



**HAL**  
open science

## **Lepidorhombus whiffiagonis, Whiff Megrin**

Bruno Chanet

► **To cite this version:**

| Bruno Chanet. *Lepidorhombus whiffiagonis*, Whiff Megrin. IUCN. 2020. <hal-04050817>

**HAL Id: hal-04050817**

**<https://hal.science/hal-04050817v1>**

Submitted on 29 Mar 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

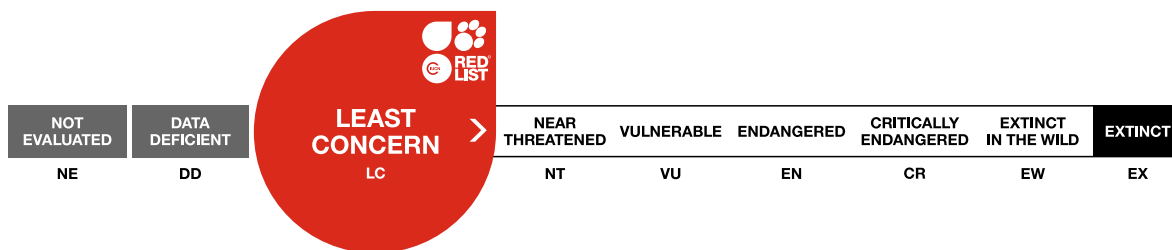
L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Copyright - All rights reserved

## *Lepidorhombus whiffiagonis*, Whiff Megrim

Assessment by: Abad, E., Cardinale, M., Chanet, B., Iriondo, A., Martínez Portela, P., Munroe, T.A. & Turan, C.



View on [www.iucnredlist.org](http://www.iucnredlist.org)

**Citation:** Abad, E., Cardinale, M., Chanet, B., Iriondo, A., Martínez Portela, P., Munroe, T.A. & Turan, C. 2021. *Lepidorhombus whiffiagonis*. *The IUCN Red List of Threatened Species 2021*: e.T198730A144939913. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T198730A144939913.en>

**Copyright:** © 2021 International Union for Conservation of Nature and Natural Resources

*Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged.*

*Reproduction of this publication for resale, reposting or other commercial purposes is prohibited without prior written permission from the copyright holder. For further details see [Terms of Use](#).*

*The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#). The IUCN Red List Partners are: [ABQ BioPark](#); [Arizona State University](#); [BirdLife International](#); [Botanic Gardens Conservation International](#); [Conservation International](#); [Missouri Botanical Garden](#); [NatureServe](#); [Re:wild](#); [Royal Botanic Gardens, Kew](#); [Sapienza University of Rome](#); [Texas A&M University](#); and [Zoological Society of London](#).*

*If you see any errors or have any questions or suggestions on what is shown in this document, please provide us with [feedback](#) so that we can correct or extend the information provided.*

## Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Pleuronectiformes	Scophthalmidae

**Scientific Name:** *Lepidorhombus whiffiagonis* (Walbaum, 1792)

### Synonym(s):

- *Lepidorhombus megastoma* Donovan, 1804
- *Pleuronectes pseudopalus* Pennant, 1812
- *Pleuronectes whiffiagonis* Walbaum, 1792

### Regional Assessments:

- Europe
- Mediterranean

### Common Name(s):

- English: Whiff Megrim, European Common Megrim, Whiff

## Assessment Information

**Red List Category & Criteria:** Least Concern [ver 3.1](#)

**Year Published:** 2021

**Date Assessed:** December 3, 2020

### Justification:

This widely distributed, demersal species is common in parts of its range and has an estimated generation length of 8 years. It is taken in commercial fisheries and also constitutes a proportion of the bycatch of demersal trawl fisheries in much of its range. Stock assessment estimates across most of its range in the Atlantic indicate biomass has been increasing over the past 8 to 19 years depending on the stock area. The exception to this trend is that spawning stock biomass of this species in Icelandic waters has declined by 82% over about the past two generations. The cause of this decline is not understood and requires further study. Abundance data are limited for the subpopulation in the Mediterranean Sea and should be examined further to gain knowledge about abundance trends for this species in this region. For the population, fishing activity is not driving global-scale declines approaching a threatened or Near Threatened level at this time, nor is it expected to do so in the near future. Therefore, this species is listed as Least Concern. It is recommended that improved monitoring of individual catch data for this species be conducted to improve future assessments.

## Geographic Range

### Range Description:

The species is distributed in the northeast Atlantic Ocean from the Barents Sea, the North Sea, off southern Iceland and south to the Azores and Cape Bojador (26°N), Western Sahara (Wienerroither *et al.* 2019, Landa *et al.* 2019). It is also present throughout the Mediterranean Sea (Nielsen 1986, Bauchot

1987), the Tyrrhenian Sea (Colloca *et al.* 2004), the Ionian Sea (Madurell *et al.* 2004, Mytilineou *et al.* 2005) and the Mediterranean coasts of Turkey (Turan *et al.* 2007). The depth range for this species is 20-850 metres (Macdonald *et al.* 2014, Šantić *et al.* 2017), but most commonly it occurs from 100-200 m (MFRI 2020).

**Country Occurrence:**

**Native, Extant (resident):** Albania; Algeria; Belgium; Bosnia and Herzegovina; Croatia; Cyprus; Denmark; Egypt; Faroe Islands; France; Germany; Gibraltar; Greece; Iceland; Ireland; Israel; Italy; Lebanon; Libya; Malta; Monaco; Montenegro; Morocco; Netherlands; Norway; Portugal; Slovenia; Spain; Sweden; Syrian Arab Republic; Tunisia; Turkey; United Kingdom; Western Sahara

**FAO Marine Fishing Areas:**

**Native:** Atlantic - northeast

**Native:** Atlantic - eastern central

**Native:** Mediterranean and Black Sea

# Distribution Map

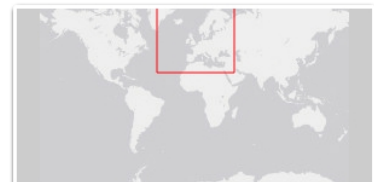
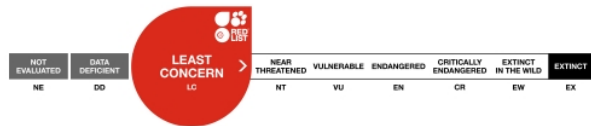


## Legend

■ EXTANT (RESIDENT)

Compiled by:

IUCN Marine Biodiversity Unit/GMSA 2020



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



## Population

This species is fairly common across its range (Went and Kennedy 1976, D'Onghia *et al.* 2003, Politou *et al.* 2003, Mytilineou *et al.* 2005, Gerritsen *et al.* 2010). Catch data generally comprises landings for both *L. boscii* and *L. whiffiagonis*. *Lepidorhombus whiffiagonis* occurs more abundantly in shallower depths (100-200 m), while *L. boscii* is more abundant in deeper depths (100-350 m). In addition, *L. boscii* appears to tolerate saltier bottom waters than does *L. whiffiagonis* (Abad *et al.* 2020). *Lepidorhombus whiffiagonis* is more common than *L. boscii* in the northern parts of their range (Rodríguez-Gutierrez *et al.* 2015). According to genetic studies, connectivity between Atlantic and Mediterranean subpopulations is low (Danancher and Garcia-Vazquez 2009), but further work is needed to determine connectivity between subpopulations in the Celtic Sea and Bay of Biscay (ICES 2015). In the Atlantic Ocean, it is caught in the following ICES divisions: 4a and 6a (northern North Sea and West of Scotland); 6b (Rockall Trough); 7b–k, 8a, 8b and 8d (west and southwest of Ireland, Bay of Biscay including Porcupine Bank); 8c and 9a (Cantabrian Sea and Atlantic Iberian waters).

**Atlantic:** In the stock in the northern North Sea and west of Scotland (Divs. 4a and 6a), biomass of both species has been estimated for the years 1985-2019. Biomass has been increasing in these areas for the past 15 years since the mid-2000s. Fishing effort has declined since the mid-1990s. *Lepidorhombus whiffiagonis* constitutes the majority of the commercial catches compared to the smaller contribution of *L. boscii* (ICES 2019). The value of this fishery in the North Sea has increased in the recent decade and the distribution and abundance of both species has extended northward (Macdonald *et al.* 2014).

Off Iceland, this species is taken as bycatch in relatively small quantities and is not directly targeted. Spawning stock biomass (SSB) off Iceland has been estimated for this species for the years 1985-2020. SSB declined from the late-1980s to 2000, then recovered by 2006, and gradually declined to 2018 after which it declined somewhat steeply in 2019 and 2020. Over the past 14 years since 2006, SSB has declined by 82%. The juvenile abundance index has been low since about 2012. The cause of this decline is not understood. Three generations ago, in about 1996, SSB was at a similar level as it was in 2020. Catch data are highly uncertain prior to 2009 as this species was not well reported in logbooks in the past. The occurrence and abundance, as well as annual total catches of *L. boscii* have been increasing off Iceland in the recent decade (Valdimarsson *et al.* 2012, MFRI 2020).

In the stock in the Rockall Trough (Div. 6b), biomass of both species has been estimated for the years 2005-2019. Biomass has been generally increasing or stable over the past 8 years since 2012. There is, however, high uncertainty associated with the biomass index. Fishing mortality estimates also uncertain due to poor estimates of discard rates have been below the recommended limit since about 2007 (ICES 2019).

In the stock west and southwest of Ireland and in the Bay of Biscay (ICES Divisions 7b–k, 8a, 8b and 8d), spawning stock biomass (SSB) has been estimated for the years 1984-2019. SSB has generally increased over the past 14 years since the time series low in 2006, and has sharply increased since 2015 to levels exceeding those in the beginning of the time series. Recruitment has been relatively stable over time and has been above average in the most recent years. Fishing mortality has been mostly declining since the mid-2000s (ICES 2019; 2020). The abundance of *L. boscii* is low in the area from the Celtic Sea (Subarea 7) to Bay of Biscay (Divisions 8abd) compared to that of *L. whiffiagonis* (Rodríguez-Gutierrez *et al.* 2015). According to the fishery independent survey conducted annually by Spain since 2001 on the

Porcupine Bank (Divs. 7c and 7k), biomass and abundance of this species has increased over the past 19 years (Ruiz-Pico *et al.* 2020).

Both *L. boscii* and *L. whiffiagonis* in the stock from the Cantabrian Sea and Atlantic Iberian waters (ICES Divisions 8c and 9a) are caught in the same fishery. *Lepidorhombus whiffiagonis* is caught in mixed-species demersal fisheries off Portugal and Spain with 'megrim' representing about 6-27% (between 1986 and 2017) of the annual total landings, and *L. boscii* constituting the large majority of those landings. Discarding of undersized individuals is frequent and historically not well quantified, and this introduces uncertainty to the management of this species (Abad *et al.* 2020). Spawning stock biomass (SSB) has been estimated for the years 1986-2020. SSB has generally increased over the past 12 years since the time series low in 2008, and has sharply increased since 2015. Recruitment was particularly high from 2015 to 2019. Fishing mortality has been variable with a generally declining trend since the early 1990s and a sharp decline since 2015 (ICES 2020).

**Mediterranean Sea:** This species is common and abundant in the central and southern Adriatic Sea and is a main target species of commercial trawl fisheries operating in that area (Danancher and Garcia-Vazquez 2009, Šantić *et al.* 2017). It is also trawled off the Aegean and northeastern Mediterranean coasts of Turkey (Keskin *et al.* 2011). Data are not available to quantify subpopulation trends in this region (M. Cardinale and P. Martinez pers. comm. 2020).

**Current Population Trend:** Increasing

## Habitat and Ecology (see Appendix for additional information)

This demersal species occurs on soft mud or muddy sand bottoms (Muus and Dahlstrøm 1989, Chanet and Branellec 2008). It prefers fine-medium sand sediments on the middle-outer shelf at depths between 150-250 m (Fernández-Zapico *et al.* 2017). Growth in larvae and juveniles are influenced by cyclical interannual environmental and feeding conditions (Landa *et al.* 2019). The maximum total length is 70 cm (MFRI 2020). The length-weight relationship is reported in Silva *et al.* (2013).

Maturity occurs at 2-4 years (Macdonald *et al.* 2013, Fernández-Zapico *et al.* 2017). Longevity is 14 years (Landa and Piñeiro 2000, Abad 2015). Natural mortality in the Bay of Biscay and Iberian Waters Ecoregion is estimated to be 0.2 (ICES 2020). When applying the following equation recommended by the IUCN Red List methods:  $1/\text{adult mortality} + \text{age of first reproduction}$ , the generation length is calculated to be about 8 years.

**Systems:** Marine

## Use and Trade

This species is almost exclusively caught in mixed bottom-trawl fisheries targeting demersal fishes, including *L. boscii*, hake, anglerfish and species of lobsters (*Nephrops* species). *Lepidorhombus boscii* is one of the most important species in terms of commercial demersal fisheries on the Galician shelf (Fuertes 1978), and the main markets for this species are located in Spain (Crego-Prieto *et al.* 2012). It is also commercially important in the Mediterranean (Vassilopoulou 2006, Šantić *et al.* 2017). Smaller individuals are frequently discarded at sea as unwanted bycatch (ICES 2020).

## Threats

This species is targeted by commercial fishing interests and also constitutes a portion of the bycatch of demersal trawl fisheries. Thus far, these fishing activities are not driving global-scale declines approaching a threatened or Near Threatened level for this species at this time, nor is it expected that fishing activities will result in a threatened or Near Threatened assessment in the near future.

## **Conservation Actions (see Appendix for additional information)**

The International Council for the Exploration of the Sea (ICES) provides management advice for setting combined total allowable catch limits for this species and *L. boscii* in the northeast Atlantic waters. It has been recommended to amend this management strategy to separate catch limits by individual species to avoid overexploitation of either species. Improvements are needed in data collection on estimating discards (ICES 2019). Regulations set by the European Union include total allowable catch limits, bycatch monitoring and minimum size limits for fishes landed by commercial fisheries and the Landing Obligation that prohibits the discarding of species which are subject to catch limits and those which are subject to minimum landing sizes (MLS) in the Mediterranean. Also under consideration in Iberian waters is the use of spatial closures and an increase in gear selectivity to reduce capture of immature individuals (Abad *et al.* 2020).

This species was assessed as Least Concern in the European regional assessment conducted in 2014.

## **Credits**

<b>Assessor(s):</b>	Abad, E., Cardinale, M., Chanet, B., Iriondo, A., Martínez Portela, P., Munroe, T.A. & Turan, C.
<b>Reviewer(s):</b>	Linardich, C.
<b>Facilitator(s) and Compiler(s):</b>	Linardich, C.

## Bibliography

- Abad, E. 2015. Reconsidering the *Lepidorhombus whiffiagonis* in VIIIc&IXa stock boundaries. Working Document for the ICES Stock Identification Methods Working Group 2015. Instituto Español de Oceanografía.
- Abad, E., Pennino, M.G., Valeiras, J., Vilela, R., Bellido, J.M., Punzón, A. and Velasco, F. 2020. Integrating spatial management measures into fisheries: The *Lepidorhombus* spp. case study. *Marine Policy* 116: 103739.
- Bauchot, M.-L. 1987. Poissons osseux. In: W. Fischer, M.-L. Bauchot and M. Schneider (eds), *Fiches FAO d'identification pour les besoins de la pêche (rev. 1). Méditerranée et mer Noire. Zone de pêche 37*, pp. 891-1421. Commission des Communautés Européennes and FAO, Rome.
- Chanet, B. and Branellec, A.L. 2008. Expliquer la biologie des espèces par leurs relations de parenté. Exemple des Scopthalmidae [Teleostéens : Pleuronectiformes]. *Bulletin de la Société des Sciences naturelles de l'Ouest de la France* 30(2): 81-89.
- Danancher, D. and Garcia-Vazquez, E. 2009. Population differentiation in megrim (*Lepidorhombus whiffiagonis*) and four spotted megrim (*Lepidorhombus boscii*) across Atlantic and Mediterranean waters and implications for wild stock management. *Marine Biology* 156(9): 1869-1880.
- D'Onghia, G., Mastrototaro, F., Matarrese, A., Politou, C.Y. and Mytilineou, C.H. 2003. Biodiversity of the upper slope demersal community in the Eastern Mediterranean: preliminary comparison between two areas with and without trawl fishing. *Journal of Northwest Atlantic Fishery Science* 31: 263-273.
- Fernández-Zapico, O., Punzón, A., Serrano, A., Landa, J., Ruiz-Pico, S. and Velasco, F. 2017. Environmental drivers of the distribution of the order Pleuronectiformes in the Northern Spanish Shelf. *Journal of Sea Research* 130: 217-228.
- Gerritsen, H. D., McGrath, D., Lordan, C., & Harlay, X. (2010) . Differences in habitat selection of male and female megrim ( *Lepidorhombus whiffiagonis*, Walbaum) to the west of Ireland. A result of differences in life-history strategies between the sexes? *Journal of Sea Research* 64(4): 487-493.
- ICES. 2015. Annex 9: Evaluation of Megrim Stock Identity in ICES Subareas VIIIc and IXa. Interim Report of the Stock Identification Methods Working Group (SIMWG) ICES CM 2015/SSGEPI:13. International Council for the Exploration of the Sea.
- ICES. 2019. Megrim (*Lepidorhombus* spp.) in Division 6.b (Rockall). Report of the ICES Advisory Committee. International Council for the Exploration of the Seas.
- ICES. 2019. Megrim (*Lepidorhombus* spp.) in divisions 4.a and 6.a (northern North Sea, West of Scotland). Report of the ICES Advisory Committee. International Council for the Exploration of the Seas.
- ICES. 2019. Megrim (*Lepidorhombus whiffiagonis*) in divisions 7.b-k, 8.a-b, and 8.d (west and southwest of Ireland, Bay of Biscay). Report of the ICES Advisory Committee. International Council for the Exploration of the Seas.
- ICES. 2019. Megrim (*Lepidorhombus whiffiagonis*) in divisions 8.c and 9.a (Cantabrian Sea and Atlantic Iberian waters). Report of the ICES Advisory Committee. International Council for the Exploration of the Seas.
- ICES. 2020. Megrim (*Lepidorhombus whiffiagonis*) in divisions 8.c and 9.a (Cantabrian Sea and Atlantic Iberian waters). Report of the ICES Advisory Committee, 2020. ICES Advice 2020, meg.27.8c9a. International Council for the Exploration of the Sea.

ICES. 2020. Working Group for the Bay of Biscay and the Iberian Waters Ecoregion. In: Silva, C. and Villanueva, C-M. (eds), ICES Scientific Reports 2:49. International Council for the Exploration of the Sea.

IUCN. 2021. The IUCN Red List of Threatened Species. Version 2021-2. Available at: [www.iucnredlist.org](http://www.iucnredlist.org). (Accessed: 04 September 2021).

Keskin, Ç., Turan, C., Ergüden, D. 2011. Distribution of the Demersal Fishes on the Continental Shelves of the Levantine and North Aegean Seas (Eastern Mediterranean). *Turkish Journal of Fisheries and Aquatic Sciences* 11(3): 413-423.

Landa, J. and Piñeiro, C. 2000. Megrim (*Lepidorhombus whiffiagonis*) growth in the North-eastern Atlantic based on back-calculation of otolith rings. *ICES Journal of Marine Science* 57(4): 1077-1090.

Landa, J., Fontenla, J. and Rodriguez-Marin, E. 2019. Megrim (*Lepidorhombus whiffiagonis*) in northern Iberian waters: Age determination corroboration, growth, abundance and mortality of the year-classes. *Continental Shelf Research* 183: 1-13.

Macdonald, P., Angus, C.H. and Marshall, C.T. 2013. Spatial variation in life history characteristics of common megrim (*Lepidorhombus whiffiagonis*) on the Northern Shelf. *Journal of Sea Research* 75: 62-68.

Macdonald, P., Angus, C.H., Cleasby, I.R. and Marshall, C.T. 2014. Fishers' knowledge as an indicator of spatial and temporal trends in abundance of commercial fish species: megrim (*Lepidorhombus whiffiagonis*) in the northern North Sea. *Marine Policy* 45: 228-239.

Madurell, T., Cartes, J.E. and Labropoulou, M. 2004. Changes in the structure of fish assemblages in a bathyal site of the Ionian Sea (eastern Mediterranean). *Fisheries Research* 66(2-3): 245-260.

MFRI. 2020. Megrim – *Lepidorhombus whiffiagonis*. MFRI Assessment Reports. Marine and Freshwater Research Institute.

Muus, B.J. and Dahlstrøm, P. 1989. *Havfisk og Fiskeri i Nordvesteuropa*. GEC Gads Forlag, København.

Mytilineou, C., Politou, C.Y., Papaconstantinou, C., Kavadas, S., D'Onghia, G. and Sion, L. 2005. Deep-water fish fauna in the Eastern Ionian Sea. *Belgium Journal of Zoology* 135(2): 229-233.

Nielsen, J.G. 1986. Scophthalmidae. In: Whitehead, P.J.P., Bauchot, M.-L., Hureau, J.-C., Nielsen, J., Tortonese, E. (ed.), *Fishes of the North-Eastern Atlantic and the Mediterranean*, pp. 1287-1293. UNESCO, Paris.

Politou, C.Y., Kavadas, S., Mytilineou, C., Tursi, A., Carlucci, R. and Lembo, G. 2003. Fisheries resources in the deep waters of the eastern Mediterranean (Greek Ionian Sea). *Journal of Northwest Atlantic Fishery Science* 31: 35-46.

Rodríguez-Gutierrez, J., Zarauz, L., Mugerza, E., Cebrián, J.L., Artetxe, I. 2015. Spanish onshore sampling of *Lepidorhombus spp.* Instituto Español de Oceanografía and AZTI Tecnalia.

Ruiz-Pico, S., Fernández-Zapico, O., Blanco, M., Velasco, F., Baldó, F. 2020. Results on *Merluccius merluccius* (hake), *Lophius budegassa* (black anglerfish) and *Lophius piscatorius* (white anglerfish), *Lepidorhombus boschii* (four-spot megrim) and *Lepidorhombus whiffiagonis* (megrim) from the Spanish Ground Fish Survey on the Porcupine bank (NE Atlantic). Working Document to be presented to the Working Group for the Bay of Biscay and the Iberian Waters Ecoregion. ICES WGBIE.

Šantić, M., Pallaoro, A., Markov, M. and Jardas, I. 2017. Morphometric and meristic traits of megrim, *Lepidorhombus whiffiagonis* (Walbaum, 1792) from the eastern central Adriatic Sea. *Archives of Biological Sciences* 69(4): 665-670.

Silva, J.F., Ellis, J.R. and Ayers, R.A. 2013. Length-weight relationships of marine fish collected from around the British Isles. 150 Science Series Technical Report, Cefas Lowestoft.

Turan, C., Ozturk, B., Erguden, D., Gurlek, M., Yaglioglu, D.A., Uygur, N. 2007. Atlas and systematics of marine bony fishes of Turkey. *Atlas of marine bony fishes of Turkey*, pp. 83-485. Nobel Publishing House, Adana.

Valdimarsson, H., Astthorsson, O. and Palsson, J. 2012. Hydrographic variability in Icelandic waters during recent decades and related changes in distribution of some fish species. *ICES Journal of Marine Science* 69(5): 816-825.

Went, A.E.J. and Kennedy, M. 1976. *List of Irish Fishes*. Stationery Office, Dublin.

Wienerroither, R., Bjelland, O., Jensen, G. and Sveistrup, A.K. 2019. Teleostei, Scopthalmidae: four-spot megrim spotted in Norwegian waters. *Fauna Norvegica* 39: 26-29.

## Citation

Abad, E., Cardinale, M., Chanet, B., Iriondo, A., Martínez Portela, P., Munroe, T.A. & Turan, C. 2021. *Lepidorhombus whiffiagonis*. *The IUCN Red List of Threatened Species* 2021: e.T198730A144939913. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T198730A144939913.en>

## Disclaimer

To make use of this information, please check the [Terms of Use](#).

## External Resources

For [Supplementary Material](#), and for [Images and External Links to Additional Information](#), please see the Red List website.

# Appendix

## Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
9. Marine Neritic -> 9.4. Marine Neritic - Subtidal Sandy	Resident	Suitable	Yes
9. Marine Neritic -> 9.5. Marine Neritic - Subtidal Sandy-Mud	Resident	Suitable	Yes
9. Marine Neritic -> 9.6. Marine Neritic - Subtidal Muddy	Resident	Suitable	Yes
11. Marine Deep Benthic -> 11.1. Marine Deep Benthic - Continental Slope/Bathyl Zone (200-4,000m)	-	-	-

## Use and Trade

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

End Use	Local	National	International
Food - human	No	Yes	No

## Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Action in Place
In-place species management
Harvest management plan: Yes

## Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Action Needed
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management

## Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
3. Monitoring -> 3.2. Harvest level trends

## Additional Data Fields

<b>Distribution</b>
Lower depth limit (m): 850
Upper depth limit (m): 20
<b>Habitats and Ecology</b>
Generation Length (years): 8

## The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#).

The IUCN Red List Partners are: [ABQ BioPark](#); [Arizona State University](#); [BirdLife International](#); [Botanic Gardens Conservation International](#); [Conservation International](#); [Missouri Botanical Garden](#); [NatureServe](#); [Re:wild](#); [Royal Botanic Gardens, Kew](#); [Sapienza University of Rome](#); [Texas A&M University](#); and [Zoological Society of London](#).