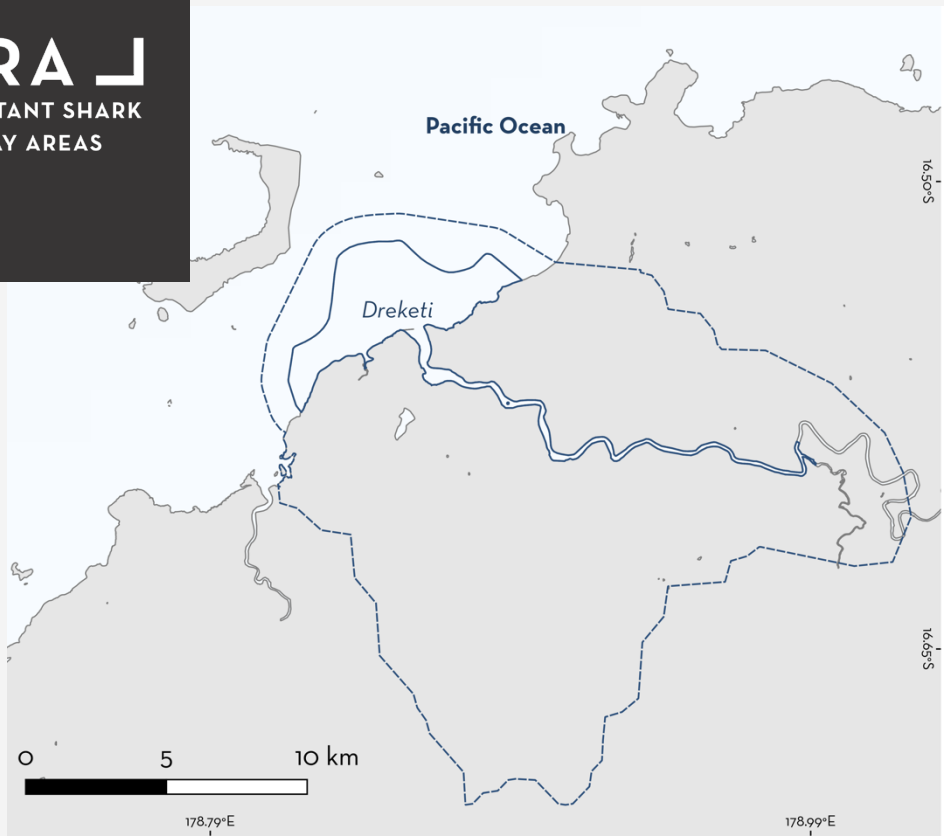
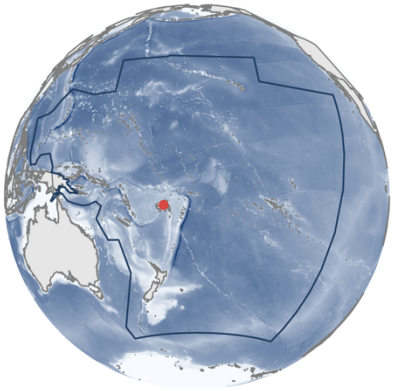
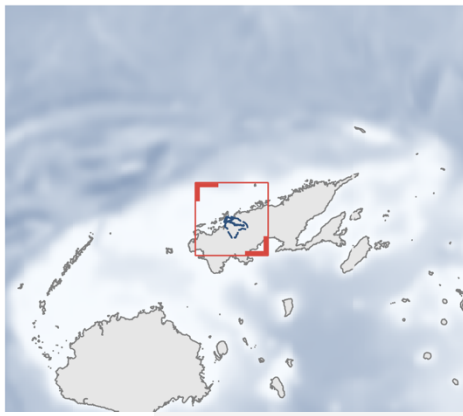
ISRA
IMPORTANT SHARK AND RAY AREAS







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

DREKETI ISRA

New Zealand & Pacific Islands Region

FIJI

0–8 metres

22.90 km²

SUMMARY

Dreketi is located on the north coast of Vanua Levu Island in Fiji. It encompasses a river and estuarine area which is influenced by a tropical marine climate with a wet (November–April) and dry season (May–October). The habitat is characterised by shallow, silty substrate and extensive mangrove forests. Within this area there are: **threatened species** (e.g., Scalloped Hammerhead *Sphyrna lewini*); and **reproductive areas** (e.g., Bull Shark *Carcharhinus leucas*).

CRITERIA

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

DESCRIPTION OF HABITAT

Dreketi is a river and estuary located on the north coast of Vanua Levu Island in Fiji. The Dreketi River has a large catchment of ~85,000 hectares and is one of the deepest rivers in Fiji with a depth of up to 4.5 m (Jorquera et al. 2020; Paris 2020). The estuary has a large alluvial fan that is usually shallow (<3 m) but with a depth of up to ~8 m. Extensive mangrove forests line the lower reaches of the river and the estuary coastline. The area is influenced by a tropical marine climate with a wet/cyclone season (November–April) and a dry season (May–October; Jorquera et al. 2020). Cyclones impact sediment discharge, with up to 40% of the annual sediment load linked to a cyclone event (Jorquera et al. 2020). Salinity levels recorded during a fishing survey in the area during January–February 2020 had a mean of 26.9 ppt (range = 13.3–31.7 ppt) in the estuary, and a mean of 18.4 ppt (range = 0–30.6) in the river (Paris 2020).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 8 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

Two Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. These are the Critically Endangered Scalloped Hammerhead (Rigby et al. 2019) and the Vulnerable Bull Shark (Rigby et al. 2021).

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Dreketi is an important reproductive area for two shark species.

In a study during January–February 2020, 47 Scalloped Hammerheads were captured from 75 bottom-set gillnets deployed in the Dreketi River (n = 20) and the estuary (n = 55) within the area (Paris 2020). Gillnets were 100 m long, 3 m high, and had a 10 cm mesh size. Up to two nets were deployed simultaneously and hauled in after 40 minutes for each deployment. All Scalloped Hammerheads captured were either neonates with a semi-healed umbilical scar (n = 14) or young-of-the-year (YOY) with a healed umbilical scar (n = 33) (Paris 2020). Individuals measured 49–58 cm total length (TL), with a mean of 52.8 cm TL. Size-at-birth for the species is 31–57 cm TL (Ebert et al. 2021). Most Scalloped Hammerheads (87%) were captured in shallow water (<1.5 m deep) close to the river mouth, but six individuals were captured 6 km upstream in the river, showing the connectivity within this area. Traditional Ecological Knowledge (TEK) gathered in 2010 through interviews with representatives from six villages from the estuary to 33 km upstream showed that hammerhead sharks (family Sphyrnidae) are commonly caught in this area, particularly at the estuary village (Rasalato et al. 2010). Respondents indicated that hammerhead sharks were generally <1 m TL, but larger individuals up to 3 m TL were also caught. Additionally, an interview survey in three villages in the area conducted in August 2024 confirmed the continued capture of Scalloped Hammerheads in this area (D Williams pers. obs. 2024). Combined, these data show that Dreketi is important for the early life stages of Scalloped Hammerheads.

A total of eight Bull Sharks were captured in January–February 2020 from bottom-set gillnets, with six neonates having open umbilical scars, indicating recent birth, and one YOY having a semi-healed umbilical scar (Paris 2020). Their size ranged from 74–100 cm TL, with a mean of 79.3 cm TL. The size-at-birth for the species is 56–81 cm TL (Ebert et al. 2021). All Bull Sharks were captured in the

river, from near the estuary to 18 km upstream. TEK provides evidence that Dreketi has long been an important reproductive site for Bull Sharks. Fishers noted that they usually catch individuals <100 cm TL, with the largest individuals ~250 cm TL (Rasalato et al. 2010). Recent interviews confirm continued regular captures of small Bull Sharks in this area (D Williams pers. obs. 2024). Dreketi is the only known important reproductive area for Bull Sharks on the island of Vanua Levu, with other areas located on Viti Levu (Glaus et al. 2019).

Acknowledgments

Andrew Paris (Ministry of Environment and Climate Change Fiji), Duncan Williams (WWF-Pacific), Unaisi Malani (WWF-Pacific), 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 10 - New Zealand and Pacific Islands 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. Dreketi 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												
Carcharhinus leucas	Bull Shark	VU	0–256	X		X						
Sphyrna lewini	Scalloped Hammerhead	CR	0–1,043	X		X						

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Carcharhinus limbatus	Blacktip Shark	VU
Sphyrna mokarran	Great Hammerhead	CR
RAYS		
Aetobatus ocellatus	Spotted Eagle Ray	EN

IUCN Red List of Threatened Species Categories are available by searching species names at 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 Dreketi is an important area for the early life stages of two shark species.

Eight Great Hammerheads were captured in the scientific fishing survey in January–February 2020 (Paris 2020). All individuals were YOY with a healed umbilical scar and measured 73–83 cm TL. The size-at-birth of the species is 50–70 cm TL (Ebert et al. 2021). TEK indicates that hammerheads are frequently captured in the area, but considering the relatively lower number of Great Hammerheads compared to Scalloped Hammerheads in the fishing survey and the few respondents who could identify the species, we deem the TEK evidence insufficient for the persistent use of the area by Great Hammerheads. Similarly, 14 Blacktip Sharks were captured in the fishing survey, with 13 YOY having either a healed (n = 12) or semi-healed (n = 1) umbilical scar (Paris 2020). Further information is required to determine the regular and predictable use of this area for early life stages of these species.

REFERENCES

Ebert DA, Dando M, Fowler S. 2021. *Sharks of the world: A complete guide*. Princeton: Princeton University Press.

Glaus KB, Brunnschweiler JM, Piovano S, Mescam G, Genter F, Fluekiger P, Rico C. 2019. Essential waters: Young bull sharks in Fiji's largest riverine system. *Ecology and Evolution* 9(13): 7574–7585. https://doi.org/10.1002/ece3.5304

Jorquera E, Breda A, Rodríguez JF, Saco PM. 2020. Impacts of climate change and land use on riverine sediment inputs into coastal ecosystems. In: Uijttewaal W, Franca MJ, Valero D, Chavarrias V, Ylla Arbós C, Schielen R, Crosato A, eds. *River Flow, First edition*. London: CRC Press, 2046–2051.

Paris A. 2020. Dreketi river and estuary shark and ray survey. Suva: WWF Fiji.

Rasalato E, Maginnity V, Brunnschweiler JM. 2010. Using local ecological knowledge to identify shark river habitats in Fiji (South Pacific). *Environmental Conservation* 37(1): 90–97. https://doi.org/10.1017/S0376892910000317

Rigby CL, Dulvy NK, Barreto R, Carlson J, Fernando D, Fordham S, Francis MP, Herman K, Jabado RW, Liu KM, et al. 2019. *Sphyrna lewini. The IUCN Red List of Threatened Species* 2019: e.T39385A2918526.

Rigby CL, Espinoza M, Derrick D, Pacoureau N, Dicken M. 2021. *Carcharhinus leucas. The IUCN Red List of Threatened Species* 2021: e.T39372A2910670. https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T39372A2910670.en