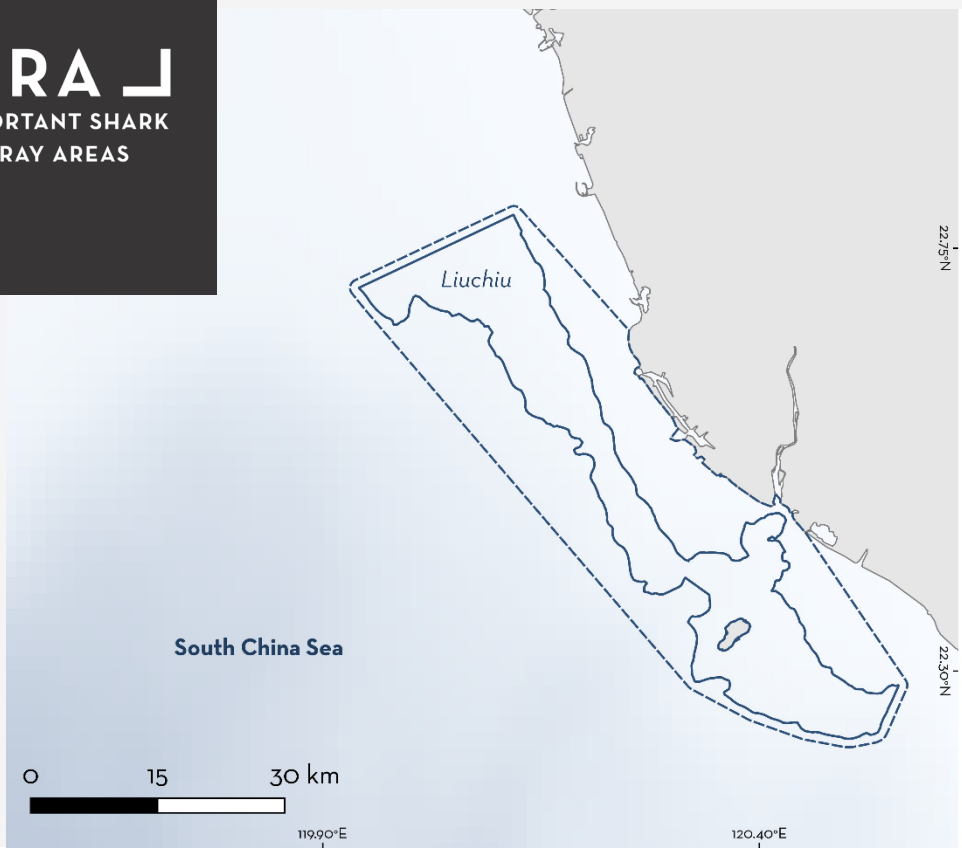
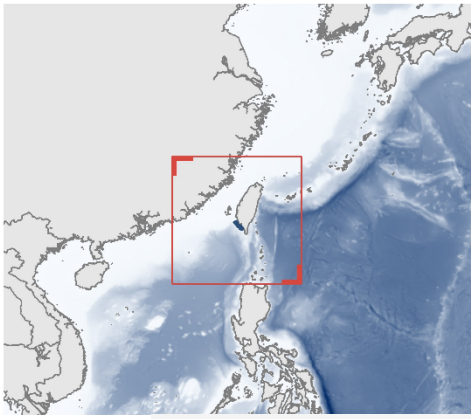
ISRA
IMPORTANT SHARK AND RAY AREAS





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

LIUCHIU ISRA

Asia Region

CHINESE TAIPEI

60–450 metres

669.3 km²

SUMMARY

Liuchiu is located in southwest Chinese Taipei waters and includes Liuchiu Island. The area encompasses the continental shelf out to the shelf break and is characterised by the presence of coral reefs and seagrass beds. Within the area there are: **threatened species** (Sarawak Pygmy Swellshark *Cephaloscyllium sarawakensis*); and **reproductive areas** (e.g., Blacktip Sawtail Catshark *Galeus sauteri*).

CRITERIA

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

DESCRIPTION OF HABITAT

Liuchiu is located in Pingtung County of southwest Chinese Taipei. The area includes Liuchiu Island, located ~12 km from the main Taiwan Island, the only offshore coral reef island of Chinese Taipei (Lim et al. 2022). The area encompasses the continental shelf out to the shelf break and is characterised by the presence of coral reefs and seagrass beds, specially near the island.

The area sits within the Taiwan Strait and is influenced by the southwest monsoon from May to September that produces upwellings throughout the Taiwan Strait while from November to April, the northeast monsoon brings warm and high salinity waters from the Kuroshio Current (Hu et al. 2003; Hsieh et al. 2016).

This Important Shark and Ray Area is benthopelagic and subsurface and is delineated from 60–450 m based on the depth range of the Qualifying Species in 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. Sarawak Pygmy Swellshark is assessed as Critically Endangered (Rigby et al. 2021).

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Liuchiu is an important reproductive area for two shark species.

Between 2011–2020, 12 pregnant female Sarawak Pygmy Swellshark were incidentally captured in commercial benthic trawlers (Nakaya et al. 2020). Individuals measured 40.5–49.5 cm total length (TL) and contained egg cases (one per oviduct). This species has a reproductive strategy called 'sustained single oviparity' where one egg case per oviduct is retained until the embryo attains ~6–10 cm TL. Fifteen embryos were sampled, measuring between 4.3–10.2 cm TL. In addition, two egg cases deposited on the seabed were caught containing embryos of 6.5 and 9.4 cm TL. Between 2015–2016, nine free-swimming individuals were also caught measuring 12.5–14.3 cm TL (Nakaya et al. 2020) which are close to the reported size-at-birth for the species (10 cm TL; Ebert et al. 2021). Some of these had a remanent external yolk-sac confirming that they were neonates and birth occurred recently in the area. The presence of neonates has not been reported in other areas confirming the reproductive importance of the area for the species.

Between November 2021 to October 2022, 721 Blacktip Sawtail Catsharks (355 males and 366 females) were collected from benthic trawlers operating in the area at depths of 100–450 m with the majority occurring at depths <200 m (Liao 2023). Individuals measured 6.8–43.7 cm TL (Liao 2023). Size-at-birth for this species is estimated ~7 cm TL (Chen et al. 1996; Liu et al. 2011) and vertebrae band growth readings from individuals (n = 174) sampled between December 2021 to November 2022 revealed that sharks between 8–11 cm TL were young-of-the-year (YOY) (Huang 2023). Of the 721 Blacktip Sawtail Sharks, 3% of the individuals were YOY based on their size and were recorded from December to March and in July (Liao 2023). Mature individuals were sampled year-round, with females presenting developed ovarian follicles and males presenting seminal material all months, suggesting that reproduction occurs year-round (Liao 2023). Higher numbers of mature individuals were recorded in July-August and January-April, when up to 68% of females, and 80% of males were

mature (Liao 2023). These YOY are still recorded in catches from the area (Hsu pers. obs. 2023) confirming their regular presence and suggesting the use of this area as a nursery ground for the species.

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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
SHARKS												
Cephaloscyllium sarawakensis	Sarawak Pygmy Swellshark	CR	82–200	X		X						
Galeus sauteri	Blacktip Sawtail Catshark	LC	60–600			X						

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