rhinobatos* as locally extinct from the Tyrrhenian Sea as well as around Sicily. A similar conclusion is reported for the French Mediterranean coast (Capape *et al*., 2006), while the last observation in Greek waters of the Ionian Sea was reported decades ago (Giovos *et al*., 2022). The long history of fishing in the Mediterranean has driven the extirpation of this species from European countries bordering the Mediterranean Sea and likely led to declines in abundance throughout much of its remaining Mediterranean range. In areas of the southern and eastern Mediterranean Sea guitarfishes are common in catches, even as species of high commercial value, e.g. in the Gulf of Gabes, southern Tunisia (Echwikhi *et al*., 2013). Common Guitarfish also has high commercial value in Lebanon where is directly targeted (Lteif *et al*., 2016). According to Bilecenoğlu (2024) *R. rhinobatos* occurs along the Turkish coasts of Aegean and Mediterranean Seas, which is protected according to National Legislation of Fisheries Act, however, the population status of the species throughout its' distribution range in Turkish waters is still unclarified, particularly in the Iskenderun Bay, where it is landed as a bycatch and used for human consumption but as less commercial species (Başusta *et al*. 2008; Çek *et al*., 2009).

In the present article, two recent records of *R. rhinobatos* from the Gulf of Taranto, on the Italian side of the Ionian Sea, representing the first confirmed sightings in this region in several decades, are reported.

MATERIAL AND METHODS

As part of the LIFE European Sharks project, which aims, among other objectives, to increase public awareness of the essential role that sharks and rays play in the Mediterranean ecosystem, various activities were carried out to collect data on elasmobranchs, with a particular focus on rare and threatened species.

As a result of these efforts, data were obtained on two recent records of *Rhinobatos rhinobatos* from the Gulf of Taranto, Italian side of the Ionian Sea. The first specimen was accidentally caught in gillnets on 18 May 2019 near Santa Maria al Bagno (Nardò, Lecce), while the second was captured on 26 August 2023 in the vicinity of Torre Colimena (Taranto) (Fig. 1).

Both records were documented with photographic evidence (Fig. 2), clearly displaying distinguishing morphological features characteristic of *R. rhinobatos*: a long, wedge-shaped snout; widely separated rostral ridges along their entire length; large anterior nasal lobes reaching the inner corners of the nostrils; spiracles with two moderately developed folds, the outer one being more prominent; a thick tail with two large, widely spaced dorsal fins; and a plain greenish to reddish-brown dorsal surface marked with light bluish-grey longitudinal stripes and blotches with a white underside (Ebert & Dando, 2020).

RESULTS AND DISCUSSION

These two recent records of *Rhinobatos rhinobatos* are particularly important, as they represent the first confirmed sightings of the species in the northern Mediterranean in several decades. Hence, these findings reinforce the urgency of region-specific conservation actions and suggest the possible existence of overlooked remnant populations that may benefit from targeted protective measures. Although *R. rhinobatos* was historically presumed to be common in the western and northern Mediterranean Sea, recent studies have reported it as locally extinct in those areas, specifically in the coastal waters of Spain, France, and Italy (Jabado *et al.*, 2021), as well as in the Adriatic Sea (Soldo & Lipej, 2022). MEDITS experimental trawl surveys (from the Alboran Sea to the Aegean Sea) conducted between 1994 and 1999, along with trawl surveys in the Adriatic Sea from 1948 to 2005, failed to record any individuals (Relini & Piccinetti, 1991; Baino *et al.*, 2001), a trend that continued in more recent surveys (Follesa *et al.*, 2019). In Greek waters of the Ionian Sea, the last confirmed records of *R. rhinobatos* date back several decades (Giovos *et al.*, 2022). Furthermore, the Common Guitarfish is not even listed as a valid species in the chondrichthyan list of Calabria (southern Italy), which includes the opposite coast of the Gulf of Taranto (Leonetti *et al.*, 2020). In the Iskenderun Bay (northeastern Mediterranean Sea,

Fig. 1: Map of locations of records: ★ - 2019 record; ✶ - 2023 record.
Sl. 1: Zemljevid obravnavnega območja z lokalitetami ulova: ★ - zapis iz leta 2019; ✶ - zapis iz leta 2023.

Turkish coast), it is landed as a bycatch and used for human consumption but as less commercial species (Başusta *et al.* 2008; Çek *et al.*, 2009). Yağlıoğlu *et al.* (2015) found that the frequency of occurrence of *R. rhinobatos* in bottom trawl bycatch in İskenderun Bay was 11.1%; on the other hand, Bengil & Başusta (2018) found that the bycatch rate of the species in the eastern Mediterranean was 2.47%.

Given that *R. rhinobatos* is a demersal species primarily inhabiting shallow coastal waters, areas heavily impacted by a combination of subsistence, artisanal, and industrial fishing, its recent detection in regions where it was previously considered locally extinct is of great conservation significance. However, although the species is protected under various legal frameworks, Soldo & Lipej (2022) highlighted a major challenge affecting demersal chondrichthyans. Many of these species, which are often considered locally extinct across parts of the Mediterranean, are highly vulnerable to unselective fishing practices, particularly bottom trawling. Therefore, Soldo & Lipej (2022) argue that legal protection alone is insufficient to prevent bycatch, especially for species inhabiting inshore areas where fishing pressure is highest and a wide array of unselective bottom-fishing gear is used in both small- and large-scale fisheries. Thus, beyond incorporating existing conservation measures into national legislation, a key priority should be the identification and mapping of critical habitats for these species. A recent study revealed that guitarfishes are regularly aggregated in the same shallow embayments in summer months for parturition,

Fig. 2: Photos of the caught specimens: A - 2019 record; B- 2023 record.
Sl. 2: Fotografije ujetih primerkov: A - zapis iz leta 2019; B - zapis iz leta 2023.

which suggests site fidelity and underlines the importance of an integrated conservation approach for protecting not only the species, but also its' critical habitats (Bilgili & Kabasakal, 2023; Kyne *et al.*, 2024). These habitats can be relatively small, minimizing potential conflict with fisheries, but can be effective if bottom-fishing activities are restricted to highly selective gear types (Soldo & Lipej, 2022; Kyne *et al.*, 2024). In the case of *R. rhinobatos*, it is now evident that a probably very small, localized population persists in restricted areas of the Gulf of Taranto. Greater effort is therefore needed to accurately determine the species' area of occupancy in this region and to implement new conservation measures that, at a minimum, ensure the safe and unharmful release of individuals caught as bycatch.

To conclude, the recent records of *Rhinobatos rhinobatos* from the Gulf of Taranto represent the first confirmed presence of the species in the northern Mediterranean in decades, challenging prior assumptions of its regional extinction. These findings underscore the potential existence of remnant populations in areas previously considered devoid of the species. As *R. rhinobatos* is highly susceptible to coastal fishing activities, particularly due to its demersal nature and preference for shallow habitats, urgent measures are needed to mitigate bycatch and further population decline. Conservation priorities should include precise mapping of critical habitats, implementing selective fishing gear in these zones, and ensuring strict enforcement of existing protective regulations. Moreover, community engagement and fisher awareness are essential components in facilitating reporting and safe handling of future encounters. The rediscovery in the Gulf of Taranto provides a critical opportunity for renewed research, monitoring, and conservation strategies to prevent the complete disappearance of this critically endangered species from the region. Future studies should include genetic analyses to assess population structure and connectivity, which would help clarify whether these individuals represent an isolated relic population or part of a wider, underreported distribution.

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NEDAVNI ZAPISKI O POJAVLJANJU KRITIČNO OGROŽENEGA NAVADNEGA GOSLAŠA *RHINOBATOS RHINOBATOS* (LINNAEUS, 1758) V SEVERNEM SREDOZEMLJU

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POVZETEK

Navadni goslaš, Rhinobatos rhinobatos*, pridnena vrsta hrustančnic, ki je na rdečem seznamu IUCN uvrščena med kritično ogrožene vrste, je doživela močan upad populacije na celotnem območju razširjenosti, zlasti v severnem Sredozemlju, kjer velja za lokalno izumrlo. V pričujočem prispevku avtorji poročajo od dveh novih najdbah vrste* R. rhinobatos *iz Tarantskega zaliva na italijanski strani Jonskega morja, kar predstavlja prvi potrjeni opažanji v tej regiji v več desetletjih. Glede na ranljivost vrste za neselektivne obalne ribolovne prakse in nenehen pritisk na plitvo morsko okolje so ti zapisi o pojavljanju precejšnjega pomena za ohranjanje vrste. Poleg tega poudarjajo nujno potrebo po kartiranju kritičnih habitatov, izboljšanju ukrepov za zmanjšanje prilova in ponovni oceni regionalnega stanja ohranjenosti vrste. Odkritje te vrste na območjih, za katera se je prej mislilo, da v njih ni prisotna, ponuja redko priložnost za razvoj ciljno usmerjenih ukrepov za njeno obnovo.*

Ključne besede: *Rhinobatos rhinobatos*, kritično ogrožena vrsta, Sredozemsko morje, ohranjanje hrustančnic, Tarantski zaliv

REFERENCES

Baino, R., F. Serena, S. Ragonese, J. Rey & P. Rinelli (2001): Catch composition and abundance of Elasmobranchs based on the MEDITS program. Rapports de la Commission Internationale pour L'Exploration Scientifique de la Mer Mediterranee 36, 234.

Barone, M., C. Mazzoldi & F. Serena (2022): Sharks, rays and chimaeras in Mediterranean and Black Seas – Key to identification. Rome, FAO. https://doi.org/10.4060/cc0830en.

Başusta, N., S.A. Demirhan, E. Çiçek, **A. Başusta & T. Kuleli (2008):** Age and growth of the common guitarfish, *Rhinobatos rhinobatos*, in Iskenderun Bay (north-eastern Mediterranean, Turkey). J. Mar. Biol. Assoc. U. K., 88(04), 837-842.

Bengil, E.G.T. & N. Başusta (2018): Chondrichthyan species as by-catch: a review on species inhabiting Turkish waters. J. Black Sea/Mediterranean Environment 24, 288-305.

Bilecenoğlu, M. (2024): Diversity of fishes along the coast of Türkiye. Turk. J. Zool., 48, 589-616. https://doi.org/10.55730/1300-0179.3197.

Bilgili, A. & H. Kabasakal (2023): Encounters with threatened batoids from the perspective of a spearfisherman suggesting an aggregation site in southeastern Aegean Sea, Turkey. Regional Studies in Marine Science, 61, 102894. https://doi.org/10.1016/j.rsma.2023.102894.

Bradai, M.N. & A. Soldo (2016): *Rhinobatos rhinobatos* (Mediterranean assessment). The IUCN Red List of Threatened Species 2016: e.T63131A16527789. Accessed on 18 May 2025.

Capapé, C., J. Zaouali & J.P. Quignard (1975): Premières données sur le cycle de la reproduction de *Rhinobatos rhinobatos* (Linné, 1758) et de *Rhinobatos cemiculus* (Geoffroy Saint-Hilaire, 1817) des côtes tunisiennes. Archive de l'Institut Pasteur Tunis, 52, 47-60.

Capapé, C., O. Guélorget, Y. Vergne, A. Marquès & J.P. Quignard (2006): Skates and rays (Chondrichthyes) from waters off the Languedocian coast (southern France, northern Mediterranean). Annales, Ser. His. Nat, 16, 165-178.

Çek, S., N. Başusta, S.A. Demirhan & M. Karalar (2009): Biological observations on the common guitarfish *Rhinobatos rhinobatos* from İskenderunBay (Turkey, Eastern Mediterranean). Anim. Biol., 59, 211-230

Ebert, D.A. & M. Dando (2020): Field Guide to Sharks, Rays & Chimaeras of Europe and the Mediterranean. Princeton University Press; Princeton, NJ, USA, 384 pp.

Echwikhi, K., B. Saidi, & M.N. Bradaï (2013): Elasmobranchs longline fisheries in the Gulf of Gabès (southern Tunisia). J. Mar. Biol. Assoc. U. K., 64(1), 203-210.

Follesa, M.C., M.F. Marongiu, W. Zupa, A. Bellodi, A. Cau, R. Cannas, F. Colloca, M. Djurovic, I. Isajlovic, A. Jadaud, C. Manfredi, A. Mulas, P. Peristeraki, C. Porcu, S. Ramirez-Amaro, F. Salmerón Jiménez, F. Serena, L. Sion, I. Thasitis, A. Cau & P. Carbonara (2019): Spatial variability of Chondrichthyes in the northern Mediterranean. Sci. Mar., 83(S1), 81-100.

Fricke, R., W.N. Eschmeyer & R. Van der Laan (Eds.) (2024): Eschmeyer's Catalogue of Fishes: Genera, Species, References. Available online: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp (accessed on 18 May 2025).

Giovos, I., R.N. Aga-Spyridopoulou, F. Serena, A. Soldo, A. Barash, N. Doumpas, G.A. Gkafas, D. Katsada, G. Katselis, P. Kleitou, V. Minasidis, Y.P. Papastamatiou, E. Touloupaki & D.K. Moutopoulos (2022): An Updated Greek National Checklist of Chondrichthyans. Fishes, 7(4), 199.

Jabado, R.W., N. Pacoureau, M. Diop, M. Dia, A. Ba, A.B. Williams, J. Dossa, L. Badji, I. Seidu, E. Chartrain, G.H.L. Leurs, A. Tamo, G. Porriños, W.J. VanderWright, D. Derrick, P. Doherty, A. Soares, G. De Bruyne & K. Metcalfe (2021): *Rhinobatos rhinobatos*. The IUCN Red List of Threatened Species 2021: e.T63131A124461877. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T63131A124461877.en. Accessed on 18 May 2025.

Kyne, P.M., P. Carlson, R.M. Aitchison, S. Al Hameli, B.M. D'Alberto, A. Gonzalez-Pestana, M.J. Groeneveld, J. Hanna, D. Karnad & D.A. Ebert (2024): Global status and research priorities for rhino rays. Endang. Species Res., 55, 129-140.

Leonetti, F.L., G. Giglio, A. Leone, F. Coppola, C. Romano, M. Bottaro, F.R. Reinero, C. Milazzo, P. Micarelli, S. Tripepi & E. Sperone (2020): An updated checklist of chondrichthyans of Calabria (Central Mediterranean, southern Italy), with emphasis on rare species. Med. Mar. Sci., 21(3), 794-807.

Lteif, M., R. Mouawad, G. Khalaf, P. Lenfant & M. Verdoit-Jarraya (2016): Population biology of an endangered species: The common guitarfish *Rhinobatos rhinobatos* in Lebanese marine waters of the eastern Mediterranean Sea. J. Fish. Biol., 88, 1441-1459.

Newell, B.M. (2017): Status Review Report of Two Species of Guitarfish: *Rhinobatos rhinobatos* and *Rhinobatos cemiculus*. Report to National Marine Fisheries Service, Office of Protected Resources, 62 pp.

Psomadakis, P.N., N. Maio & M. Vacchi (2009): The chondrichthyan biodiversity in the Gulf of Naples (SW Italy, Tyrrhenian Sea): An historical overview. Cybium, 33, 199-209.

Relini, G. & C. Piccinetti (1991): Stato attuale dei censimenti ittici nei mari Italiani. Atti II Seminario Italiano Censimenti Faunistici dei Vertebrati. Supplemento alle Ricerche di Biologia della Selvaggina XVI, 29-54.

Serena, F. (2005): Field identification guide to the sharks and rays of the Mediterranean and Black Sea. FAO Species Identification Guide for Fishery Purposes. Rome, FAO. 97 pp.

Soldo, A. & L. Lipej (2022): An Annotated Checklist and the Conservation Status of Chondrichthyans in the Adriatic. Fishes, 7(5), 245. https://doi.org/10.3390/fishes7050245.

Van der Laan, R., R. Fricke & W.N. Eschmeyer (Eds.) (2024): Eschmeyer's Catalogue of Fishes: Classification. Available online: http://www.calacademy.org/scientists/catalog-of-fishes-classification/ (accessed on 18 May 2025).

Yağlıoğlu, D., T. Deniz, M. Gürlek, D. Ergüden & C. Turan (2015): Elasmobranch bycatch in a bottom trawl fishery in the Iskenderun Bay, northeastern Mediterranean. Cah. Biol. Mar., 56, 237-243.