

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

## JUAN DE FUCA CANYON ISRA

### North American Pacific Region

#### SUMMARY

Juan de Fuca Canyon is located off Washington state, United States of America. The area is situated on the continental shelf where the Strait of Juan de Fuca flows into a region cut by several deep canyons. The largest of these is the Juan de Fuca Canyon, which acts as a conduit for coastal sediments to reach the deep seafloor and promotes upwelling by channelling deep, cold, nutrient-rich waters to the surface. Within this area there are: **undefined aggregations** (e.g., North Pacific Spiny Dogfish *Squalus suckleyi*).

#### CRITERIA

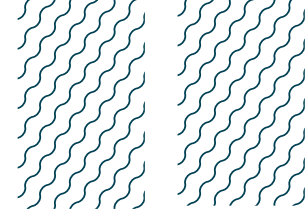
##### Sub-criterion C5 - Undefined Aggregations

— —  
**UNITED STATES OF AMERICA**  
 — —

**65-365 metres**  
 — —

**2,013.3 km<sup>2</sup>**  
 — —





## DESCRIPTION OF HABITAT

Juan de Fuca Canyon is located off Washington state, United States of America (USA). The area is situated on the continental shelf where the Strait of Juan de Fuca flows into a region cut by several deep canyons (Burger 2003). The largest of these is the Juan de Fuca Canyon, which acts as a conduit for coastal sediments to reach the deep seafloor and promotes upwelling by channeling deep, cold, nutrient-rich waters to the surface (Alford & MacCready 2014). Sediments are predominantly glacial deposits from the Ice Age, with additional modern inputs from the Columbia and Chehalis rivers (Thomson 1981). During the boreal summer, a large cyclonic (anti-clockwise) eddy develops over this area enhancing the upwelling of deep waters. This process is reinforced by wind-driven upwelling over the shelf, where prevailing northwest winds, combined with the Coriolis effect, transport surface waters offshore and generate plumes of cold, upwelled water extending seaward from the inner shelf (Thomson 1981; Freeland 1992). In contrast, during winter, prevailing southeast winds push surface waters shoreward, reducing offshore transport and suppressing upwelling over the inner shelf (Thomson 1981; Freeland 1992).

This Important Shark and Ray Area is benthic and pelagic and subsurface and is delineated from 65-365 m based on the depth range of Qualifying Species in the area.

## ISRA CRITERIA

### SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

Juan de Fuca Canyon is an important area for undefined aggregations of one shark and one chimaera 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  $2.2 \pm 0.5$  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 184 were within this area (2.2%) (NOAA NWFSC FRAM 2026).

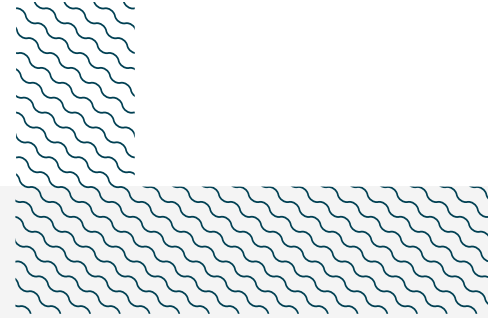
North Pacific Spiny Dogfish were captured in 1,667 tows in the entire survey area (20% of total tows) at depths between 59–553 m, with 155 tows in this area (84.2% of tows in this area) at depths between 95–362 m. Of the ten highest catch-per-unit-effort (CPUE; number of individuals per square kilometre; ind/km<sup>2</sup>) along the coast, five are within this area ranging 121,947–1,726,906 (average = 653,349) while the remaining five are at least 60 km apart. The average CPUE for the remaining 150 tows with North Pacific Spiny Dogfish in this area was 2,131.3 ind/km<sup>2</sup> (maximum = 55,203 ind/km<sup>2</sup>). Outside this area, the average CPUE of the remaining 1,607 tows with North Pacific Spiny Dogfish (also not considering the five highest values) is 83 ind/km<sup>2</sup> (maximum = 57,192.0 ind/km<sup>2</sup>). The average maximum number of individuals in a single tow that had North Pacific Spiny Dogfish captured in this area was 317.8, while outside this area it was 23 for the same average area (0.02 km<sup>2</sup>) (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-weight 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 33.6–191.9 cm TL, while in this area ranged 37.5–107.4 cm TL. Size-at-birth for the species is 22–33 cm TL indicating that aggregations were not mainly composed by neonates. Of the 155 tows with North Pacific Spiny Dogfish in this area, 135 had the average size of individuals >48 cm TL. North Pacific Spiny Dogfish are known to form large aggregations for feeding and of pregnant females (Ebert et al. 2021). A study using hydroacoustic proxies of prey availability for seabirds in the region also reported aggregations of *Squalus* spp. in this area (Burger 2003).

Whitespotted Chimaera was captured in 4,429 tows in the entire survey area (53.1% of total tows) at depths between 2–959 m, with 170 in this area (92.4% of tows in this area) at depths between 67–362 m. Based on Kernel Utilization Distribution (KUD) weighted by CPUE (number of individuals per square kilometre; ind/km<sup>2</sup>), this area is one of the only four areas with KUD >75% along the USA West Coast. Of the 10 highest CPUE along the coast (ranging 68,455.7–252,718.3 ind/km<sup>2</sup>), two are within this area (188,248.7 and 118,342.7 ind/km<sup>2</sup>). The average CPUE for the remaining 168 tows with Whitespotted Chimaera in this area was 4,238.7 ind/km<sup>2</sup> (maximum = 49,513.6 ind/km<sup>2</sup>). Outside this area, the average CPUE of the remaining 4,322 tows with Whitespotted Chimaera (also not considering the eight highest values) is 1,240.8 ind/km<sup>2</sup>. The average maximum number of individuals in a single tow that had Whitespotted Chimaera capture in this area was 96.5, while outside this area it was 22.8 for the same average area (0.02 km<sup>2</sup>) (NOAA NWFSC FRAM 2026).

Data comprised the number of individuals and total kilograms per species in each tow, and the Precaudal Length (PCL) was calculated based on the length-weight relationship (King & McPhie 2013). The average size of individuals in tows outside this area ranged 6.3–106.1 cm PCL, while in this area ranged 8.7–59.3 cm PCL. Size-at-maturity for the species is 30.2 cm PCL for males and 39.3 cm PCL for females (King & McPhie 2013). Of the 170 tows with Whitespotted Chimaera in this area, 153 had the average size of individuals >30.2 cm PCL (90%) and 82 had the average size of individuals >39.3 cm PCL (48.2%) suggesting that aggregations were mainly composed of juveniles, subadults, and adults. Whitespotted Chimaera are known to form large aggregations that can be size-specific (Barnett et al. 2009).

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



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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.

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### **Suggested citation**

**IUCN SSC Shark Specialist Group. 2026.** Juan de Fuca Canyon ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

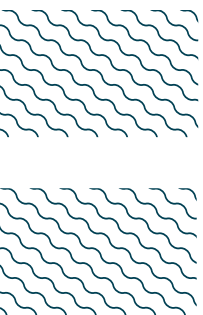
## QUALIFYING SPECIES

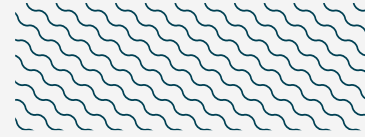
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
<b>SHARKS</b>													
<i>Squalus suckleyi</i>	North Pacific Spiny Dogfish	LC	0-1,238								X		
<b>CHIMAERAS</b>													
<i>Hydrolagus colliei</i>	White-spotted Ratfish	LC	0-959								X		

## SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
<b>RAYS</b>		
<i>Bathyraja kincaidii</i>	Sandpaper Skate	LC
<i>Caliraja rhina</i>	Longnose Skate	LC

*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.*





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