

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

## MUKAH ISRA

### Asia Region

### SUMMARY

Mukah is a coastal area in northern Sarawak, Borneo, in Malaysia. The habitat is characterised by shallow (<25 m depth) water with sandy and muddy substrates, coastal mudflats, peatland-draining estuaries, and mangrove habitats. The area is influenced by the monsoon regime, and the surface circulation is generally towards the northeast. Within this area there are: **threatened species** and **reproductive areas** (Scalloped Hammerhead *Sphyrna lewini*).

### CRITERIA

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

**MALAYSIA**

**0-25 metres**

**3,796.05 km<sup>2</sup>**





## DESCRIPTION OF HABITAT

Mukah is a coastal area in northern Sarawak, Malaysia. The area is characterised by a wide and shallow continental shelf (Garces et al. 2006), with shallow water <25 m deep extending to ~40 km offshore. The coastline is primarily lined with mudflats and mangroves, and there are major peatland-draining estuaries ('black water rivers') (Martin et al. 2018), interspersed with sandy beaches and rocky shores. The shallow shelf in Mukah has sandy and muddy substrates (Department of Fisheries Malaysia 1999).

The area is influenced by the monsoon regime, with the northeast monsoon from November-February and the southwest monsoon from May-August. The surface circulation in shelf waters is generally towards the northeast (Pa'Suya et al. 2014).

This Important Shark and Ray Area is benthopelagic and extends from inshore and surface waters (0 m) to 25 m based on the bathymetry of the area.

## ISRA CRITERIA

### CRITERION A - VULNERABILITY

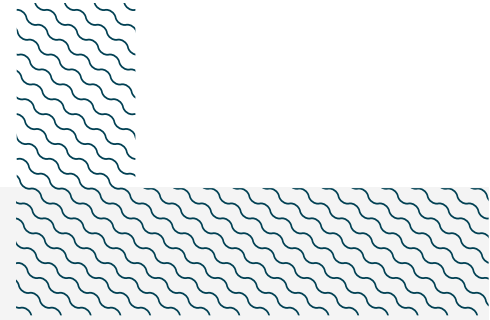
One Qualifying Species within the area is considered threatened with extinction according to the IUCN Red List of Threatened Species. The Scalloped Hammerhead is assessed as Critically Endangered (Rigby et al. 2019).

### SUB-CRITERION C<sub>1</sub> - REPRODUCTIVE AREAS

Mukah is an important reproductive area for one shark species.

Historical data indicate that Mukah has long been an important area for neonate and young-of-the-year (YOY) Scalloped Hammerheads. A survey in 2006 sampled 312 local gillnetters and found that 15% of their shark catch was Scalloped Hammerheads, with a total of 78.5 kg landed in three out of seven days of surveys (Arshad et al. 2006). Importantly, 100% of the measured individuals (n = 35) had a mean total length (TL) of 77.7 cm (Arshad et al. 2006). Size-at-birth for the species is 31-57 cm TL (Ebert et al. 2021) and they have a fast initial growth rate of ~50-60 cm in the first year (Chen et al. 1990), showing that these were mostly neonates and YOY individuals.

Based on a combination of landing and market surveys in 2015, 2017, 2018, and 2019, regular contemporary catches of neonate and YOY Scalloped Hammerheads are reported from gillnets mostly in nearshore (<20 nautical miles) and shallow (<25 m depth) waters (Booth et al. 2021; A Then unpubl. data 2023). Over four days of landing surveys in 2015, half of the 38 Scalloped Hammerheads recorded were neonates ranging from 49-57 cm TL and the other half were YOY ranging from 58-71 cm TL (A Then unpubl. data 2023). Similarly, landing surveys (n = 8) in Mukah in 2018-2019 recorded only neonates and YOY ranging from 51.2-88.0 cm TL (Booth et al. 2021). From the observed 2.81 individuals recorded per day of survey, a yearly catch of ~1,000 Scalloped Hammerheads was estimated (Booth et al. 2021). Recent local ecological knowledge obtained from interviews with 21 fishers (70% of surveyed fishers using gillnets in Mukah) indicate regular catches of Scalloped Hammerheads (2-30 individuals per month per fisher) (A Then unpubl. data 2022). Fishers estimated the average size to be ~50 cm TL, highlighting that they capture neonates and YOY individuals (A Then unpubl. data 2022).



---

### **Acknowledgments**

Amy Then Yee Hui (Faculty of Science, Universiti Malaya), Amanda Leung Jhu Xhin (Institute of Ocean and Earth Sciences, Universiti Malaya), Serena Adam (WWF-Malaysia), and Christoph A Rohner (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2024 ISRA Region 9 – Asia 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. 2024.** Mukah ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

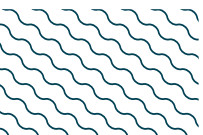
## QUALIFYING SPECIES

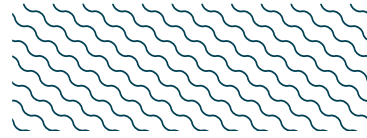
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
<b>SHARKS</b>													
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR	0-1,043	X		X							

## SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
<b>SHARKS</b>		
<i>Carcharhinus sealei</i>	Blackspot Shark	VU
<i>Carcharhinus sorrah</i>	Spottail Shark	NT
<i>Hemigaleus microstoma</i>	Sicklefin Weasel Shark	VU
<i>Rhizoprionodon acutus</i>	Milk Shark	VU
<b>RAYS</b>		
<i>Urogymnus polylepis</i>	Giant Freshwater Whipray	EN

*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 Mukah might be an important area for reproductive purposes of one ray species. Giant Freshwater Whipray distributional records confirm the species occurrence in many riverine and coastal areas in Sarawak, Borneo (Windusari et al. 2019; Then et al. 2022). A recent direct observation in Mukah of an adult female (disc width = 190 cm) with four developed pups infer potential important reproductive grounds for the species, also considering that the total number of sightings in this area is higher than in adjacent districts (Kuching and Bintulu) (Then et al. 2022).



## REFERENCES

- Arshad AHHA, Ali A, Gambang AC, Sade A, Fong LC, Ahmad AT, Nurudding AA. 2006. Data collection and fisheries management of sharks in Malaysia. Kuala Lumpur: Department of Fisheries Malaysia.
- Booth H, Chaya F, Ng S, Tan V, Rao M, Teepol B, Matthews E, Lim A, Gumal M. 2021. Elasmobranch fishing and trade in Sarawak, Malaysia, with implications for management. *Aquatic Conservation: Marine and Freshwater Ecosystems* 31(11): 3056–3071. <https://doi.org/10.1002/aqc.3688>
- Chen CT, Leu TC, Joung SJ, Lo NCH. 1990. Age and growth of the scalloped hammerhead, *Sphyrna lewini*, in northeastern Taiwan waters. *Pacific Science* 44(2): 156–170.
- Department of Fisheries Malaysia. 1999. Fisheries resources survey in the Exclusive Economic Zone (EEZ) of Malaysia 1997-1999: Demersal fish resource survey, coast of Sarawak. Kuala Lumpur: Ministry of Agriculture Malaysia.
- Ebert DA, Dando M, Fowler S. 2021. *Sharks of the world. A complete guide*. Princeton: Princeton University Press.
- Garces LR, Stobutzki I, Alias M, Campos W, Koongchai N, Lachica-Alino L, Mustafa G, Nurhakim S, Srinath M, Silvestre G. 2006. Spatial structure of demersal fish assemblages in South and Southeast Asia and implications for fisheries management. *Fisheries Research* 78(2-3): 143–157. <https://doi.org/10.1016/j.fishres.2006.02.005>
- Martin P, Cherukuru N, Tan AS, Sanwlani N, Mujahid A, Müller M. 2018. Distribution and cycling of terrigenous dissolved organic carbon in peatland-draining rivers and coastal waters of Sarawak, Borneo. *Biogeosciences* 15(22): 6847–6865. <https://doi.org/10.5194/bg-15-6847-2018>
- Pa'Suya MF, Omar KM, Peter BN, Din AHM. 2014. Seasonal sea surface circulation in the northwest region of the Borneo Island based on nineteen years satellite altimetry data. *Geoinformation for Informed Decisions* (2014): 189-200. [https://doi.org/10.1007/978-3-319-03644-1\\_14](https://doi.org/10.1007/978-3-319-03644-1_14)
- Then AYH, Lim KC, Loh KH. 2022. Updated distribution of the endangered freshwater stingray *Urogymnus polylepis* in Malaysia, with notes on biology and genetics. *Raffles Bulletin of Zoology* 70: 534–549. <https://doi.org/10.26107/RBZ-2022-0030>
- Windusari T, Iqbal M, Hanum L, Zulkifli H, Yustian I. 2019. Contemporary distribution records of the giant freshwater stingray *Urogymnus polylepis* in Borneo (Chondrichthyes: Dasyatidae). *Ichthyological Exploration of Freshwaters* 22(2): 185–192. <http://doi.org/10.23788/IEF-1089>