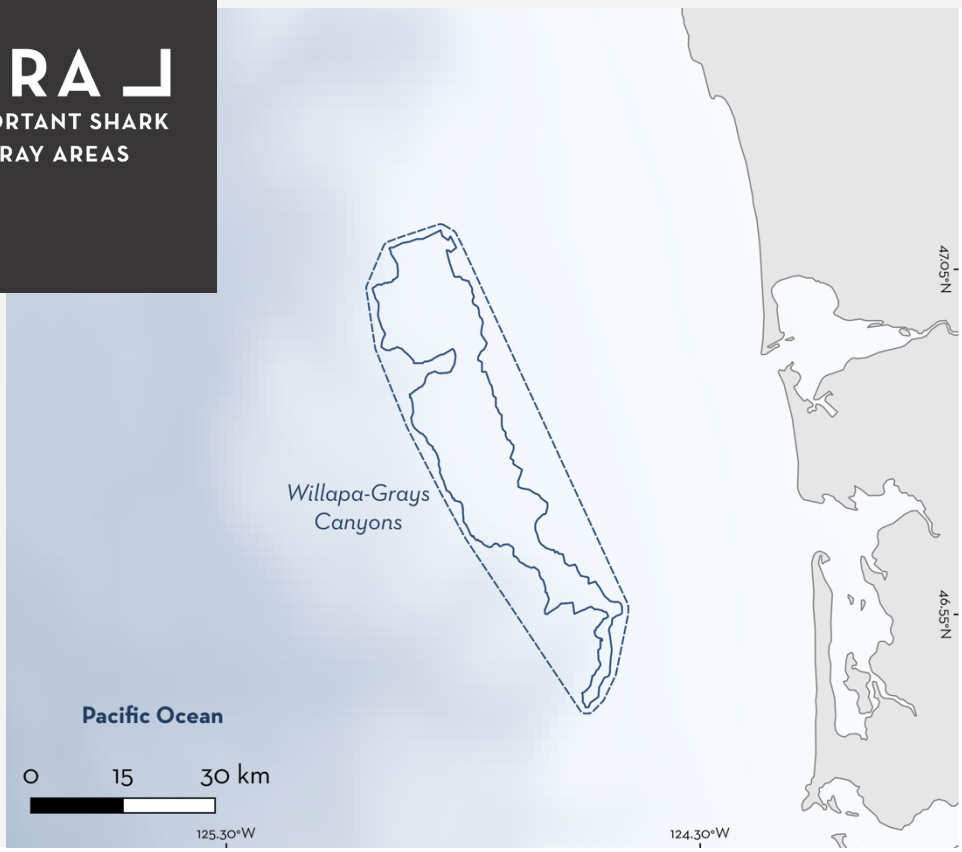
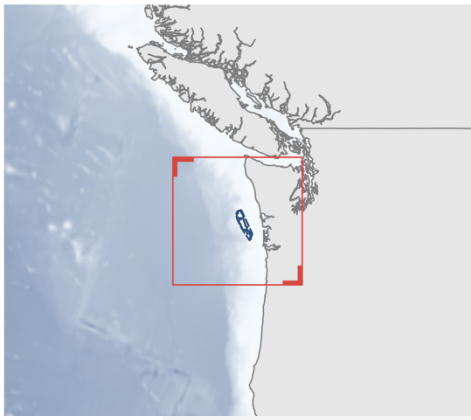
ISRA
IMPORTANT SHARK AND RAY AREAS





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

WILLAPA-GRAYS CANYONS ISRA

North American Pacific Region

UNITED STATES OF AMERICA

100–450 metres

724.9 km²

SUMMARY

Willapa-Grays Canyons is located off Washington State, United States of America. The area is situated at the shelf break where dense aggregations of glass sponges and sponge reefs occur. It sits in the vicinity of a large canyon system composed of Willapa, Guide, and Grays canyons. Sediment dynamics in the region are strongly influenced by the Columbia River plume. Seasonal coastal upwelling during the boreal spring and summer brings cold, saline, and nutrient-rich waters onto the continental shelf and into surface layers, enhancing productivity. Within this area there are: **undefined aggregations** (North Pacific Spiny Dogfish *Squalus suckleyi*).

CRITERIA

Sub-Criterion C5 – Undefined Aggregations

DESCRIPTION OF HABITAT

Willapa-Grays Canyons is located off Washington State, United States of America (USA). The area is situated at the shelf break characterised by dense aggregations of glass sponges and sponge reefs (Powell et al. 2018). It sits in the vicinity of a large canyon system composed of Willapa, Guide, and Grays canyons. Sediment dynamics in the region are strongly influenced by the Columbia River plume (Twichell et al. 2010).

Regional circulation is primarily driven by persistent alongshore winds, which structure two current systems: the southward-flowing California Current at the surface and the northward-flowing California Undercurrent along the continental slope between 100 and 400 m depth (Hickey & Banas 2003). Seasonal coastal upwelling during the boreal spring and summer brings cold, saline, and nutrient-rich waters onto the continental shelf and into surface layers, enhancing productivity (Peterson et al. 2010). Additionally, active methane vent sites occur in the area (Collier & Lilley 2005).

This Important Shark and Ray Area is benthic and pelagic, subsurface, and delineated from 100–450 m based on the depth range of Qualifying Species in the area.

ISRA CRITERIA

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

Willapa-Grays Canyons is an important area for undefined aggregations of one shark species.

The West Coast Groundfish Bottom Trawl Survey (WCGBTS) is conducted annually between May –July and August–October along the USA West Coast between the USA–Canada border and the USA–Mexico border, at depths ranging from 55 to 1,280 m (Keller et al. 2017). The survey area is subdivided into ~12,000 equal-area grid cells, from which 188 cells are randomly selected each year within depth and latitudinal strata to ensure representative spatial sampling. All sharks captured are sorted to species level (or the lowest possible taxonomic resolution) and weighed, and subsamples of selected species are measured. The trawl net used in the survey has a headrope measuring 25.9 m and a footrope measuring 31.7 m. Trawling is conducted during daylight hours at a target speed of 2.2 ± 0.5 knots, with a standard tow duration of 15 minutes (approximately 0.55 km) (Keller et al. 2017).

Between 2011–2025, 8,338 tows were conducted in the entire survey area, of which 111 were within this area (1.3%) (NOAA NWFSC FRAM 2026). North Pacific Spiny Dogfish were captured in 1,667 tows in the entire survey area (20% of total tows) at depths between 59–553 m, with 70 in this area (63.1% of tows in this area) at depths between 137–303 m. Of the ten highest catch-per-unit-effort (CPUE; number of individuals per square kilometre; ind/km^2) values recorded along the coast, two are within this area (2,798.4 and 909.1 ind/km^2). Only one area along the entire coast (Juan de Fuca Eddy) recorded higher CPUE values than this area. The average CPUE for the remaining 68 tows with North Pacific Spiny Dogfish in this area was 43.1 ind/km^2 (maximum = 571.9 ind/km^2). Outside this area, the average CPUE of the remaining 1,589 tows with North Pacific Spiny Dogfish captures (also not considering the eight highest values) was 7.9 ind/km^2. The total number of individuals in a single tow that had North Pacific Spiny Dogfish in this area was 154.1, while outside this area it was 45.8 for the same average area (0.02 km^2) (NOAA NWFSC FRAM 2026).

Data comprised the number of individuals and total kilograms per species in each tow, and the total length (TL) was calculated based on the length-weigh relationship using parameters available on FishBase (Froese et al. 2013; Froese & Pauly 2026). Neonate/young-of-the-year (YOY) were inferred from sizes estimated from weight measurements. The average size of individuals in tows outside this

area ranged 18–104 cm TL, while in this area ranged 33–98 cm TL. Size-at-birth for the species is 22–33 cm TL indicating that aggregations were not mainly composed of neonates. Of the 68 tows with North Pacific Spiny Dogfish in this area, 59 had the average size of individuals >48 cm TL. North Pacific Spiny Dogfish are known to form large aggregations of feeding individuals and of pregnant females (Ebert et al. 2021).

Further information is required to understand the nature and function of these aggregations.

Acknowledgments

Joseph J Bizzarro (University of Santa Cruz, Fisheries Collaborative Program; NOAA Fisheries, Southwest Fisheries Science Center), Christopher G Lowe (California State University Long Beach), and Vanessa Bettcher Brito (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2026 ISRA Region 11 – North American Pacific region 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. 2026. Willapa-Grays Canyons 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
SHARKS												
Squalus suckleyi	North Pacific Spiny Dogfish	LC	0–1,238							X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
RAYS		
Bathyraja kincaidii	Sandpaper Skate	LC
Beringraja binoculata	Big Skate	LC
Caliraja rhina	Longnose Skate	LC

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.

REFERENCES

Collier RW, Lilley MD. 2005. Composition of shelf methane seeps on the Cascadia Continental Margin. *Geophysical Research Letters* 32: L06609. https://doi.org/10.1029/2004gl022050

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

Froese R, Pauly D. 2026. FishBase, version (11/2025). Available at: www.fishbase.org Accessed April 2026.

Froese R, Thorson JT, Reyes RB. 2013. A Bayesian approach for estimating length-weight relationships in fishes. *Journal of Applied Ichthyology* 30: 78–85. https://doi.org/10.1111/jai.12299

Hickey BM, Banas NS. 2003. Oceanography of the U.S. Pacific Northwest Coastal Ocean and estuaries with application to coastal ecology. *Estuaries* 26: 1010–1031. https://doi.org/10.1007/bf02803360

Keller AA, Wallace JR, Methot RD. 2017. The Northwest Fisheries Science Center's West Coast Groundfish Bottom Trawl Survey : history, design, and description. National Oceanic and Atmospheric Administration (NOAA) - NOAA Central Library.

NOAA Fisheries, Northwest Fisheries Science Center (NWFSC), Fisheries Resource Analysis and Monitoring Division (FRAM). 2026. West Coast Groundfish Bottom Trawl Survey. Seattle: NOAA Fisheries.

Peterson WT, Morgan CA, Fisher JP, Casillas E. 2010. Ocean distribution and habitat associations of yearling coho (*Oncorhynchus kisutch*) and Chinook (*O. tshawytscha*) salmon in the northern California Current. *Fisheries Oceanography* 19: 508–525. https://doi.org/10.1111/j.1365-2419.2010.00560.x

Powell A, Clarke ME, Fruh E, Chaytor JD, Reiswig HM, Whitmire CE. 2018. Characterizing the sponge grounds of Grays Canyon, Washington, USA. *Deep Sea Research Part II Topical Studies in Oceanography* 150: 146–155. https://doi.org/10.1016/j.dsr2.2018.01.004

Twichell DC, Cross VA, Peterson CD. 2010. Partitioning of sediment on the shelf offshore of the Columbia River littoral cell. *Marine Geology* 273: 11–31. https://doi.org/10.1016/j.margeo.2010.02.001