

Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

## IZMIR BAY ISRA

### Mediterranean and Black Seas Region

#### SUMMARY

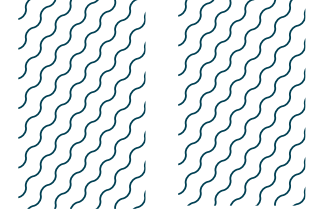
Izmir Bay is located in the eastern Aegean Sea in Türkiye. It is characterised by muddy and sandy substrates and includes four lagoons (Kirdeniz, Homa, Cilazmak, and Tas) that are located near the Gediz River delta. The area overlaps with a Wildlife Protected Area, the Central Aegean Sea Ecologically or Biologically Significant Marine Area, four Key Biodiversity Areas, and one Ramsar site. Within the area there are: **threatened species**; **reproductive areas**; and **feeding areas** (Blackchin Guitarfish *Glaucostegus cemiculus*).

#### CRITERIA

**Criterion A - Vulnerability;**  
**Sub-criterion C1 - Reproductive Areas; Sub-criterion C2 - Feeding Areas**

— —  
**TÜRKIYE**  
 — —  
**0-10 metres**  
 — —  
**135.4 km<sup>2</sup>**  
 — —





## DESCRIPTION OF HABITAT

Izmir Bay is located on the western coast of the Anatolian peninsula, Türkiye and is connected to the eastern Aegean Sea. The mouth of the bay is ~20 km wide and 40 km long, while the inner bay is ~5-7 km wide and 24 km long. Sea surface temperature and salinity are influenced by the discharges of the Gediz River, the inputs of the Aegean Sea, and the strong evaporation during the boreal summer (Sayin 2003). This area is characterised by sandy and muddy substrates. Maximum sea surface temperatures occur in the boreal summer (~24°C) while minimum temperatures occur in winter (~16°C; Pulat & Özel 2003; Sayin 2023). Within the bay, there are four lagoons that are important habitats: Homa (the largest), Kirdeniz, Cilazmak, and Tas (WWF 2008). Homa Lagoon has two water entrances. The depth of this lagoon is 0.2-1.5 m (Yurur 2008). These lagoons are not characterised by drastic seasonal changes in sea surface temperature and salinity as seen in other parts of the area and constant conditions are observed year-round (Sayin 2003).

Izmir Bay overlaps with the Central Aegean Sea Ecologically or Biologically Significant Marine Area (CBD 2023). It also overlaps with four Key Biodiversity Areas: Gediz Delta, Çiçek Islands, Karaburun and İldir Strait Islands, and Kizildag Izmir (KBA 2023a, 2023b, 2023c, 2023d). In addition, the lagoons overlap with a Ramsar Site, Gediz Delta (Ramsar 2023). These lagoons are also a Wildlife Protected Area and a National Bird Protection Area (WWF 2008).

This Important Shark and Ray Area is delineated from surface waters (0 m) to a depth of 10 m, based on the bathymetry of the area.

## ISRA CRITERIA

### CRITERION A – VULNERABILITY

The one Qualifying Species within the area is considered threatened with extinction according to the IUCN Red List of Threatened Species™. The Blackchin Guitarfish is assessed as Critically Endangered (Kyne & Jabado 2019)

### SUB-CRITERION C1 – REPRODUCTIVE AREAS

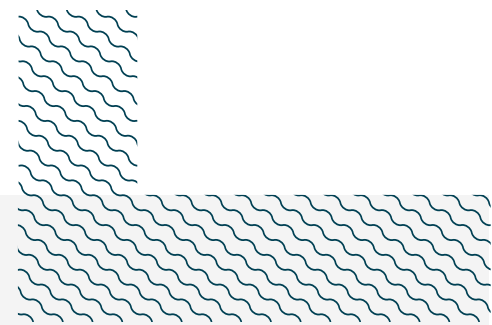
Izmir Bay is an important reproductive area for one ray species.

Within the bay, the lagoon systems provide a suitable habitat for neonate and juvenile Blackchin Guitarfish. Monthly sampling conducted between 2015-2016 recorded 122 individuals (Bengil 2018; Bengil et al. 2018, 2020). From those individuals, 10 had sizes (30-40 cm total length [TL]) close to the reported size-at-birth (~34 cm TL; Last et al. 2016). In addition, most individuals (~97) were young-of-the-year (<70 cm TL). The smallest individuals were reported in the summer and early fall and an increase in total length was observed throughout the months. Neonates and juveniles have been reported up to 2018, confirming the regular presence of these life-stages (Bengil 2020). This area also supports Blackchin Guitarfish at other life stages, including large, mature males and females in central parts of the bay (Akyol & Capapé 2014).



## SUB-CRITERION C2 - FEEDING AREAS

Izmir Bay is an important feeding area for Blackchin Guitarfish. Stomach content analysis from 122 individuals, with 69% characterised as full (32 females and 52 males) showed that the dominant prey are crustaceans (Index of Relative Importance [IRI] = 99.5%), from which the most important prey is the Mediterranean Green Crab *Carcinus aestuarii* (Bengil et al. 2020). This crab is the dominant crustacean in the lagoon system that forms around the Gediz River mouth (Acarli 2007), indicating that young guitarfishes take advantage of these habitats for feeding.



---

### Acknowledgments

Elizabeth Grace Tunka Bengil (Kyrenia University Faculty of Maritime Studies), Ismet Saygu (University Faculty of Fisheries), and Emiliano García-Rodríguez (IUCN SSC Shark Specialist Group - ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2023 ISRA Region 3 - Mediterranean and Black Seas workshop for their contributions to this process.

This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

This project was funded by the Shark Conservation Fund, a philanthropic collaborative pooling expertise and resources to meet the threats facing the world's sharks and rays. The Shark Conservation Fund is a project of Rockefeller Philanthropy Advisors.

### Suggested citation

**IUCN SSC Shark Specialist Group. 2023.** Izmir Bay ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

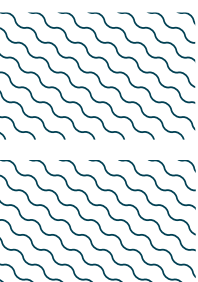
## QUALIFYING SPECIES

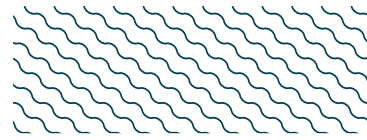
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
RAYS													
<i>Glaucostegus cemiculus</i>	Blackchin Guitarfish	CR	0-100	X		X	X						

## SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
<b>SHARKS</b>		
<i>Isurus oxyrinchus</i>	Shortfin Mako	EN
<i>Mustelus mustelus</i>	Common Smoothhound	EN
<i>Mustelus punctulatus</i>	Blackspotted Smoothhound	VU
<i>Scyliorhinus canicula</i>	Smallspotted Catshark	LC
<i>Scyliorhinus stellaris</i>	Nursehound	VU
<b>RAYS</b>		
<i>Aetomylaeus bovinus</i>	Duckbill Eagle Ray	CR
<i>Dasyatis pastinaca</i>	Common Stingray	VU
<i>Dasyatis tortonesei</i>	Tortonese's Stingray	DD
<i>Gymnura altavela</i>	Spiny Butterfly Ray	EN
<i>Leucoraja naevus</i>	Cuckoo Skate	LC
<i>Myliobatis aquila</i>	Common Eagle Ray	CR
<i>Raja clavata</i>	Thornback Skate	NT
<i>Raja miraletus</i>	Brown Skate	LC
<i>Raja montagui</i>	Spotted Skate	LC
<i>Raja polystigma</i>	Speckled Skate	LC
<i>Raja radula</i>	Rough Skate	EN
<i>Rostroraja alba</i>	White Skate	EN
<i>Tetronarce nobiliana</i>	Great Torpedo Ray	LC
<i>Torpedo marmorata</i>	Marbled Torpedo Ray	VU

IUCN Red List of Threatened Species Categories are available by searching species names at [www.iucnredlist.org](http://www.iucnredlist.org) Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.





## SUPPORTING INFORMATION

There are additional indications that Izmir Bay is an important area for range-restricted species and reproductive purposes for two shark and two ray species.

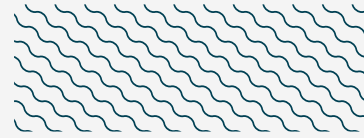
Izmir Bay holds the presence of Rough Skate as a resident range-restricted species. Rough Skate was reported year-round in the catch of trawl nets within the area between 2007–2009 (Gurbet et al. 2013; Eronat & Özaydın 2014). This species occurs only in the Mediterranean Sea Large Marine Ecosystem. More information is needed to confirm the importance of this area for this species.

Neonate Common Smoothhound individuals measuring 34–41 cm TL were reported as bycatch in the region from 2006–2009. This size is close to the reported size-at-birth for the species (34–42 cm TL; Saïdi et al. 2008). They were caught at depths between 28–55 m (Ceyhan et al. 2010; Eronat & Özaydın 2014). More evidence is needed to confirm the importance of this area in relation to other areas in the region.

Recently, neonate Shortfin Mako ( $n = 2$ ) have been reported from fisheries data from within the area (Bengil et al. 2019). However, more information is needed to understand if this is an important reproductive area for this species.

Neonate Duckbill Eagle Ray ( $n = 3$ ) have been reported from the area based on captures from commercial trawlers in 2016. Animals collected measured 38–61 cm disc width (DW) (Akyol et al. 2017) but more information is needed to confirm if this is an important reproductive area for the species.

Neonate Spiny Butterfly Rays have been reported as bycatch in different fisheries for multiple years. Between 2005–2009 (Özaydın et al. 2007; Eronat & Özaydın 2014) and 2018 (Taylan et al. 2022), individuals measured ~31–37.6 cm DW, which is close to the reported size-at-birth for the species (38–44 cm DW; Last et al. 2016). In addition, the presence of a pregnant female with embryos in an advanced stage of development was reported as bycatch of trammel nets in April 2018 (Taylan et al. 2019). More evidence is needed to confirm the importance of this area in relation to other areas in the region.



## REFERENCES

- Acarli D. 2007.** Studies on fisheries and improving its fishery in Homa Lagoon. Unpublished PhD Thesis, Ege University, Izmir.
- Akyol O, Capapé C. 2014.** Distribution of blackchin guitarfish *Rhinobatos cemiculus* E. Geoffroy Saint-Hilaire, 1817 (Elasmobranchii: Rhinobatidae) with first records from İzmir Bay (Turkey, northeastern Aegean Sea). *Turkish Journal of Zoology* 38(4): 460–465. <https://doi.org/10.3906/zoo-1307-32>
- Akyol O, Aydın I, El Kamel-Moutalibi O, Capapé C. 2017.** Bull ray, *Aetomylaeus bovinus* (Geoffroy Saint-Hilaire, 1817 (Myliobatidae) in the Mediterranean Sea and captures of juveniles from İzmir Bay (Aegean Sea, Turkey). *Journal of Applied Ichthyology* 33: 1200–1203. <https://doi.org/10.1111/jai.13420>
- Bengil EGT. 2018.** Genetic features of some cartilaginous species inhabiting Aegean and Mediterranean Sea and bioecological features of *Glaucostegus cemiculus* (Geoffroy Saint-Hilaire, 1817). Unpublished PhD Thesis, Ege University, Izmir.
- Bengil EGT. 2020.** Can opportunistic methodologies provide information on elasmobranchs? A case study from Seas around Turkey. *Journal of Wildlife and Biodiversity* 4(Special issue): 68–77. <https://doi.org/10.22120/jwb.2020.136094.1185>
- Bengil EGT, Akalın M, Tüney Kızılkaya İ, Bengil F. 2019.** Biology of Shortfin Mako Shark (*Isurus oxyrinchus* Rafinesque, 1810) from the Eastern Mediterranean. *Acta Aquatica Turcica* 15(4): 425–432. <https://doi.org/10.22392/actaquatr.545997>
- Bengil GET, Başusta A, Başusta N. 2018.** Length-weight relationships of *Glaucostegus cemiculus* (Geoffroy Saint-Hilaire, 1817) from the Aegean Sea and northeastern Mediterranean coasts of Turkey. *Journal of the Black Sea/Mediterranean Environment* 24: 1–9.
- Bengil EGT, Bengil F, Özyaydın O. 2020.** Feeding ecology and reproduction biology of *Glaucostegus cemiculus* (Geoffroy Saint-Hilaire, 1817) from the eastern Aegean Sea. *Regional Studies in Marine Science* 33: 100952. <https://doi.org/10.1016/j.rsma.2019.100952>
- Ceyhan T, Hepkafadar O, Tosunoğlu Z. 2010.** Catch and size selectivity of small-scale fishing gear for the smooth-hound shark *Mustelus mustelus* (Linnaeus, 1758) (Chondrichthyes: Triakidae) from the Aegean Turkish coast. *Mediterranean Marine Science* 11(2): 213–224. <https://doi.org/10.12681/mms.73>
- Convention on Biological Diversity (CBD). 2023.** North-East Levantine Sea. Available at: <https://chm.cbd.int> Accessed May 2023.
- Eronat EGT, Özyaydın O. 2014.** Length-weight relationship of cartilaginous fish species from Central Aegean Sea (İzmir Bay and Sığacık Bay). *Ege Journal of Fisheries and Aquatic Sciences* 31(3): 119–125. <https://doi.org/10.12714/egejfas.2014.31.3.01>
- Gurbet R, Akyol O, Yalçın E, Özyaydın O. 2013.** Discards in bottom trawl fishery in the Aegean Sea (İzmir Bay, Turkey). *Journal of Applied Ichthyology* 29(6): 1269–1274. <https://doi.org/10.1111/jai.12243>
- Key Biodiversity Areas (KBA). 2023a.** Key Biodiversity Areas factsheet: Çiçek Islands. Available at: <http://www.keybiodiversityareas.org> Accessed May 2023.
- Key Biodiversity Areas (KBA). 2023b.** Key Biodiversity Areas factsheet: Gediz Delta. Available at: <http://www.keybiodiversityareas.org> Accessed May 2023.
- Key Biodiversity Areas (KBA). 2023c.** Key Biodiversity Areas factsheet: Karaburun and Ildir Strait Islands. Available at: <http://www.keybiodiversityareas.org> Accessed May 2023.
- Key Biodiversity Areas (KBA). 2023d.** Key Biodiversity Areas factsheet: Kizildag Izmir. Available at: <http://www.keybiodiversityareas.org> Accessed May 2023.
- Kyne PM, Jabado RW. 2019.** *Glaucostegus cemiculus*. *The IUCN Red List of Threatened Species* 2019: e.T104050689A104057239. <https://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T104050689A104057239.en>

Last P, White W, de Carvalho M, Séret B, Stehmann M, Naylor G. 2016. *Rays of the world*. Clayton: CSIRO Publishing.

Özaydin O, Uçkun D, Akalin S, Leblebici S, Tosunoğlu Z. 2007. Length-weight relationships of fishes captured from Izmir Bay, Central Aegean Sea. *Journal of Applied Ichthyology* 23(6): 695-696. <https://doi.org/10.1111/j.1439-0426.2007.00853.x>

Pulat İ, Özel İ. 2003. The plankton fauna of the northern lagoony system of Izmir Bay. *Aquatic Sciences* 20(3-4): 399-403.

Ramsar. 2023. Gediz Delta. Available at: <https://www.ramsar.org> Accessed June 2023.

Saïdi B, Bradai MN, Bouaïn A. 2008. Reproductive biology of the smooth-hound shark *Mustelus mustelus* (L.) in the Gulf of Gabès (south-central Mediterranean Sea). *Journal of Fish Biology* 72(6): 1343-1354. <https://doi.org/10.1111/j.1095-8649.2008.01801.x>

Sayin E. 2003. Physical features of the Izmir Bay. *Continental Shelf Research* 23(10): 957-970. [https://doi.org/10.1016/S0278-4343\(03\)00083-9](https://doi.org/10.1016/S0278-4343(03)00083-9)

Taylan B, Bayhan B, Sağlam C, Kara A. 2019. First observation of the embryos of spiny butterfly ray, *Gymnura altavela* (Linnaeus, 1758) (Chondrichthyes: Gymnuridae) from Eastern Mediterranean, a species critically endangered. *Fresenius Environmental Bulletin* 28(4a): 3147-3152.

Taylan B, Bayhan B, Sağlam C, Özcan Babaoğlu A, Kara A. 2022. The Length-weight characteristics of five elasmobranch species (Pisces: Chondrichthyes) from Izmir Bay (Aegean Sea coast of Turkey): spring 2018. *Turkish Journal of Agriculture - Food Science and Technology* 10(2): 368-373. <https://doi.org/10.24925/turjaf.v10i2.368-373.4613>

World Wildlife Foundation (WWF). 2008. Assessment report of Ramsar sites in Turkey. WWF-Turkey.

Yurur EE. 2008. Investigation of nutrient fluxes in the sediments of Homa Lagoon. Unpublished PhD Thesis, Ege University, Izmir.