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Evaluation of information for the Salas y Gomez and Nazca Ridges Area

Salas y Gomez and Nazca Task Team

South Pacific Regional Fisheries Management Organisation

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7 August 2026

Executive Summary

The Salas y Gómez and Nazca ridges constitute one of the most distinctive seamount systems in the southeastern Pacific Ocean. Extending approximately 4,000 km and comprising more than 110 seamounts and guyots, the ridge system encompasses a broad range of geomorphological, oceanographic, and ecological conditions within a single interconnected biogeographic region. Its combination of extensive seamount habitats, strong environmental gradients, and relative isolation has produced exceptionally high levels of biodiversity, endemism, and ecological distinctiveness, leading to its recognition as an Ecologically or Biologically Significant Area (EBSA) under the Convention on Biological Diversity.

The area is characterised by an unusually diverse assemblage of seafloor habitats. Elevated volcanic features, ridge crests, escarpments, guyots, and seamount flanks provide hard-substrate environments that support extensive coral- and sponge-dominated communities. Habitat suitability models and recent submersible surveys indicate that vulnerable marine ecosystem (VME) indicator taxa are widespread across both ridges, particularly on elevated topographic features where favourable hydrodynamic conditions enhance food delivery to suspension-feeding organisms. Recent expeditions have repeatedly documented dense coral and sponge assemblages, many of which exhibit the structural complexity and ecological characteristics associated with VMEs.

A defining feature of the region is the relatively high degree of ecological integrity retained across much of the system. Although some seamounts have been subject to historical bottom fishing, available evidence suggests that large portions of the ridges remain comparatively lightly disturbed relative to many other seamount provinces globally. Recent surveys continue to document intact habitat-forming assemblages, abundant long-lived sessile fauna, and taxa new to science. This relative naturalness substantially increases the scientific and conservation value of the area by providing rare examples of minimally disturbed deep-sea ecosystems.

The ridge system also provides exceptional geographic and geomorphological representation. The Nazca Ridge is expressed as a broad aseismic ridge containing diverse seamount morphologies and contourite-related sedimentary features, whereas the Salas y Gómez Ridge is dominated by a volcanic island-seamount chain associated with long-lived intraplate volcanism. Together they encompass a wide range of geomorphic landforms and environmental conditions. The system spans a pronounced east-west oceanographic gradient, ranging from ultra-oligotrophic conditions associated with the South Pacific Gyre in the west to increasingly productive waters influenced by the Humboldt Current system toward the east. This gradient generates substantial variation in productivity, oxygen conditions, food supply, and ecological communities across the region.

Biologically, the area represents one of the most distinctive marine regions of the southeastern Pacific. Available evidence indicates exceptionally high levels of endemism. The region has long been recognised as an important biogeographic outpost linking the southeastern Pacific with Indo-West Pacific faunal affinities. Recent scientific expeditions continue to discover new taxa and expand understanding of biodiversity patterns throughout the ridges system, indicating that significant portions of the area's biodiversity remain undocumented.

As previously noted, the region also contains widespread concentrations of habitat-forming organisms that are intrinsically vulnerable to disturbance. Deep-sea corals, hydrocorals, sponges, and other sessile taxa exhibit slow growth, great longevity, low recruitment rates, and limited recovery potential. Evidence from other neighbouring seamount systems demonstrates that physical disturbance from bottom-contact fishing can result in ecological impacts that persist for decades or even centuries. Consequently, much of the ecological value of the ridge system derives from communities that possess both high conservation value and low resilience to disturbance.

The significance of the area for threatened and migratory species, particularly in areas within the high seas remains unclear. The evidence is strongest for benthic communities and certain localised nursery or foraging functions, such as Galápagos shark nursery habitat around Salas y Gómez Island (Chile's Exclusive Economic Zone), breeding of seabirds in Rapa Nui and Salas y Gómez Island and likely swordfish and Chilean jack mackerel recruitment and nursery areas associated with some parts of the ridges. However, for many highly mobile pelagic species, including seabirds, sea turtles, sharks, tunas, and marine mammals, the available evidence supports occurrence and habitat use rather than demonstrating that the region is uniquely important for critical life-history stages.

The scientific value of the area is exceptionally high. The ridge system provides a natural laboratory for studying seamount ecology, endemism, population connectivity, deep-sea biodiversity, oceanographic-biological interactions, and ecosystem responses to environmental gradients. Despite substantial recent advances in knowledge, only a small portion of the undersea features within the region have been directly surveyed. The recent discovery of previously unknown species and communities indicates that the area remains one of the most scientifically promising deep-sea regions globally.

The overall assessment undertaken by SPRFMO Members revealed broad agreement that the area satisfies several criteria relating to bioregional representation, biodiversity representation, uniqueness, vulnerability, naturalness, VME occurrence, cultural significance, and scientific interest. The only criterion that did not receive broad consensus concerned the degree to which the area has demonstrable special importance for the life-history stages of threatened or highly migratory species, reflecting ongoing uncertainties rather than an absence of ecological significance. To that effect, future data collection and research efforts could further improve understanding of the ecological role of the area for highly mobile species, including potential breeding, nursery, feeding, migratory, and connectivity functions. Additional information derived from telemetry studies, genetic analyses, fisheries-independent surveys, ecological monitoring, and observations from currently under-sampled sectors of the ridge system may help reduce existing uncertainties and strengthen future assessments of the area's significance for threatened species and critical life-history stages.

Current fishing activity within the area is relatively limited when compared to the wider southeastern Pacific, with most effort concentrated along the eastern portion of Nazca Ridge. Jumbo flying squid represents the dominant contemporary fishery, while tuna and swordfish fisheries contribute comparatively small proportions of their overall catches from within the broader area. Historical bottom-contact fisheries have occurred on some seamounts and provide evidence of the long-term ecological consequences that can result from disturbance of vulnerable deep-sea habitats.

Overall, the weight of evidence indicates that the Salas y Gómez-Nazca ridge system is a globally significant seamount province that combines exceptional biodiversity, high endemism, vulnerable marine ecosystems, remarkable geomorphological diversity, substantial scientific value, and relatively high ecological integrity. While uncertainties remain for some mobile pelagic species and unsurveyed portions of the ridge system, the scientific evidence consistently identifies the area as one of the most distinctive and ecologically important marine regions within the South Pacific.

Contents

1. Purpose

The purpose of this paper is to update the Scientific Committee on the work that the Salas y Gómez and Nazca Task Team, supported by its participants, including Members and Observers, has progressed in the last year. Here we present all relevant data and information regarding the Salas y Gómez and Nazca Ridges Area, which is used as a basis to discuss and propose potential enhanced management measures for this area, fulfilling task 6.2.4 *"Review and discuss all compiled data and information and present possible measures to SC14 for the recommendation to COMM15*' of the 2026 Scientific Committee Multi-annual Workplan.

The paper also includes an up-to-date analysis of all fishing and observer data, and an evaluation of fishing impacts for the Salas y Gómez and Nazca Ridges Area, which were undertaken largely by Chile under the guidance of the Salas y Gómez and Nazca Task Team. While the information presented here regarding fishing activities and impacts reflect the collective work of the Task Team, some Members have expressed technical reservations on specific aspects of the interpretation of the data during the development of the paper. Nevertheless, while not every technical aspect may have been unanimously agreed, this paper is the result of the collective work of the Salas y Gómez and Nazca Task Team. Consequently, this paper represents the most comprehensive compilation of scientific information for the Salas y Gómez and Nazca Ridges Area developed under SPRFMO to date, and as such, it intends to address tasks 6.2.1 "*Provide an analysis of all fishing data within the Salas y Gómez and Nazca ridges area, including for 2024*", 6.2.2 "*Provide an evaluation of fishing impacts for the Salas y Gómez and Nazca ridges area*", and 6.2.3 "*Undertake an analysis of observer data from all fisheries (not limited to SPRFMO if that data is available) regarding interactions with marine mammals, seabirds, reptiles and other species of concern within the Salas y Gómez and Nazca ridges area and adjacent areas*" of the 2026 Scientific Committee Multi-annual Workplan.

2. Background

At its 2024 annual meeting, the Commission adopted Decision 17-2024 To Protect the Salas y Gómez ad Nazca Ridges Area, tasking the Scientific Committee (SC) to include the Salas y Gómez and Nazca Ridges as a standing agenda item from 2024 onward. Under this item, the SC was instructed to compile and review relevant scientific information and data about the area and recommend possible measures to the Commission. These recommendations should be based on an ecosystem-based approach aimed at preserving biodiversity and fishery resources, as well a sustainable use of marine resources. Provided materials and advice from the SC to the Commission should also include the findings of any scientific research and work developed under the SC Multi-annual Workplan on the Salas y Gómez and Nazca Ridges Area.

Following the Commission's Decision 17-2024, the SC agreed to "*to establish a Task Team for the Salas y Gómez and Nazca Ridges Area to compile and review all relevant scientific information and data about the Area and recommend possible measures to be presented to the SC13 in 2025, based on an ecosystem-based approach that aims at preserving its biodiversity and fishing resources in the Convention Area.*" (SC12-Report). Following due process, Terms of Reference for t Task Team were defined to provide further detail regarding the tasks to be fulfilled (e.g., scope, deadlines, responsibilities). The Terms of Reference for the Task Team were last updated at the 13th Meeting of the SC in 2025 held in Wellington, New Zealand (Annex-17 of the SC13-Report).

Due to unforeseen circumstances the Task Team could not deliver their findings to the SC in 2025, as initially instructed by the Commission, but nevertheless kept steadily working during 2025 and 2026, with the outcomes of the work being presented here. As work was being progressed by the Task Team, some of the outputs were published as annexes of SC reports or stand-alone items but are included here to facilitate their accessibility and consideration, either in the main body of the manuscript, or as an annex. While no substantial changes have been made to such outputs, typography errors have been addressed.

The main work outputs provided in this report are:

- A definition of the Salas y Gómez and Nazca Ridges Area, in the context of SPRFMO, with clearly defined geographical boundaries
- An Evaluation Criteria to serve as the framework for assessing areas for enhanced protection measures, including the Salas y Gómez and Nazca Ridges Area
- A compilation of available information and data on the Salas y Gómez and Nazca Ridges Area, including an evaluation of fishing impacts and an analysis of historical fishing activity and observer data
- An assessment of information on the Salas y Gómez and Nazca Ridges Area against the Evaluation Criteria
- Potential recommendations to the Scientific Committee for the Salas y Gómez and Nazca Ridges Area

3. Scientific Information

This section provides an evaluation of information relating to the Salas y Gómez and Nazca Ridges Area (Figure 1), organised according to the Evaluation Criteria (see Annex A – Evaluation Criteria for assessing spatial management proposals) that was agreed by the Task Team and the SC in 2025 (SC13-Report). The materials provided here are based on technical documents (submitted to SPRFMO as Member scientific papers), with emphasis on peer-reviewed studies and formal reports that describe the geomorphology, oceanography, biodiversity, vulnerability, cultural significance, and research value of the area. The compiled information was used by Members to individually assess each criterion of the Evaluation Criteria, with a short summary of the scientific information developed to facilitate such assessment (see Annex B – Summary of available information). The Salas y Gómez and Nazca Ridges are recognised as an Ecologically or Biologically Significant Area (EBSA) by the United Nations Convention on Biological Diversity (CBD, 2017). This section builds upon the scientific basis underpinning the original EBSA description (Gálvez-Larach, 2012) and incorporates the advances in knowledge generated over the last decade (Wagner et al., 2021; Gaymer et al., 2025).

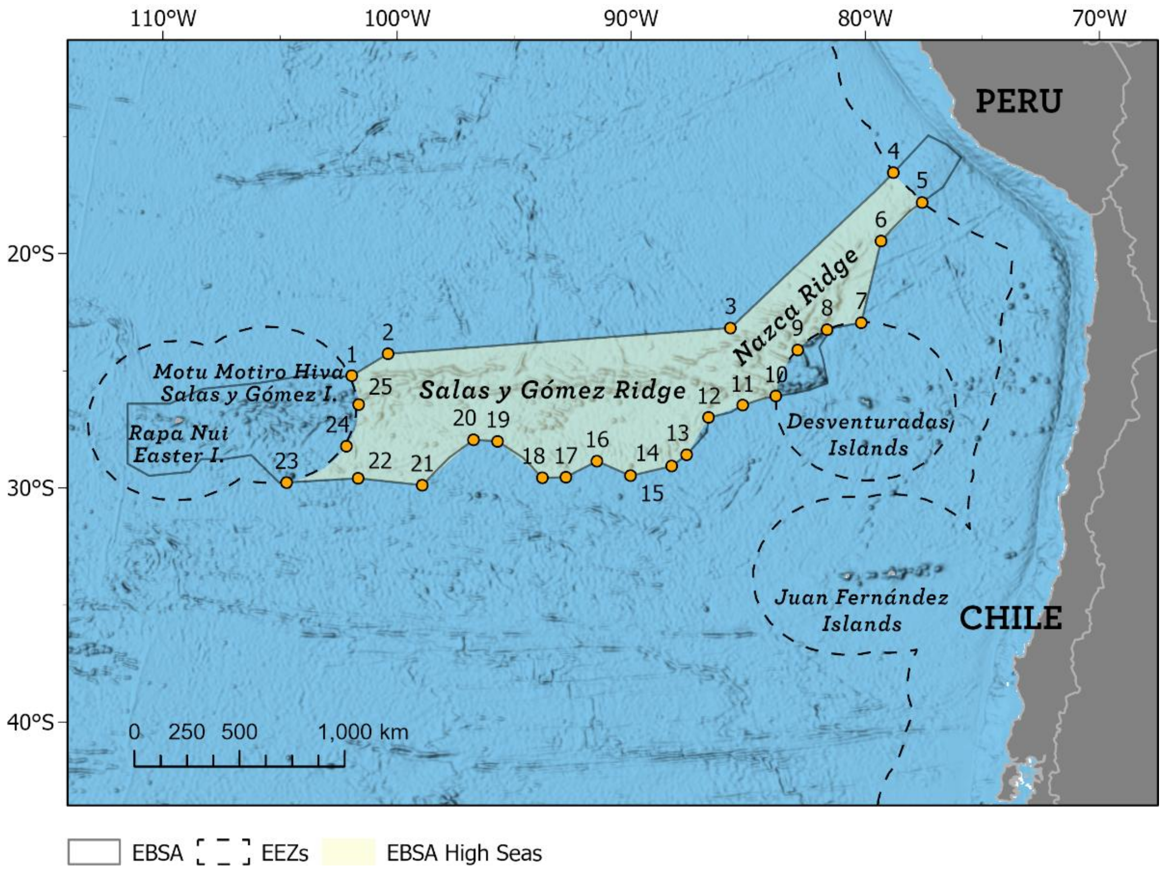

Figure 1 The Salas y Gómez and Nazca (SGN) Ridges Area (light-yellow polygon) that is located within the High Seas, with the main topographic and geographic features referenced in the text labelled. The SGN area represents 73% of the area recognised by the Convention of Biology Diversity as an ecologically or biologically significant area (EBSA, grey solid line) found beyond the Exclusive Economic Zones (EEZs, black dashed line) of Chile and Peru. The coordinates of the points can be found in Annex C.

3.1 Bioregional representation

3.1.a Area is known to contain unique, rare or distinct habitats or ecosystems that fishing operations will disturb

The Salas y Gómez and Nazca Ridges Area provides notable bioregional representation within the southeastern Pacific because it contains habitat types and ecosystems that are uncommon at regional and global scales, including the Easter Island and Desventuradas Ecoregions (Spalding et al., 2007, Wagner et al., 2021; Gaymer et al., 2025). Elevated hard-substrate features such as seamount summits and flanks, guyots, crests, and escarpments are likely to support structurally complex benthic communities dominated by habitat-forming deep-sea corals and sponges, including scleractinians, octocorals, stylasterid hydrocorals, antipatharians and hexactinellids (Clark et al., 2010, Tapia-Guerra et al., 2025, *in prep*). Habitat suitability index models using occurrence data from the area for vulnerable marine ecosystem (VME) indicator taxa (corals and sponges) across the ridges systems (Figure 2, Georgian et al., 2021; Parin et al., 1997; Mironov et al., 2006; Mechó et al. *in prep.*) indicate that prominent topographic features are likely to support distributions of stony corals and sponges, particularly on elevated terrain where current regimes and substrate characteristics favour sessile suspension feeders (Figure 3, Georgian et al., 2021). These habitat-forming taxa are recognised as VME indicator taxa under Annex 5 of the current SPRFMO bottom-fishing measures (CMM03-2025), and recent expeditions have shown evidence of their presence throughout both ridges (Easton et al., 2019; Friedlander et al., 2021; Tapia-Guerra et al., 2021a, b, 2025; Mechó et al. *in prep.*). These assemblages are directly relevant to bioregional representation and are not uniformly distributed throughout the Salas y Gómez and Nazca Ridges Area and instead are associated to a combination of bathymetry, substratum, and oceanographic conditions, a pattern similarly observed in other important biogeographical areas across the South Pacific (i.e., Anderson et al., 2016; Rowden et al., 2017; Stephenson et al., 2021).

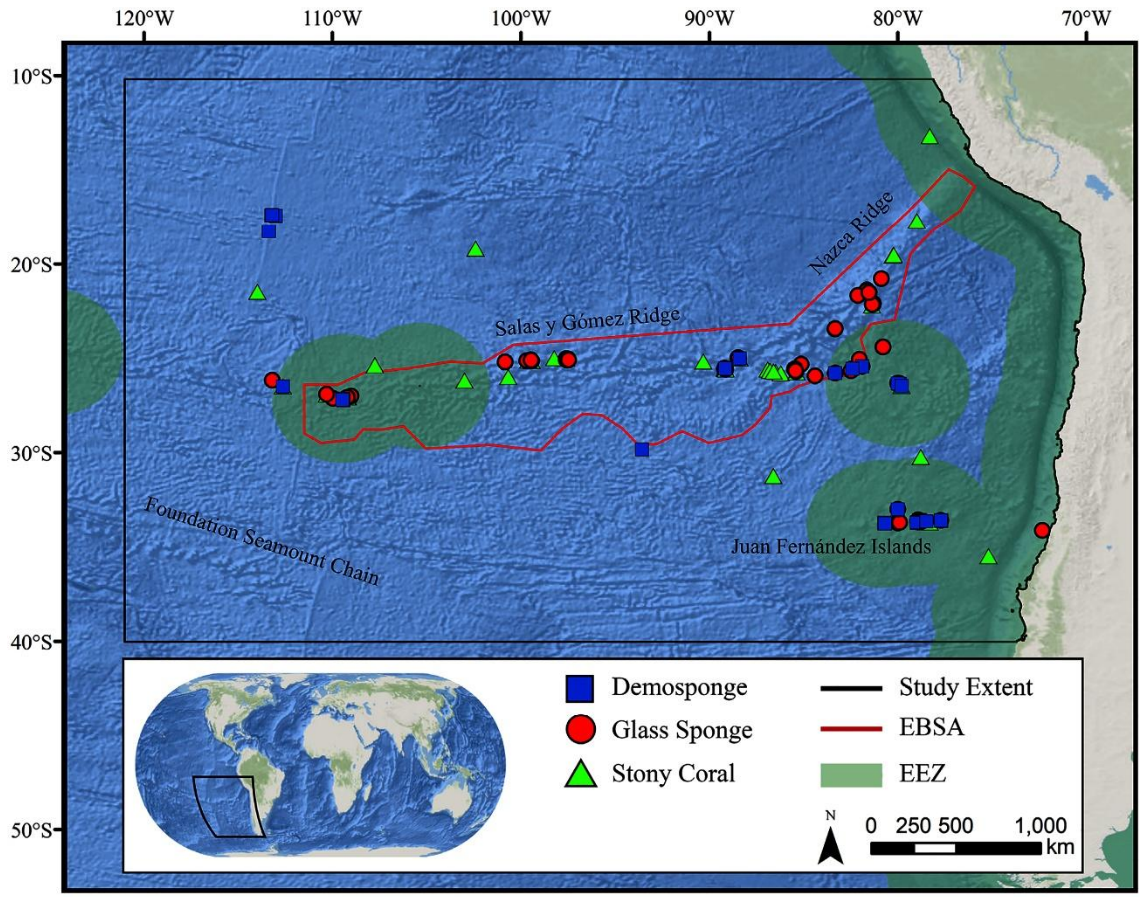

Figure 2 Distribution of occurrence records for demosponges, glass sponges, and stony corals, national exclusive economic zones (EEZs), and Ecologically or Biologically Significant Marine Area (EBSA) designation. Sourced from Georgian et al. (2021) https://doi.org/10.7717/peerj.11972/fig-1 .

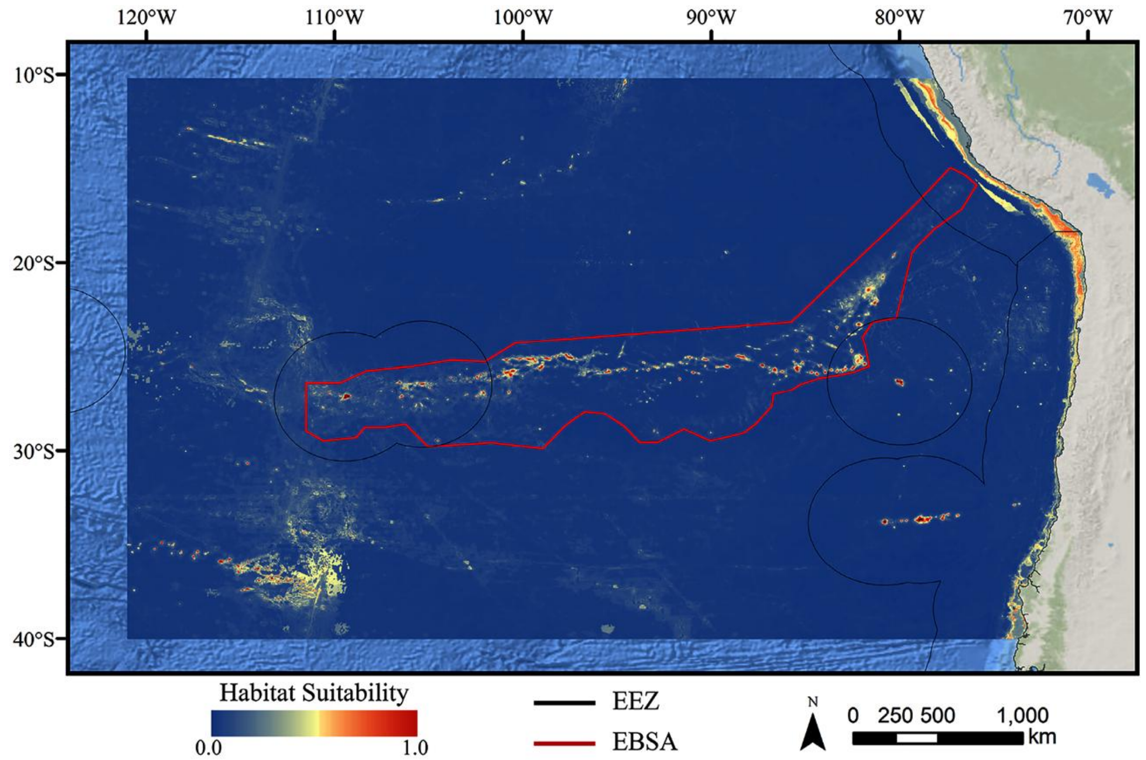

Figure 3 Predicted habitat suitability for the stony coral ensemble model. Warmer colours indicate more suitable habitat. Sourced from Georgian et al. (2021) https://doi.org/10.7717/peerj.11972/fig-5 .

Deep-sea benthic communities are widely recognised as vulnerable to direct contact from bottom gears and to other physical disruptions of the seabed (Clark et al., 2016), and current SPRFMO bottom-fishing measures (CMM03-2025) identify corals and sponges as VME indicator taxa due to their structural complexity, fragility, and generally slow recovery (SC09-DW11).

There is ample evidence in the primary literature that physical disturbance (for example, bottom trawling) can cause long-lasting changes to deep-sea benthic communities, particularly in seamounts and other habitats dominated by sessile, structure-forming taxa such as corals, hydrocorals, sea pens, and sponges. Clark et al. (2019) found that on New Zealand seamounts, heavily trawled sites had lower benthic abundance and richness than unfished or occasionally fished sites, and recovery remained limited after 15 years of protection; and a follow-up study by Goode et al. (2025) from the same region detected only early, spatially patchy signs of early recovery nearly two decades after fishing ceased. Work by Morrison et al. (2020) on Arctic sponge grounds showed that disturbed areas still differed from control sites and had lower megafaunal densities four years after disturbance. Similarly, evidence presented in Petit et al. (2026) demonstrates that trawled seamounts in the nearby Juan Fernández Archipelago still exhibit strong ecological consequences from bottom trawling activity occurring more than two decades ago, sharply contrasting with the healthy benthic ecosystem observed at an ecologically comparable and non-trawled proximate seamount (Petit et al., 2026; Tapia-Guerra et al., 2026).

The evidence assembled for this area therefore indicates that its bioregional significance is linked both to the presence of distinct benthic habitats and to the fact that these habitats are susceptible to disturbance when fishing activities interact with the seabed (Petit et al., 2026; Tapia-Guerra et al., *in prep.*).

The Salas y Gómez and Nazca Ridges are notable for containing ecological formations that appear to be rare in the global ocean. Recent syntheses and expedition reports describe exceptionally deep light-dependent coral and algal communities on parts of the western end of Salas y Gómez Ridge and at the intersection of the Nazca Ridge with the Salas y Gómez Ridge, extending beyond 300 m depth under conditions of exceptional water transparency and low turbidity (Easton et al., 2019; Tapia-Guerra et al., 2021b, 2025; Gaymer et al., 2025). This observation is significant because mesophotic communities at such depths are globally uncommon and poorly documented, and imply a distinctive interplay among irradiance penetration, water transparency, substrate availability, and local hydrography. Within a bioregional framework, these communities represent a habitat type that is indicative of a unique combination of oceanographic and geomorphological conditions that distinguishes the Salas y Gómez Ridge and Nazca Ridge within the broader Pacific Ocean (Parin et al., 1997; Tapia-Guerra et al., 2021b; Gaymer et al., 2025).

Even though these communities had been largely documented within the portions of the EBSA that overlaps with Chile's EEZ, recent expeditions have found mesophotic coral systems along seamounts of the western part of Salas y Gómez Ridge and in the transition zone between the Salas y Gómez and Nazca ridges, within the high seas (Tapia-Guerra et al., 2021b; Easton et al., 2024), confirming preliminary findings from historic Soviet expeditions described by Parin et al. (1997). Several of the seamounts in both ridges have peaks within the mesophotic zone where water temperatures are >15 °C), further suggesting suitable conditions for light-dependent benthic communities across non-surveyed locations (Figure 4) (Easton et al., 2019; Tapia-Guerra et al., 2021b, *in prep.*).

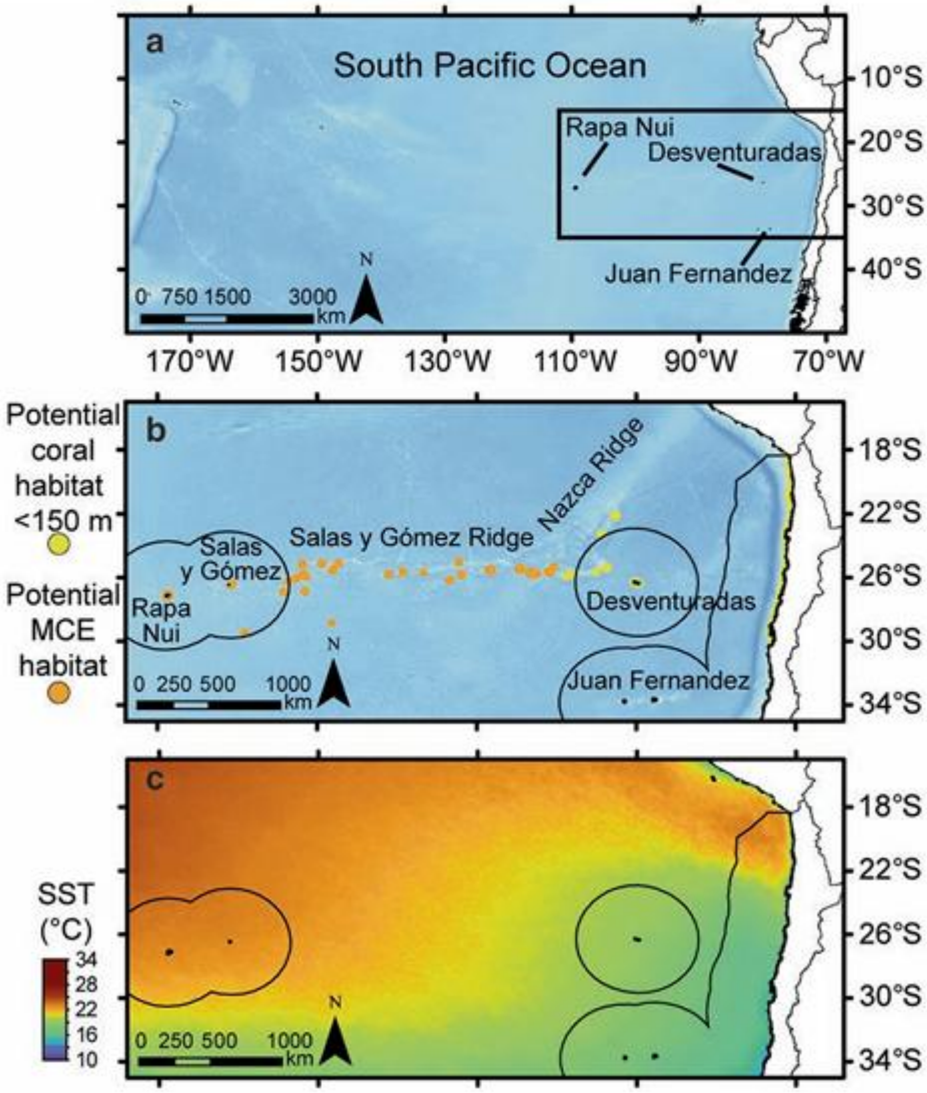

Figure 4 (a) South Pacific Ocean with the extent of the subsequent panels indicated by the black-outlined box. (b) Potential coral habitat and (c) sea surface temperature (SST) of the Salas y Gómez Ridge, Nazca Ridge, and Chilean Exclusive Economic Zone (EEZ). Potential coral habitat (yellow) was identified and defined as seafloor north of 30° S that has suitable depths (<150 m) to support mesophotic coral ecosystem (MCE) as identified from bathymetric data. Because in situ temperatures at these depths are <15 °C east of ~85° W, potential MCE habitat is likely restricted to zones highlighted in orange. Sourced from Easton et al. (2019).

3.1.b Areas with a comparatively higher degree of naturalness due to zero or a low level of human-induced disturbance or degradation from, for example, historical fishing activity

A second dimension of bioregional representation is the comparatively high degree of naturalness retained across much of the area (Wagner et al., 2021). Although some sectors of the wider South Pacific may have been substantially affected by bottom fishing (Stephenson et al., 2025), including nearby areas to the Salas y Gómez and Nazca Ridges Area (Porobic et al., 2019), available evidence indicates that large portions of the Salas y Gómez and Nazca ridges remain lightly disturbed (Gálvez-Larach, 2009; Georgian et al., 2021; Gaymer et al., 2025), with only 12 seamounts with historical bottom fishing activity reported (Dunstan et al., 2011), although anecdotal evidence suggests this number could be higher throughout both ridges (A. Smith, A.P. Smith Fishing Consultancy Ltd, pers.

comm., February 2026). This conclusion is supported by the persistence of intact benthic habitat-forming assemblages, the observation of abundant long-lived sessile fauna on surveyed seamounts, and the continuing discovery of taxa that are new or likely to be new to science (Wagner et al., 2021; Easton et al., 2024; Sellanes et al., 2024; Gaymer et al., 2025; Gallardo-Salamanca et al., 2026; Petit et al., 2026; Sánchez et al., *in review*). Three recent remotely operated vehicle surveys (Figure 5) have documented coral and sponge communities with substantial three-dimensional structure, as well as associated invertebrate and fish assemblages' characteristic of minimally altered deep-sea habitat (Easton et al., 2024; Sellanes et al., 2024; Schmidt Ocean Institute, 2024).

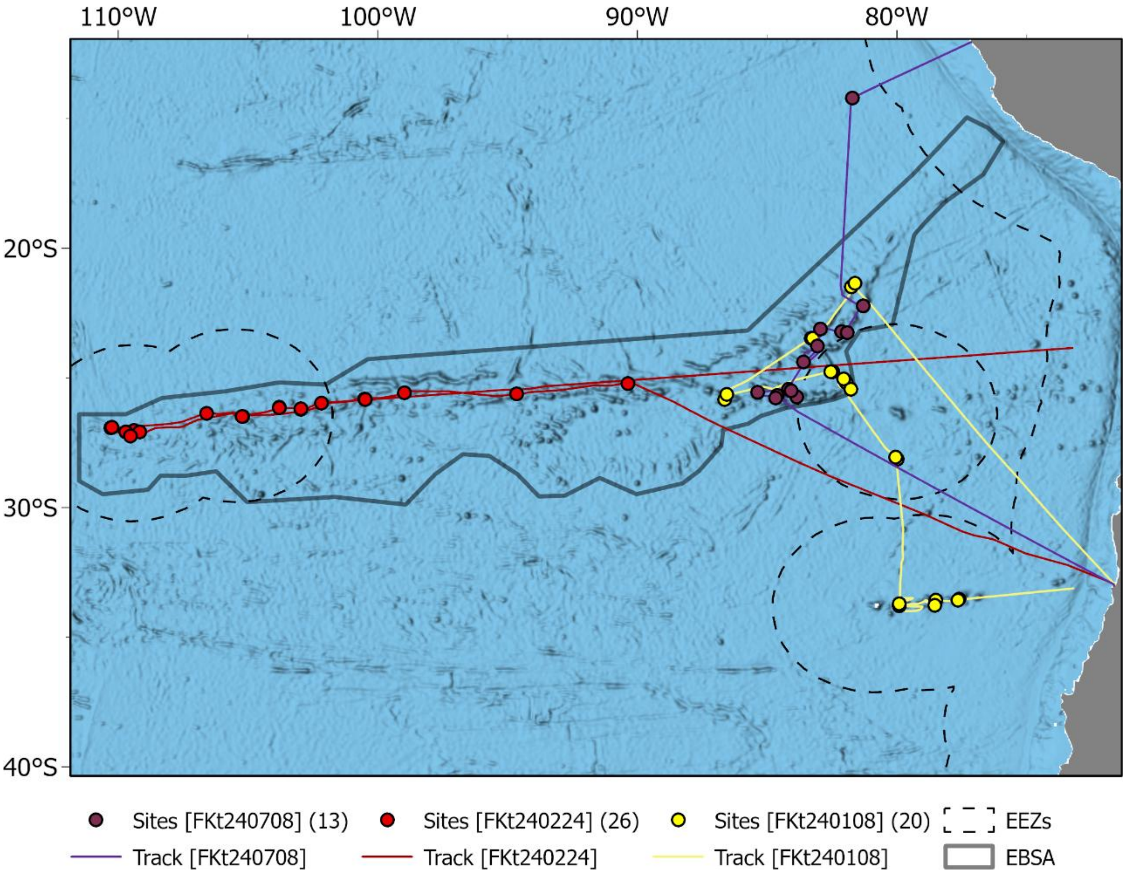

Figure 5 Surveyed sites and vessel tracks from three recent Schmidt Ocean Institute/Center for Ecology and Sustainable Management of Oceanic Islands research expeditions: FKt240108 (Jan-Feb 2024, in yellow), FKt240224 (Feb-Apr 2024, in red) and FKt240708 (Jul-Aug 2024, in fuchsia). Number of surveyed sites are given in round brackets for each expedition. Boundary lines for the Ecologically or Biologically Significant Area (EBSA) are shown in solid grey, and Exclusive Economic Zones (EEZs) are shown as black dashed lines for reference.

From a bioregional perspective, the presence of relatively undisturbed ecosystems is scientifically important. Such systems can function as benchmarks for evaluating anthropogenic effects elsewhere, and they capture ecological configurations that may already have been diminished in more heavily exploited settings. In that sense, bioregional representation in this area does not depend only on species lists or habitat counts; it also depends on the maintenance of ecological integrity. The combination of distinct habitat types and relatively low disturbance therefore provides a strong basis for concluding that the area contributes substantially to bioregional representation within the SPRFMO Convention Area, a finding aligned with the EBSA recognition (Criteria 1 and 7) by the United Nations Convention on Biological Diversity (CBD, 2017).

3.2 Geographic and/or geomorphological representation

3.2.a The area provides for important or desirable geographic representation within the SPRFMO area

The Salas y Gómez and Nazca ridges jointly represent an extensive and unusual seamount system in the southeastern Pacific. Regional compilations indicate that the Salas y Gómez and Nazca ridges system contains approximately 110 seamounts, representing about 41% of the seamounts identified in the southeastern Pacific, and is characterised by an exceptionally high concentration of seamounts (Gálvez-Larach, 2009). Although they differ in orientation, geological history, and oceanographic setting, these ridges comprise a nearly continuous seamount chain extending over approximately 4,000 km (across Peruvian and Chilean waters and the high seas) and are widely recognised as a single biogeographic region characterised by high biodiversity, endemism, and ecological connectivity among seamount habitats (Fedorov, 1985; Parin et al., 1997; Wagner et al., 2021; Gaymer et al., 2025).

The Nazca Ridge extends in a northeast-southwest direction to about 29°S, 90°W for approximately 2,200 km from the Peru-Chile trench region, while the Salas y Gómez Ridge extends roughly 2,800 km in a more zonal configuration from the East Pacific Rise and intersects the Nazca Ridge at about 24°S, 83°W (Woods and Okal, 1994; Gaymer et al., 2025). Woods and Okal (1994) described the Nazca Ridge based on short-period Rayleigh waves dispersion; according to their results, the Nazca Ridge is clearly visible, standing about 1,500 m above the surrounding abyssal plain, and extending south-west from the Peru-Chile trench to where it intersects the Salas y Gómez Ridge. Past the intersection, however, the 3,500 m isobath continues south-west about 29°S, 90°W, thereby forming a linear feature of low relief along the same geographic trend as the recognised Nazca Ridge, until the Roggeveen Rise. This combination provides broad geographic representation by spanning gradients in latitude, longitude, depth, productivity, and water-mass characteristics across a large portion of the SPRFMO area (Hammond et al., 2025).

Geomorphological classifications place the Nazca Ridge within the broader category of large oceanic topographic or igneous provinces (classified as an Oceanic Plateau) and characterise it as an aseismic intraplate ridge forming a broad and comparatively continuous regional topographic structure (Parin et al., 1997; Harris et al., 2014; Harris et al., 2023; Harris et al., 2026). However, this regional continuity does not imply morphological uniformity. Parin et al. (1997) described substantial variation in the morphology, summit configuration, depth and relief of individual seamounts along the ridge, distinguishing flat sub-horizontal, convex and acute-topped summit morphologies. Bathymetric analyses further reveal flat-topped guyots, dome-shaped edifices, irregular multi-peaked seamounts and elongated ridge-like structures (Fedorov and Ivanov, 1981, 1984). According to Hampel et al. (2004), the southwestern part of the Nazca Ridge exhibits greater bathymetric elevations associated with volcanic features than the northeastern part, where the relief is significantly gentler. Superimposed on this volcanic and tectonic framework, towards northeast of the Nazca Ridge, the sedimentary morphologies consistent with contourite drift systems have been recognised on and around the ridge, reflecting interactions among volcanic construction, tectonic evolution, deep-water circulation and sediment transport (Calvès et al., 2022; Harris et al., 2023; Harris et al., 2026).

The Salas y Gómez Ridge, by contrast, is more appropriately described as an island-seamount chain, expressed as an irregularly spaced, quasi-linear series of volcanic islands, guyots, and seamounts associated with long-lived intraplate volcanism (Pilger and Handschumacher, 1981; Parin et al., 1997). Although organised along the Easter-Salas y Gómez alignment, the ridge exhibits substantial geomorphological variability, including elongated volcanic edifices, rounded and dome-shaped seamounts, broad flat-topped features, and structurally complex morphologies (Rodrigo et al., 2014). Considered together, the Nazca and Salas y Gómez ridges encompass a diverse assemblage of seafloor landforms and geomorphic classes within a contiguous biogeographic region.

Across the Salas y Gómez and Nazca ridges system, three major geographic and biogeographic sectors can be distinguished: the Easter Island Ecoregion in the western sector, the Salas y Gomezian region along the central Salas y Gómez Ridge, and the Nazca region toward the eastern sector (Fedorov, 1982, 1985; Fedorov and Ivanov, 1981, 1984; Tapia-Guerra et al., *in prep.*). These areas are superimposed on a geomorphologically heterogeneous seafloor (Harris et al., 2026) and encompass contrasting combinations of seamount and mound morphology, summit depth, flank configuration, symmetry and vertical relief, and gentle relief in the north-east Nazca Ridge (Calvès et al., 2021). The Easter Island sector includes morphologically diverse volcanic edifices influenced by the complex tectonic setting associated with the Easter Microplate and Easter Fracture Zone, whereas the central Salas y Gómez sector is characterised by a prominent E–W volcanic alignment containing numerous large seamounts and broad flat-topped or plateau-like edifices. Toward the east, the Nazca sector comprises generally deeper and, in several cases, more asymmetric edifices embedded within the broader topographic structure of the Nazca Ridge (Tapia-Guerra et al., *in prep.*). Considered together, the Easter Island, Salas y Gomezian, and Nazca sectors therefore represent a contiguous but geomorphologically heterogeneous seafloor province, encompassing volcanic chains, individual seamounts and guyots, ridge-like structures, escarpments, and sedimentary depositional features across multiple spatial scales.

Oceanographically, the area bridges contrasting regimes. Western sectors lie closer to the South Pacific Gyre and are characterised by very low nutrient concentrations (e.g. ultra-oligotrophic system) (SC12-Doc37) and high water clarity, whereas easternmost sectors are influenced by the Humboldt Current system, the Peru-Chile upwelling domain, and an oxygen minimum zone of approximately 700-m thick due to a high nutrient content (SC13-SGN01_rev1; SC12-Doc37). The transition from ultra-oligotrophic conditions associated with the South Pacific Gyre along the Salas y Gómez Ridge to oligotrophic and mesotrophic in the Nazca Ridge and eutrophic in the easternmost portion, due to the influence of the upwelling system (Cornejo, 2026), is exceptional within an interconnected ridge system and likely contributes to substantial ecological and biogeographic turnover across the region (Wagner et al., 2021; Hammond et al., 2025; Harris et al., 2026). These pronounced environmental gradients may generate distinct ecological settings along the Salas y Gómez and Nazca Ridges, consistent with the ecological benthic-unit framework proposed by Harris et al. (2026). The area therefore represents more than a single habitat type; it captures a cross-section of the southeastern Pacific's oceanographic heterogeneity.

3.2.b The area proposed is known to contain unique or unusual geomorphological features that fishing operations may damage

The geomorphological distinctiveness of the area is further reflected in the concentration of seamounts, guyots and volcanic elevations (Harris et al., 2014; Yesson et al., 2011). Regional compilations indicate that the ridge system contains more than 110 seamounts and guyots in a relatively small area (94% of the Southeast Pacific and 11% of the Pacific Ocean (Kitchingman et al., 2008)), making it one of the densest seamount concentrations in the southeastern Pacific, and among the largest concentrations of seamounts in the high seas globally (Georgian et al., 2021; Harris et al., 2014; Gálvez-Larach, 2009; Yesson et al., 2011) (Figure 6). Summits of these undersea features occur over a broad bathymetric range, from approximately 150 m below the sea surface to depths well beyond 1,000 m, while surrounding abyssal depths exceed 4,000 m (mean 2,100 m) (Gálvez-Larach, 2009; Wagner et al., 2021; Gaymer et al., 2025). The resulting extreme topographic relief generates pronounced environmental gradients over relatively short horizontal distances, producing exceptional habitat heterogeneity and promoting ecological partitioning according to depth, hydrodynamic conditions, substrate characteristics, and oxygen availability (Clark et al., 2010).

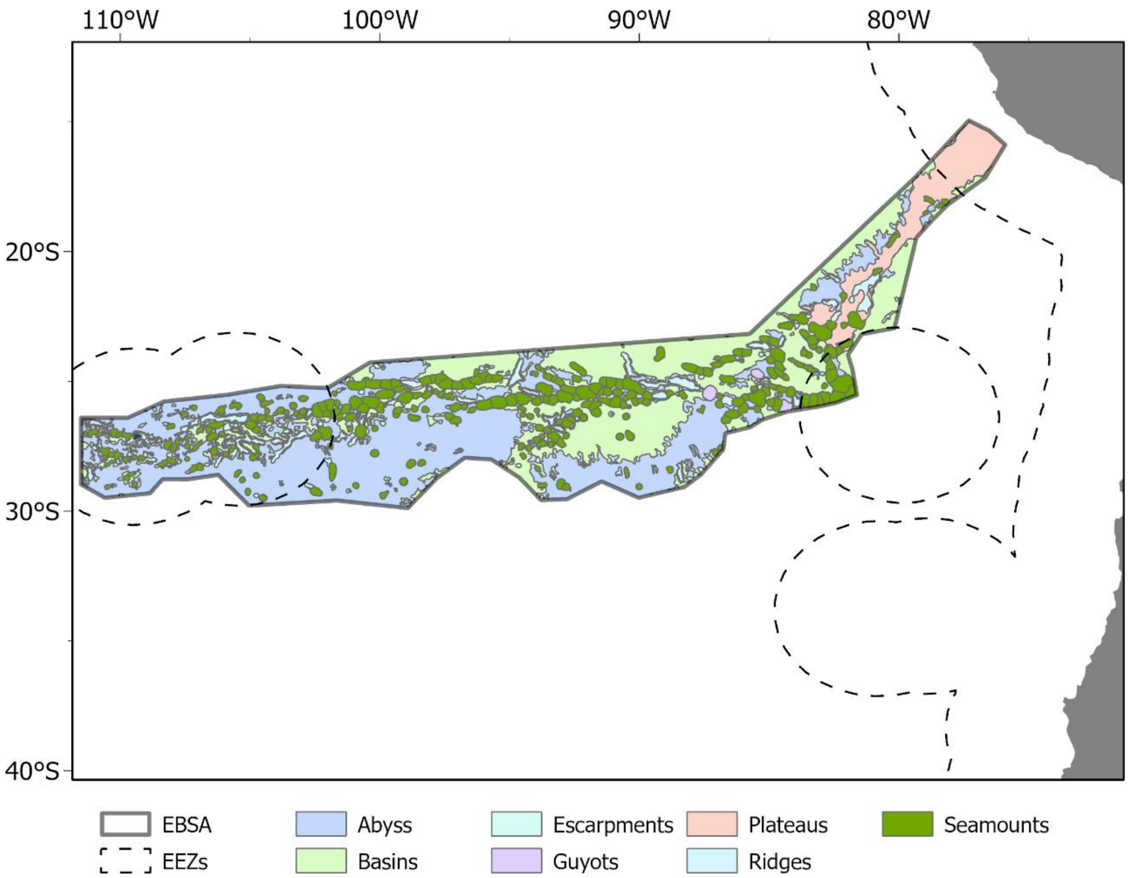

Figure 6 Distribution of seafloor geomorphological undersea features (Harris et al., 2014). Boundary lines for the Ecologically or Biologically Significant Area (EBSA) are shown in solid grey, and Exclusive Economic Zones (EEZs) are shown as black dashed lines for reference. Underlying spatial data can be accessed from http://www.bluehabitats.org.

The Nazca Ridge is believed to rise approximately 1,500 m (Hampel et al., 2004) to 2,000 m (Wipf et al., 2008) above the adjacent oceanic floor, with elevations approximately ranging from 50 m to 1,000 m towards the eastern end, which also displays evidence of strong biophysical coupling with regional circulation (SC12-Doc37). However, recent studies based on high-resolution multibeam bathymetric data complemented by backscatter have shown that the Nazca Ridge harbours seamounts with summits between 200 and 500 m deep (Tapia-Guerra et al., *in prep.*), in line with early descriptions of the area provided by Fedorov and Ivanov (1981, 1984) and Parin et al. (1997).

Mesoscale eddies can facilitate the offshore transport of organic matter from the Peruvian margin toward the Nazca Ridge, potentially contributing to enhanced particulate organic carbon (POC) delivery and deposition in deep-ridge ecosystems (Flores et al., 2026). Regional POC flux modelling using a power-law attenuation function indicates that only about 16% of net primary production is exported below the euphotic zone (40-60 m) in the portion of the Nazca Ridge within the Peruvian jurisdictional waters (SPRFMO SC13-SGN01_rev1; SPRFMO SC12-Doc 37). Combined with the estimated contributions of the physical and migrant carbon pumps, this limited downward transfer of organic material suggests weak coupling between pelagic production and benthic ecosystems due to zooplankton and bacterial grazing in the eastern most portion of the Nazca Ridge (SPRFMO SC13-SGN01_rev1; SPRFMO SC12-Doc 37). However, this may not hold across the rest of the Nazca Ridge and the Salas y Gómez Ridge. Recent work by Cornejo (2026) shows high values of Phytoplanktonic Biomass Export Index and Benthopelagic Index in oceanic stations across the Salas y Gómez and Nazca ridges in depths of up to 4,000 m, suggesting a greater transfer potential of phytoplankton biomass and particulate organic matter to the seafloor. Cornejo (2026) indicates though, that these indices should be interpreted as indirect indicators, which require further validation, ideally through the continuous monitoring of oceanographic and biogeochemical variables, as well as sediment traps and benthic observations coupled with pelagic measurements. Despite exceptionally high primary production, the Peruvian coast “performs as a relatively inefficient biological carbon pump due to extensive remineralization, zooplankton grazing, and high trophic transfer efficiencies” (Bam et al., 2023).

The Nazca Ridge's interaction with low-oxygen water masses, pronounced relief, and across-slope current structures likely influences food supply to benthic communities and may shape species distributions in ways not observed in simpler abyssal settings. Overall, there is a transition from relatively productive waters influenced by the Humboldt Current system in the easternmost end to oligotrophic and ultra-oligotrophic conditions toward the Salas y Gómez Ridge and the South Pacific Gyre (Cornejo 2026). Across this gradient, declining nutrient availability and primary productivity may be associated with increasing dependence on pelagic food webs and the transport of organic matter through zooplankton and other mobile consumers (Cornejo 2026).

The susceptibility of these geomorphological features to damage follows from their ecological function. Throughout the Salas y Gómez and Nazca Ridges, seamount summits, ridges, and escarpments provide essential habitat for diverse assemblages of sessile and habitat-forming taxa, owing to the availability of hard substrates and hydrodynamic conditions that enhance the delivery of suspended food particles (Clark et al., 2010; Wagner et al., 2021). Physical disturbance to these features, particularly where it affects sessile habitat-forming taxa such as corals and sponges, can reduce habitat complexity, alter community composition, and require decades to centuries for recovery (Althaus et al., 2009; Clark et al., 2010; Koslow et al., 2001; Petit et al., 2026).

The significance of the area's geomorphological diversity extends beyond the representation of distinct landforms, because these features underpin habitat heterogeneity, support vulnerable habitat-forming communities, and influence ecosystem structure and function. Consequently, disturbance to the geomorphology or the associated biota may have disproportionate ecological consequences (Althaus et al., 2009; Clark et al., 2010; Wagner et al., 2021, Gaymer et al., 2025).

3.3 Biodiversity representation

3.3.a The area is known to contain unique or rare (occurring in only a few locations) species, populations or communities

The Salas y Gómez and Nazca ridges support exceptionally distinctive marine biological assemblages characterised by high levels of endemism, evolutionary uniqueness, and strong biogeographic isolation. Longstanding ichthyological work identified the ridge system as a major biogeographic transition zone and the easternmost extension of Indo-West Pacific affinities in the southeastern Pacific, with a fish fauna containing a substantial endemic component (Parin, 1991; Parin et al., 1997). More recent synthesis has extended this picture by documenting high levels of endemism across fish and invertebrate assemblages associated with the ridge system and neighbouring island groups, highlighting the region as a centre of speciation and evolutionary diversification (Wagner et al., 2021; Chavez-Molina et al., 2023). Regional endemism in the Salas y Gómez and Nazca ridges is exceptionally high, with estimates ranging from approximately 41-44% for fishes and 46-51% for benthic invertebrates, reflecting the region's long-term isolation and unique evolutionary history (Parin et al., 1997; Gálvez-Larach, 2012). Surveys of nearshore reef fishes at the Juan Fernández and Desventuradas Islands found that endemic species comprised up to 96-99% of total fish abundance, a level considered among the highest known examples of assemblage-level endemism in marine ecosystems globally (Friedlander et al., 2016). Nevertheless, continued discoveries of new species and limited sampling across some habitats indicate that biodiversity inventories for the broader ecoregion remain incomplete (Friedlander et al., 2016; Wagner et al., 2021).

The area is also increasingly recognised as supporting ecological formations of exceptional global significance. Gaymer et al. (2025) reported the presence of the deepest known light-dependent coral and algal communities (below 300 m). These assemblages highlight a unique combination of oceanographic, geomorphological, and ecological conditions that have no known parallels elsewhere in the global ocean. And although such assemblages had been documented at the western end of the Salas y Gómez Ridge, around Rapa Nui and Salas y Gómez Island, and at the intersection of the Nazca Ridge with the Salas y Gómez Ridge within Chile's EEZ (Parin et al., 1997; Tapia-Guerra et al., 2021b), recent expeditions have reported mesophotic coral systems along seamounts of the western part of Salas y Gómez Ridge within the high seas (Figure 5) (Easton et al., 2024). Wagner et al. (2021) reviewed earlier discoveries from seamount expeditions, and recent post-cruise reports from Easton et al. (2024) and Sellanes et al. (2024) note additional specimens and morphotypes suspected to represent new taxa.

Despite growing scientific attention and significant recent research efforts, some parts of the Salas y Gómez-Nazca ridge system remain incompletely documented, particularly across its deep-sea habitats and many seamounts. Even so, it is widely recognised as a global marine biodiversity hotspot and among the most distinctive biogeographic regions in the southeastern Pacific (Parin et al., 1997; Wagner et al., 2021; Gaymer et al., 2025). Rare species and communities in this context are not defined only by low abundance but also by geographically restricted occurrence, unusual habitat associations, and taxonomic novelty. It is important to note that these attributes are most strongly expressed in the region's benthic and seamount-associated communities, which exhibit exceptionally high levels of endemism and have yielded numerous species new to science, indicating that the biodiversity of many ridge habitats remains incompletely characterised (Parin et al., 1997; Wagner et al., 2021; Gaymer et al., 2025).

3.3.b The area is known to contain a high diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity

Beyond endemism, the area supports a broad diversity of ecosystems and habitat types. Benthic habitats include hard-substrate coral and sponge gardens, mixed assemblages on seamount flanks, soft-sediment environments influenced by organic matter deposition, and shallow to mesophotic phototrophic communities, the latter having been documented at the western extremes of the system around Rapa Nui and Motu Motiro Hiva (also known as Easter Island and Salas y Gómez, respectively), and according to reports from recent expeditions, also in the high seas of the Salas y Gómez Ridge and at the intersection of the Nazca Ridge with the Salas y Gómez Ridge (Easton, 2024; Easton et al., 2019; Wagner et al., 2021). Pelagic habitats are equally varied because the ridge system intersects migratory pathways, frontal structures, eddy fields, and productivity gradients. Habitat suitability models developed by Georgian et al. (2021) predicted favourable conditions for a wide distribution of corals and sponges along seamounts, ridges, and escarpments. While these models indicate that benthic diversity is likely distributed across numerous discrete topographic nodes rather than being concentrated at only a few localities, it is important to note that direct in situ observations remain geographically concentrated, leaving significant sampling gaps across much of the system, particularly on the northeast portion of the Nazca Ridge. Georgian et al. (2021) acknowledged that the scarcity of direct observations in deeper waters throughout the area is an obstacle for effective spatial management, categorising the area as a 'data-poor' environment. However, information collected in recent years from both the Nazca and the Salas y Gómez ridges (Figure 5) has significantly enhanced the current understanding of distribution and abundance of dominant benthic invertebrate taxa, as new confirmed records across both ridges have been reported and analysed, and subsequently included in the validation and further development of predictive models of deep-sea corals and sponges in the area (Easton, 2024; Sellanes, 2024; Tapia-Guerra et al. 2025, 2026, Mechó et al. *in prep.*).

The area also has documented significance for life stages or concentrations of some pelagic species. Fisheries-related studies identified the Nazca Ridge and the eastern Salas y Gómez Ridge as a nursery area for swordfish (Yáñez et al., 2004; Yáñez et al., 2006), as well as for Chilean jack mackerel (Arcos, 2001, as cited in Wagner et al. (2021) and Gaymer et al. (2025)). Additional work cited in recent syntheses indicates nursery areas for sharks around Rapa Nui and Salas y Gómez Island (Morales et al., 2018; Morales-Serrano & Gonzalez-Pestana, 2024). These examples show that biodiversity representation in some parts of the area includes not only resident benthic assemblages but also ecologically important functions for wide-ranging pelagic fauna.

Community composition varies markedly across the Salas y Gómez and Nazca Ridge system, with fish and invertebrate assemblages showing high levels of spatial turnover among seamounts and subregions, indicating substantial beta diversity across environmental and geographic gradients (Friedlander et al., 2021). This is expected in a system characterised by strong gradients in depth, isolation, current exposure, oxygen concentration, and food supply. Such gradients can produce distinct summit, upper-slope, mid-slope, and deep-flank assemblages on individual seamounts, while broader east-west environmental variation generates additional turnover across the ridge system. Consequently, the Salas y Gómez and Nazca ridges support a highly heterogeneous mosaic of assemblages, with substantial species turnover among locations and environmental settings contributing to high regional biodiversity. Despite this heterogeneity, the ridge system may also facilitate connectivity among populations through dispersal pathways linking seamounts that maintain genetic exchange (Flores et al., 2026). These interacting processes likely contribute to the exceptional biogeographic distinctiveness and elevated endemism documented for the region's benthic and seamount-associated fauna (Parin et al., 1997; Wagner et al., 2021). Regardless the variability, several groups such as sponges, corals, toad fishes, macrourids, and gastropods are present across both ridges (Sazonov and Iwamoto, 1992; Tenorio et al., 2024; Gaymer et al., 2025). This suggests a degree of ecological connectivity throughout the area, although this hypothesis is somehow at odds with the idea that some species' distributions may be constrained by the contrasting oceanographic conditions of the biogeographic transition zone located between 82° and 85°W (Fernández-Zúñiga et al., 2025; Parin et al., 1997).

3.3.c The area is known to contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery

Much of the ecological value of the Salas y Gómez-Nazca Ridge system is linked to fragile habitat-forming species. Surveys of ridge seamounts have recorded diverse assemblages of deep-sea corals, hydrocorals, gorgonians, and sponges, which are recognised as vulnerable marine ecosystem (VME) indicator taxa (SPRFMO CMM 03-2025 Annex 5) (Georgian et al., 2021; Friedlander et al., 2021; Wagner et al., 2021; Gaymer et al., 2025;). Until recently, records of such assemblages were predominantly linked to studies and surveys conducted across seamounts in the Rapa Nui-Salas y Gómez region and the Nazca-Desventuradas Marine Park, with limited sampling within the high-seas, although modelling suggested presence of these assemblages in unsampled undersea features beyond national jurisdiction (Figure 2) (Georgian et al., 2021). Recent expeditions (Figure 5) and studies have confirmed this across a variety of surveyed sites within and outside the high seas portion of the EBSA (Tapia-Guerra et al., 2025, 2026; Mechó et al. *in prep.*).

VME indicator taxa create structurally complex habitats that increase benthic heterogeneity and provide refuge, settlement surfaces, and feeding opportunities for a diverse associated fauna (Watling & Auster, 2021), which contribute to the region's ecological complexity. Many habitat-forming species, particularly black corals (Antipatharia) and sponges, are exceptionally long-lived and slow-growing, with recovery periods that may extend over decades to centuries, and in some cases longer (Wagner et al., 2021; Gaymer et al., 2025). The same biological and morphological characteristics that make these taxa important habitat formers, including slow growth, great longevity, erect and fragile structures, and low recovery rates, also render them highly susceptible to physical disturbance and slow to recover following damage (FAO, 2009; Petit et al., 2026).

The repeated documentation of coral-, sponge-, and other VME-associated assemblages across surveyed seamounts indicates that vulnerable benthic habitats are a widespread component of the Salas y Gómez-Nazca Ridge ecosystem. Their prevalence, combined with the ecological importance and vulnerability of habitat-forming taxa, supports the view that the ridge system is representative of a biologically rich deep-sea environment characterised by both high ecological value and sensitivity to disturbance (Friedlander et al., 2021; Watling & Auster; 2021).

3.4 Uniqueness and rarity

3.4.a The area warrants conservation and preservation due to their unique features, resources, and/or characteristics

The distinctiveness of the Salas y Gómez-Nazca Ridge system arises from the combined effects of geographic isolation, complex seamount topography, and strong oceanographic and environmental gradients, which together have promoted the development of highly endemic and biogeographically unique biological communities (Parin et al., 1997; Friedlander et al., 2021; Wagner et al., 2021). Biogeographically, the ridge benthic fauna has long been recognised as unusual for the eastern Pacific because it contains affinities with the Indo-West Pacific while remaining geographically separated from the core distribution of many related taxa (Parin, 1991). This configuration has likely promoted colonisation, isolation, and local diversification over evolutionary time. Recent reviews continue to identify the area as a globally important hotspot of marine distinctiveness, with elevated endemism and a high potential for cryptic diversity (Wagner et al., 2021; Gaymer et al., 2025).

Endemism is one of the defining characteristics of the biodiversity associated with the Salas y Gómez and Nazca Ridge system and a key indicator of its ecological and evolutionary significance. Although estimates differ among taxa and are constrained by incomplete sampling, the literature summarised by Chavez-Molina et al. (2023) indicates that endemic fish and invertebrates comprise a substantial fraction of the known biota associated with the ridge system and nearby islands. Studies conducted throughout the region, including the Desventuradas Islands and Juan Fernández archipelago, have documented exceptionally high rates of endemism among reef, benthic, and demersal communities (Friedlander et al., 2016; Sellanes et al., 2019, Gaymer et al., 2025). While island-focused studies cannot be extrapolated uniformly to the entire Nazca Ridge, they suggest the broader interpretation that the ridge-linked seascape functions as an evolutionary and ecological centre of uniqueness, however, this interpretation remains to be validated for the northern Nazca Ridge proper, where biological data is more limited and sampling remains spatially uneven. Studies based on data collected by recent expeditions (Figure 5) are likely to help confirm this interpretation.

The western and eastern portions of the ridge system are also distinctive in different ways. Western sectors near the centre of the South Pacific Gyre experience ultraoligotrophic conditions and exceptional water transparency. These conditions appear to enable unusual photic-zone depth penetration and facilitate the deepest recorded light-dependent coral and algal communities (see section 3.2). In contrast to the ultra-oligotrophic western sectors of the ridge system, the Nazca Ridge shows oligotrophic and mesotrophic conditions and at its eastern part is influenced by productivity exported from the Humboldt Current upwelling ecosystem through mesoscale eddy transport. Despite the very high primary production, the Peruvian coast appears to be a relatively inefficient biological carbon pump (SPRFMO SC13-SGN01_rev1; SPRFMO SC12-Doc 37, Bam et al., 2023) (see section 3.2.b), with further research needed is needed to understand carbon fluxes and remineralisation rates are modified under El Niño and La Niña (Bam et al., 2023). These nutrient cycling processes can alter the delivery of particulate organic carbon to offshore ridge habitats, where seamount topography can modify circulation patterns, influence benthic-pelagic coupling, and affect the distribution of food resources to deep-sea communities (SPRFMO SC13-SGN01_rev1; SPRFMO SC12-Doc 37), although this may be limited to the Nazca Ridge (Flores et al., 2026). A recent study based on data from 58 cruises suggests that at the Salas y Gómez and Nazca ridges holds a great potential capacity for phytoplankton biomass and particulate organic matter transfer to the seafloor, up to depths of approximately 4,000 m (Cornejo 2026). Dissolved oxygen, nutrient cycling, and biological productivity are linked through numerous feedback mechanisms, many of which remain poorly understood. This limits our ability to reliably assess their impacts as ocean conditions continue to change.

In scientific terms, rarity in this region should not be interpreted solely as scarcity. Rather, it encompasses restricted geographic occurrence, unusual ecological function, singular environmental combinations, and the occurrence of taxa or communities with limited known analogues elsewhere. On that basis, the area's unique features comprise both biotic and abiotic attributes, including endemic assemblages, deep phototrophic communities, a dense seamount chain, and a ridge system spanning contrasting trophic regimes. These properties collectively justify treatment of the area as exceptional; however, it is critical to note that biological knowledge of the ridges remains remarkably sparse; 32 discrete seamounts have been explored so far in the region (Figure 5) (Georgian et al., 2021; Tapia-Guerra et al., 2021, *in prep*.; Mechó et al. *in prep*.).

3.5 Vulnerability, fragility, sensitivity, or slow recovery/resilience

3.5.a Area contains either (i) unique ("the only one of its kind"), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features

The vulnerability of the Salas y Gómez and Nazca Ridges Area is closely tied to the composition of its benthic communities and the life-history characteristics of key habitat-forming taxa. Survey data, although limited to 32 discrete seamounts, indicate that many seamounts are dominated by sessile, structure-forming organisms such as deep-sea stony corals, octocorals, black corals, stylasterids, and sponges. These groups often have low natural mortality, episodic recruitment, slow growth, and long lifespans. Consequently, the direct removal or breakage of colonies can produce ecosystem changes that persist for extended periods (Wagner et al., 2021; Gaymer et al., 2025).

The area also meets broader vulnerability criteria owing to its exceptionally high levels of endemism, distinctive biological communities, globally significant habitats, and unique geomorphological and oceanographic characteristics (see sections 3.1, 3.2 and 3.3). These characteristics contribute to ecological vulnerability because recovery is influenced not only by the life history traits of individual species, but also by dispersal limitations, habitat specialisation, and the restricted availability of suitable environmental conditions across the ridge system (Clark et al., 2010). Recovery of disturbed seamount communities may be constrained by limited larval supply from distant source populations, the strength and direction of ocean-current mediated dispersal pathways, and the availability of suitable hard substrata required for settlement of sessile fauna such as corals and sponges (Clark et al., 2010; Rogers et al., 1994). Where communities depend on depth bands, oxygen conditions, or hydrodynamic regimes, habitat disturbance may be difficult to reverse even if physical substrata remain present (Clark et al., 2010; Rogers, 1994; Rogers, 2018).

Until recently, current biological knowledge was biased toward the Chilean marine protected areas (Rapa Nui, Motu Motiro Hiva and Nazca-Desventuradas) and western island ecoregions. However, a comprehensive assessment of historical survey efforts, including the most recent expeditions (Figure 5) and associated studies, shows that the easternmost sector of the Nazca Ridge and portions of the central Salas y Gómez Ridge remain poorly characterised, with limited visual observations available to validate benthic community distributions (Figure 12).

Scientific assessments of seamount ecosystems globally support the interpretation that oceanic seamount and deep-coral environments are among the marine ecosystems most sensitive to persistent anthropogenic effects, especially when those effects involve mechanical contact with the seabed (FAO, 2009; Friedlander et al., 2021). This general conclusion is reinforced by direct observations of dense coral and sponge assemblages on topographic highs across both ridges (Easton, 2024; Sellanes, 2024; Schmidt Ocean Institute, 2024). The repeated co-occurrence of fragility, isolation, and long-lived taxa indicates low resilience to disturbance.

Recovery potential is further shaped by the area's geomorphology and hydrography. Steep terrain, strong local current regimes, and oxygen variations can structure communities very precisely in space. If disturbance removes habitat complexity from a summit, escarpment, or ridge crest, recolonisation may not simply proceed from adjacent soft-sediment areas because the lost community may depend on a narrow combination of hard substrate, flow exposure, and water-mass characteristics. In eastern sectors, the influence of low-oxygen waters may additionally constrain depth distributions and habitat continuity (Hammond et al., 2025). These factors contribute to slow and potentially incomplete recovery trajectories (Clark et al., 2010; Rogers et al., 1994).

For these reasons, vulnerability in the area is best understood as a property of its benthic and seamount-associated communities rather than as a list of sensitive species. The ridge system contains biological communities that are intrinsically fragile, habitats whose re-establishment is likely to be protracted, and environmental settings that are not widely replicated elsewhere in the region. Accordingly, the weight of evidence suggests the conclusion that the benthic ecosystem of the area exhibits high vulnerability, fragility, sensitivity, and slow recovery, while the easternmost Nazca Ridge remains a 'data-poor' environment whose specific resilience and recovery trajectories are not yet fully characterised.

3.6 Area is of special significance for threatened or important species or ecosystem properties

3.6.a There is evidence that the area is of special importance for life history stages of species and/or threatened species

The compiled evidence indicates that the Salas y Gómez and Nazca Ridges Area supports numerous species that are endangered, threatened, near threatened, declining, or otherwise of conservation concern. Some of these species use parts the area to feed, breed and migrate (Gaymer et al., 2025). However, the importance of the area to these species relative to other areas remains an open question. The summary evaluation reports observations in the area of at least 25 species of sharks and rays, 21 seabird species, seven marine mammal species, seven species of bony fishes, and five marine turtle species with relevant threat categories or conservation concern (Gaymer et al., 2025;

Nuñez & Luna-Jorquera, 2026; Parin, 1991; Parin et al., 1997; Wagner et al., 2021). These records suggest both resident and transient use of the region and are consistent with the role of seamount systems as aggregation zones, navigational features, and foraging habitat for mobile pelagic fauna (Morato et al., 2010). However, for some of these wide-ranging species, the Salas y Gómez and Nazca ridges may represent only a portion of their basin-scale pelagic habitats. In some cases, like the endangered Polynesian storm-petrel (*Nesofregetta fuliginosa*), the importance of the Salas y Gómez Island for the species has led to the designation of the island as an Important Bird and Biodiversity Area (IBA) (BirdLife International, 2026).

For example, the main foraging areas of the five sea turtle species mentioned by Wagner et al. (2021) are not restricted to the Salas y Gómez and Nazca Ridge region; rather, these species predominantly forage in more coastal environments. For instance, the Eastern Pacific green turtle (*Chelonia mydas agassizii*) feeds in coastal neritic areas off Peru (Quiñones et al., 2022), although recent genetic, morphometric, and ecological studies indicate that the Rapa Nui-Salas y Gómez region functions as an important foraging area for both the black and yellow morphotypes of *Chelonia mydas*, supporting individuals connected to multiple Pacific lineages, including those associated with the eastern Pacific and French Polynesia (Alvarez-Varas et al., 2021a, 2021b, 2022; Petit et al., 2020).

The loggerhead turtle (*Caretta caretta*), although considered an oceanic species, occurs predominantly in offshore waters of the Peru-Chile Current System, where individuals have been recorded tens to hundreds of kilometres from the Peruvian coast and remain largely associated with the southeastern Pacific foraging region (Alfaro-Shigueto et al., 2008; Mangel et al., 2011). The leatherback turtle (*Dermochelys coriacea*) primarily forages in neritic and shelf-associated waters off Peru, with important concentration areas documented in northern Peru and off the central-southern coast near Pisco-Ica (Quiñones et al., 2021; Costanza et al., 2021; Mangel et al., 2024).

The hawksbill turtle (*Eretmochelys imbricata*) is a highly coastal species that forages in mangrove and coastal reef habitats and is largely known to be associated to nearshore environments in the eastern Pacific, making its occurrence within the offshore Salas y Gómez and Nazca ridge system unlikely (Gaos et al., 2012; Liles et al., 2011) although the species been recorded in nearshore waters off Rapa Nui Easter Island (Álvarez-Varas et al., 2015). The Eastern Pacific hawksbill population (Mexico to Peru, ~15,000 km of coastline) numbers only ~500–700 nesting females in total (Gaos et al., 2010, 2017), with over 70–80% of all known nesting concentrated at just two Central American mangrove estuaries, Bahía de Jiquilisco (El Salvador) and Estero Padre Ramos (Nicaragua) (Liles et al., 2011; Gaos et al., 2017), and this population is characterised by short, neritic movements (<5 km from shore) rather than long-distance oceanic dispersal (Gaos et al., 2012); Peru itself has no confirmed nesting sites, only incidental coastal bycatch records (Alfaro-Shigueto et al., 2010).

Finally, six of the petrel species identified by Gaymer et al. (2025), namely the Wedge-tailed Shearwater (*Ardenna pacifica*), Phoenix Petrel (*Pterodroma alba*), Henderson Petrel (*P. atrata*), Black-winged Petrel (*P. nigripennis*), Murphy's Petrel (*P. ultima*), and Herald Petrel (*P. heraldica*), have breeding distributions centred in the central and western Pacific Ocean, with major breeding colonies occurring in Hawaii, Polynesia and Melanesia, including French Polynesia and the Pitcairn Islands (Pierce et al., 2007; Oppel et al., 2017; Pyle & Pyle, 2017; Howell & Zufelt, 2019; Le Bouteiller & Borsa, 2020;). Breeding within Chilean insular territories of the Salas y Gómez-Rapa Nui region is comparatively limited, consisting of small and geographically peripheral populations, occasional breeding records, or only a few confirmed nests in some years, primarily on Motu Nui and adjacent islets (Marín & Cáceres, 2010;). Consequently, the regional contribution of the Salas y Gómez and Nazca ridges system to the global breeding populations of these species is likely less important relative to that of their principal breeding areas elsewhere in the Pacific.

Beyond the domain of species-specific studies, Núñez & Luna-Jorquera (2026) provide the first trait-based assessment of seabird functional diversity across the Salas y Gómez and Nazca Ridges based observations of 36 seabird species and 8,179 individuals collected during 11 oceanographic surveys (Figure 7). The authors concluded that the area supports highly distinctive but functionally vulnerable seabird assemblages. The area hosts species with unique ecological roles and relatively little redundancy, meaning biodiversity loss could translate directly into loss of ecosystem functions. However, uncertainties around sampling coverage, additional traits, and palaeontological aspects of community structure mean that the mechanisms shaping this functional diversity remain incompletely understood (Núñez & Luna-Jorquera, 2026).

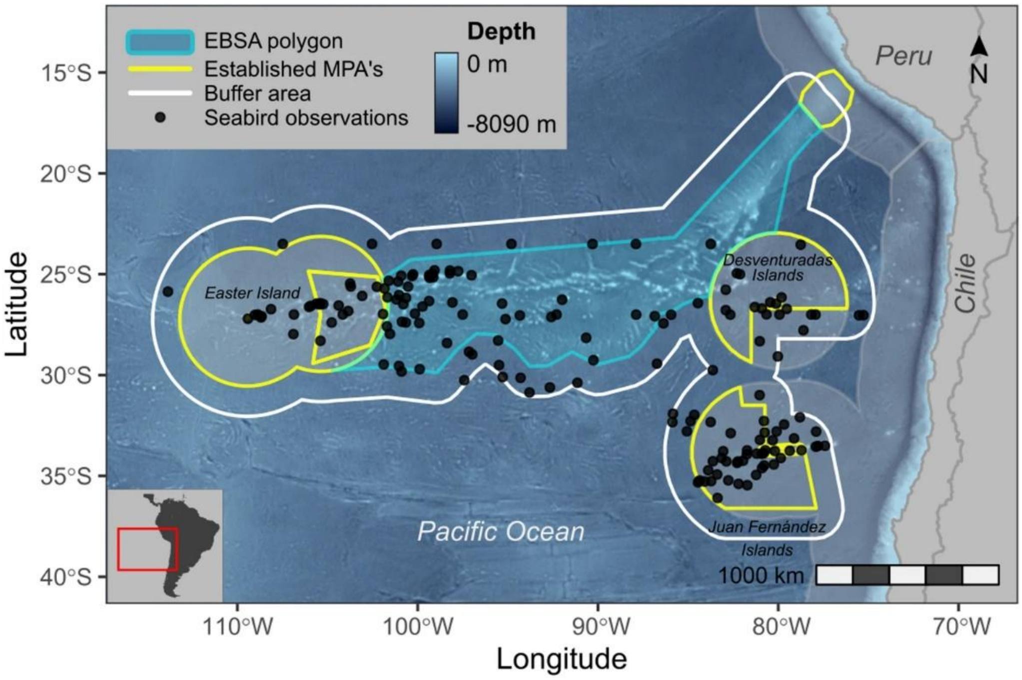

Figure 7 Black dots show the position of the daily surveys to determine seabird richness and abundance of seabirds at sea within and around the Salas & Gómez and Nazca ridges area. The map shows the study area (white line), the Salas & Gómez and Nazca ridges Ecologically or Biologically Significant Area (EBSA) boundary and the diverse marine protected areas in Peruvian and Chilean waters. Sourced from Núñez & Luna-Jorquera (2026).

Evidence for special significance at particular life-history stages is stronger for some taxa than for others. The Nazca Ridge and eastern Salas y Gómez Ridge have been identified as a nursery area for swordfish and Chilean jack mackerel (*Trachurus murphyi*) based on fisheries and ecological analyses (Arcos, 2001; Yáñez et al., 2004; Yáñez et al., 2006). However, Arcos et al. (2001) identified the primary nursery habitat for the Chilean jack mackerel based on its latitudinal position north of 30°S and specific oceanographic parameters. While the original study defined this zone broadly (i.e., north of 30°S) and through environmental variables, subsequent scientific literature has superimposed these biological data onto the wider Salas y Gómez and Nazca Ridges area. However, the National Geographic Pristine Seas expedition to Desventuradas Islands and the southernmost part of the Nazca Ridge recorded high abundances of juvenile T. murphyi around San Ambrosio Island, reinforcing the hypothesis that the Desventuradas Islands area acts as a nursey ground for this species (National Geographic & Oceana, 2013).

Recent studies identified Rapa Nui Easter Island and Motu Motiro Hiva Salas y Gómez Island, at the western end of the ridge system, as the first documented nursery areas for Galápagos sharks in the southeastern Pacific, while regional syntheses highlight recruitment and breeding functions for Chilean jack mackerel across the Nazca Ridge system, noting the latter remains debatable (Gaymer et al., 2025; IUCN SSC Shark Specialist Group, 2024; Morales-Serrano & Gonzalez-Pestana, 2024). It is worth noting that the IUCN Shark Specialist Group identified lack of information across the entire EBSA as the main hurdle to evaluate and meet the IUCN Important Shark and Ray Areas (ISRA) criteria when evaluating the wider EBSA as a candidate ISRA (García-Rodríguez, 2025; Jabado et al., 2023). To date, recognised ISRA areas include Salas y Gómez/Motu Motiro Hiva (IUCN SSC Shark Specialist Group, 2024; https://sharkrayareas.org/portfolio-item/salas-y-gomez-motu-motiro-hiva-isra/) and Rapa Nui (IUCN SSC Shark Specialist Group, 2026; https://sharkrayareas.org/portfolio-item/rapa-nui-isra/) both within Chile's EEZ.

The mere presence of species within the Salas y Gómez Ridge or the Nazca Ridge does not necessarily constitute definite evidence that the area is of particular importance for either critical life-history stages or for threatened species. Many of the taxa included in the Gaymer et al. (2025) list correspond to highly mobile species, such as tunas, billfishes, sharks, seabirds, marine mammals, and sea turtles, whose wide-ranging movements across large oceanic areas make occasional presence insufficient to infer ecological dependence on this specific area. Demonstrating that the area is of special importance for life-history stages would require evidence of key ecological functions (e.g., breeding, nursery, spawning, or persistent feeding aggregation areas).

For many other threatened species, however, the currently available evidence is sufficient to confirm occurrence and likely habitat use and, in some cases, breeding area (within Chile's EEZ), but not yet sufficient to demonstrate that the area is uniquely important for all life-history stages. This distinction is important scientifically. The area should not be characterised as equally critical for every threatened taxon recorded there. Rather, the evidence supports a gradient of significance: well-supported foraging, breeding, nursery or recruitment roles for some species, strong probable habitat and passage functions for others, and more general occurrence records for the remainder.

3.6.b There is evidence that the area contains habitat for the survival and recovery of endangered, threatened, declining species or is an area with significant assemblages of such species

The region contains ecosystem properties important to the survival and persistence of associated biota. Seamount topography modifies currents, elevates encounter rates between suspension feeders and food particles, and creates structurally complex benthic habitat (Genin & Dower, 2007; Wang et al., 2024). Coral and sponge assemblages provide three-dimensional substrate and shelter used by other invertebrates and demersal fish (Rogers, 1994). Reports such as the National Geographic and Oceana expedition summary for the Desventuradas Islands region described these habitats as essential to a range of benthic assemblages and highlighted their role in supporting trophic complexity (National Geographic & Oceana, 2013).

The islands of Salas y Gomez, San Félix and San Ambrosio are all considered IBAs by BirdLife International, and these places as well as Rapa Nui are considered Key Biodiversity Areas (KBA) by the KBA Partnership Program (KBA, World database of key biodiversity areas, https://www.keybiodiversityarea s.org/kba-data, 2020). More recently, Salas y Gomez and Rapa Nui have been declared as Important Shark and Ray Areas (ISRA) The area has also been recognised internationally as an Ecologically or Biologically Significant Area under the Convention on Biological Diversity, reflecting a combination of high endemism, vulnerable deep-sea ecosystems, and potential connectivity corridors for highly mobile pelagic species including sharks, turtles, and cetaceans, with direct movement data for these species remaining limited (Gálvez-Larach, 2012; CBD, 2020). Although EBSA designation is not itself proof of any single ecological process, it supports the interpretation that the aggregate evidence points to regional significance for some species, some of which may be threatened, and broader ecosystem properties.

Overall, the area contains habitat and ecological features that are likely important for survival, persistence, and in some cases recovery of vulnerable taxa, even where species-specific demographic data remain incomplete.

3.7 VMEs are known to occur and/or triggering of VME indicator thresholds reported for the area proposed

3.7.a Known or consistent triggering of VME indicator thresholds occurs

The evidence for VME occurrence in the Salas y Gómez and Nazca Ridges Area is substantial. Scientific surveys and syntheses report occurrence of multiple taxa that are widely recognised as indicators of VMEs under the FAO Deep-Sea Fisheries Guidelines (FAO, 2009) and as such listed as VME indicator taxa within SPRFMO's bottom-fishing management framework (SPRFMO CMM 03-2025 Annex 5). These include framework- or reef-forming stony corals such as *Madrepora* spp. and *Solenosmilia* spp., black corals, stylasterid hydrocorals, gorgonians, and large hexactinellid sponges. The ecological significance of these taxa lies in their capacity to create complex biogenic structures, their fragility, long lifespans, and their slow rates of recovery (FAO, 2009; SPRFMO CMM 03-2025 Annex 5).

Historical fishing records indicate that VME indicator taxa have been accidentally caught by bottom trawl gear in parts of the Salas y Gómez and Nazca Ridges Area . However, the area's current interpretation is informed primarily by direct scientific observation rather than by fisheries bycatch alone (Petit et al., 2026). This distinction is important because non-fishing survey methods provide stronger evidence of the *in situ* form, density, and structural complexity of benthic assemblages than can be inferred from fragmented specimens recovered in gear (see section 3.7.b).

It is worth noting that when the encounter protocol and its associated VME indicator taxa weight thresholds were adopted in CMM03, bottom trawling no longer occurred in the Salas y Gómez and Nazca Ridges Area .

3.7.b VMEs have been observed through non-fishing operations

Recent expeditions in diverse parts of the Salas y Gómez and Nazca ridges area (Figure 5) have directly documented deep-sea sessile invertebrates' (i.e., corals and sponges) assemblages characteristic of VMEs using remotely operated vehicles and other visual sampling techniques (Figure 9, Figure 10). Post-cruise reports from Easton et al. (2024) and Sellanes et al. (2024), together with expedition documentation from the Schmidt Ocean Institute (2024) (Figure 5), describe numerous observations of structurally complex benthic communities on previously unexplored seamounts of the Salas y Gómez and Nazca ridges, which add to the existing compilation of occurrence records of some VME indicator taxa (Figure 8). These observations include dense coral gardens, large sponges, mixed octocoral fields, and diverse associated fauna occupying hard-substrate topographic highs (Friedlander et al., 2021; Tapia-Guerra et al., 2025). Considering the limited sampling coverage across the EBSA relative to its extent and the numerous undersea features it encompasses, some VME indicator taxa appear to exhibit spatial clustering. For instance, records of black corals are concentrated largely at the intersection of the Salas y Gómez Ridge with the Nazca Ridge (Figure 8-D).

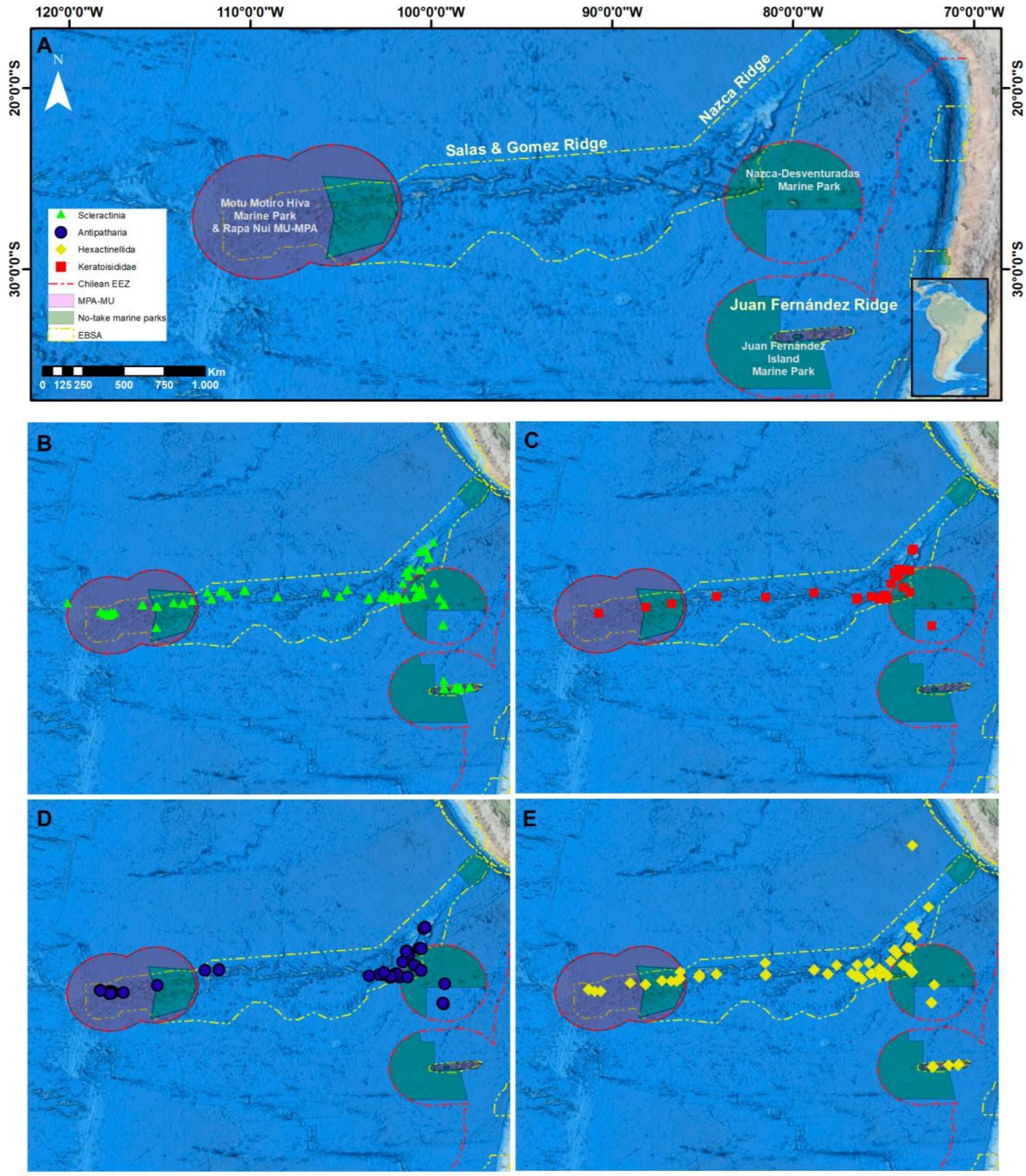

Figure 8 Distribution of occurrence records of VME indicator taxa across the Salas y Gómez and Nazca Ridge system. (A) Area of interest; (B) stony corals (Scleractinia); (C) bamboo corals (family Keratoisididae); (D) black corals (order Antipatharia); and (E) glass sponges (class Hexactinellida). Occurrence records were compiled from the Global Biodiversity Information Facility (GBIF), the Ocean Biodiversity Information System (OBIS), previous scientific expeditions, including CIMAR 22 (2016), EPIC (2019), and the Schmidt Ocean Institute/ Center for Ecology and Sustainable Management of Oceanic Islands (ESMOI) expedition (2024) (see Figure 5). Sourced from Mechó et al. (*in prep.*).

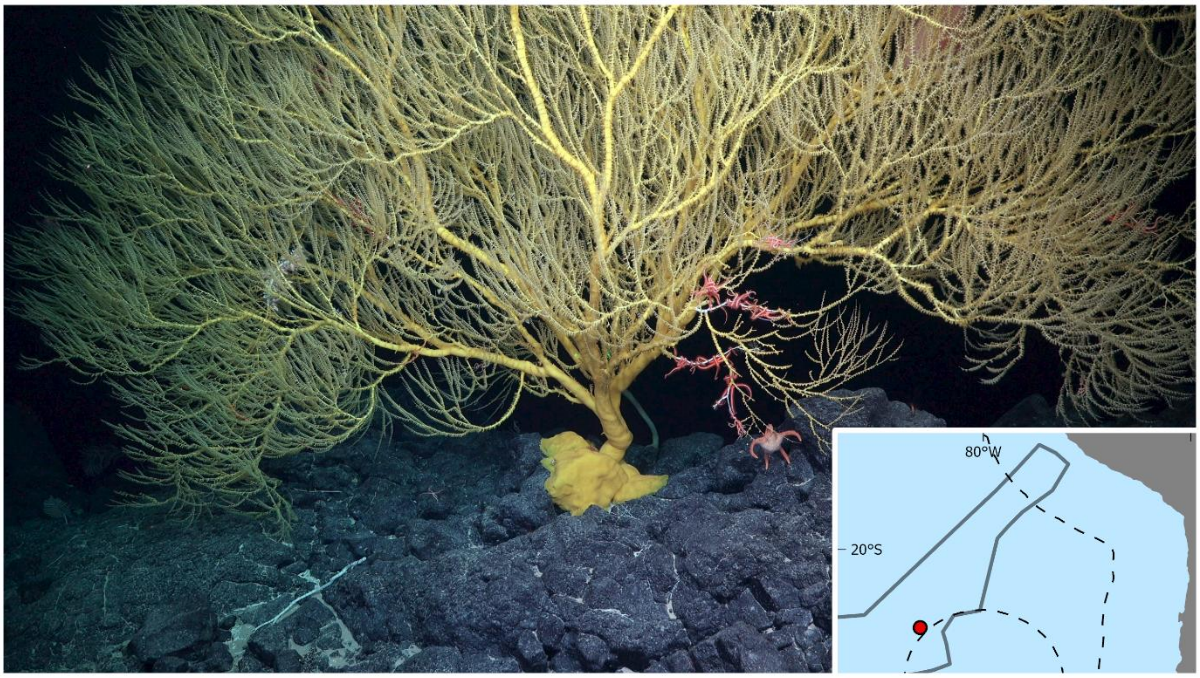

Figure 9 A large bamboo coral holding benthic ctenophores, barnacles, a sea star, and ophiuroids was documented on Dive 696 while exploring a newly discovered and mapped seamount, catalogued as KW-14176, along the Nazca Ridge off the coast of Chile. Inset map displays location of seamount KW-14176 (red circle). Credit: ROV SuBastian / Schmidt Ocean Institute. Video Frame Grab Images acquired during R/V Falkor (too) expedition FKt240708 (2024). MGDS. doi:10.60521/332002. Location of dives sourced from MGDS https://www.marine-geo.org/tools/events/4538.

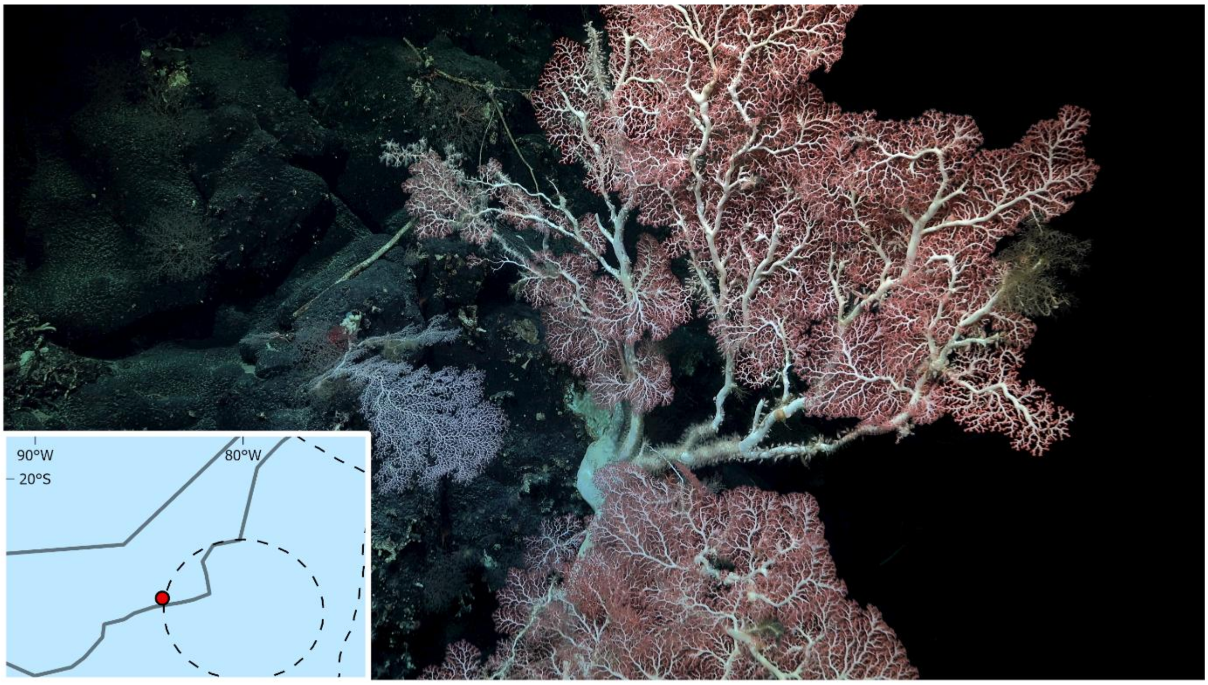

Figure 10 Hard coral (thought to be *Corallium* spp.) documented at 1526 m deep on Dive 698 on an unnamed, unexplored seamount (designated as T09) along the Nazca Ridge off the coast of Chile. Credit: ROV SuBastian / Schmidt Ocean Institute. Video Frame Grab Images acquired during R/V Falkor (too) expedition FKt240708 (2024). MGDS. doi:10.60521/332002. Inset map displays location of seamount T09. Location of dives sourced from MGDS https://www.marine-geo.org/tools/events/4538.

Habitat modelling provides additional support by indicating that suitable environmental conditions for coral and sponge likely to be widespread across the EBSA, particularly on seamounts, ridges, and escarpments (Georgian et al., 2021). However, Georgian et al. (2021) also highlighted that model predictions for stony corals and sponges should be interpreted with caution due to the limited availability of independent data for validation, although recent expeditions (Figure 5) have reduced this gap (Mechó et al., *in prep.*). Therefore, although these models provide valuable insights into the potential distribution of suitable habitat, they do not substitute for direct observations, noting that surveying each undersea feature within the EBSA is financially and logistically challenging, to say the least. These constraints are common among deep-sea RFMOs, which have typically relied in predictive modelling of VME indicator taxa habitat to design and implement spatial management measures (e.g., Howell et al., 2016; Knudby et al., 2013), including SPRFMO (Georgian et al., 2019; Stephenson et al., 2021; Rowden et al., 2026).

Recently collected survey data may be used to quantify the abundance of VME indicator taxa across surveyed sites, enabling the development of abundance-based predictive models that are likely to overcome some of the recognised limitations of presence-only habitat suitability models and provide a more robust basis for assessing the distribution and ecological significance of VMEs across the entire EBSA (Anderson et al., 2016; Bennion et al., 2025; Georgian et al., 2021). In the meantime, and while collected data from recent expeditions is being analysed and processed and more robust habitat suitability models are published (Mechó et al., *in prep.*; Figure 11), the Georgian et al. (2021) habitat suitability models for stony corals and sponges remain the best available information regarding the distribution of potential VMEs (as a proxy) across a large spatial scale such as the entire EBSA (*sensu* Stephenson et al., 2021). Where area-specific information is lacking or limited, "other information that is relevant to inferring the likely presence of vulnerable populations, communities, and habitats should be used" (FAO, 2009).

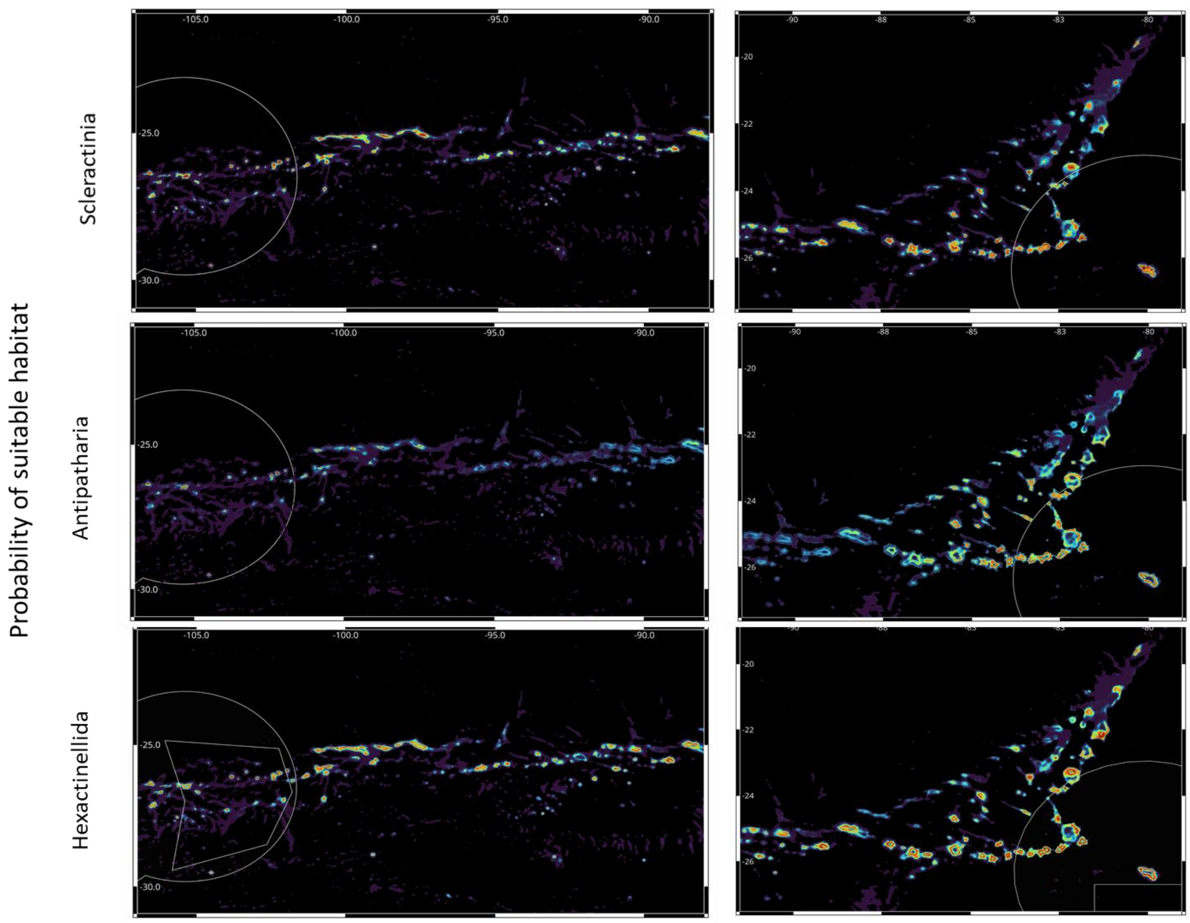

Figure 11 Predicted habitat suitability for Scleractinia, Antipatharia and Hexactinellida. Warmer colours indicate more suitable habitat (HSI, 0-1). Sourced from Mechó et al. (*in prep.*)

Taken together, the evidence satisfies both components of this criterion: VME indicator taxa are known to occur, and VMEs have been observed through non-fishing operations.

3.8 Cultural significance

3.8.a The area has an exceptionally rich and long history and cultural significance

Although the present document adopts a natural sciences tone, cultural significance can be evaluated using empirical evidence drawn from social sciences, such as archaeology, historical geography, ethnography, and maritime heritage studies. Delgado et al. (2022) examined the hidden maritime cultural landscape of the Salas y Gómez and Nazca ridges and concluded that the area forms part of a broader seascape with longstanding significance for Polynesian navigation, mobility, and interaction. Within this interpretation, the ridges are not merely geological structures but components of routes and seafaring spaces that connected islands and peoples across the southeastern Pacific.

The western part of Salas y Gómez Ridge is of relevance to Rapanui cultural history. Available evidence indicates that the ridge and associated islands were incorporated into ancestral voyaging networks and subsistence-related seascapes. Scientific arguments for prehistoric trans-Pacific interaction have also drawn on botanical and genetic evidence related to the dispersal of sweet potato (*Ipomoea batatas*), which has been interpreted as consistent with contact or exchange between Polynesian and Indigenous American populations prior to European arrival in the region. While the mechanisms and frequency of such contacts remain debated in some details, the ridges are scientifically relevant as part of the maritime geography through which those contacts may have occurred (Delgado et al., 2022; Gaymer et al., 2025).

Further, this area was important during European colonial exploration and became incorporated into broader networks of maritime navigation, exploration, fisheries, and regional trade (Conservation International, 2026). Voyaging, fishing, and the transportation of commodities across these remote waters left signs of the human history of exploration and exploitation (Delgado et al., 2022).

From an assessment perspective, cultural significance is therefore supported by evidence that the area belongs to an ancestral navigational seascape with long temporal depth and documented relevance to Indigenous maritime history. The criterion is not evaluated on symbolic grounds alone; it is supported by a body of interdisciplinary research linking seafloor geography, island connectivity, voyaging, and material or biological traces of exchange.

3.9 Scientific interest

3.9.a The area has scientific research interest associated with understanding ecosystem, biological, geological and biodiversity processes in the SPRFMO region

The Salas y Gómez and Nazca Ridges Area is of high scientific interest because it enables investigation of multiple classes of process in a single regional system. At the geological level, the ridges offer opportunities to study volcanic chain formation, hotspot or tectono-magmatic histories, relief development, and sedimentary interactions such as contourite drift formation on oceanic topography (Woods and Okal, 1994; Calvès et al., 2022; Harris et al., 2023). At the oceanographic level, the area spans a major transition between ultra-oligotrophic gyre waters and eastern boundary upwelling influence, allowing examination of how current systems, eddies, oxygen minimum zones, and offshore carbon export interact with seamounts and slopes (Dewitte et al., 2021; Hammond et al., 2025; Flores et al., 2026; SPRFMO SC13-SGN01_rev1; SPRFMO SC12-Doc 37).

Biologically, the region functions as a natural laboratory for questions of endemism, connectivity, colonisation, and adaptation in isolated deep-sea and seamount settings. Wagner et al. (2021) and Flores et al. (2026) highlighted the distinctiveness of the ridge communities and the challenges of understanding how populations are connected across widely spaced topographic features. The persistence of likely undescribed species and the repeated discovery of novel taxa during recent expeditions indicate that current knowledge remains incomplete and that the area retains high potential for fundamental biodiversity discovery (Easton et al., 2024; Sellanes et al., 2024; Gaymer et al., 2025).

Consequently, numerous oceanographic cruises, fisheries surveys, and recent expeditions employing remotely operated vehicles and submersibles and running visual censuses have been conducted throughout the ridge system, leading to the discovery of new species, deep light-dependent coral communities, extensive coral and sponge assemblages, previously undocumented habitats and seabird and marine mammal censuses (Figures 7 and 12). The frequency and diversity of these research efforts reflect the area's outstanding scientific value and its importance for improving understanding of geological, oceanographic, ecological, and biogeographic processes within the SPRFMO Convention Area.

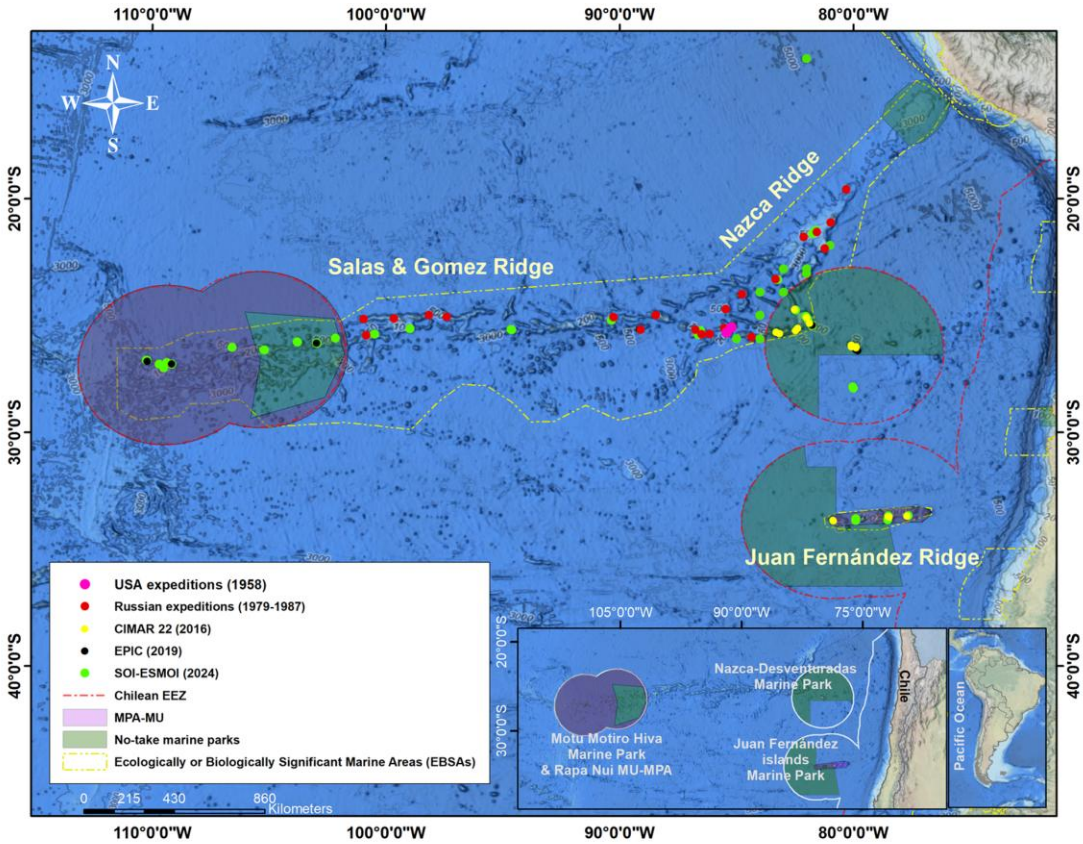

Figure 12 Surveyed areas by different expeditions to Salas y Gómez and Nazca Ridges Area since 1958. Elaborated by J. Tapia-Guerra, ESMOI.

The ridge system is also scientifically important for evaluating conservation and management questions in areas beyond national jurisdiction. It provides a case study in how habitat suitability modelling, visual surveys, fisheries information, migratory patterns and governance processes can be integrated to assess VMEs, biodiversity hotspots, and threats in the high seas. Because the area includes both surveyed and unsurveyed features, it is well suited to designing comparative studies on representativeness, vulnerability, and the transferability of ecological patterns across seamount provinces.

A further component of scientific interest lies in the possibility of understanding ecological and evolutionary processes across strong environmental gradients compressed within one connected system. Western and eastern sectors differ markedly in productivity, water clarity, and oxygen levels, yet both are linked by ridge topography that may act as stepping stones for some organisms while isolating others, depending on their dispersal capacity. This setting is valuable for studying how environmental filtering, dispersal limitation, and habitat discontinuity interact to shape community composition (Flores et al., 2026). In summary, the area has exceptional research value for ecosystem science, geology, oceanography, fisheries ecology, biogeography, and biodiversity discovery within the SPRFMO Convention Area.

4. Assessment of information against Evaluation Criteria

4.1 Methods

Due to time limitations and Member's divergences in some aspects of the Evaluation Criteria (Annex A – Evaluation Criteria for assessing spatial management proposals), the Task Team decided that Members would undertake individual evaluations of the Evaluation Criteria using all available information about the Salas y Gómez and Nazca Ridges Area. At the time of the evaluation (April 2026, ref. G24-2026), all compiled information was available to Members, but it was not organised in way that could help inform the evaluation process, something that was specifically raised by some Members. That is, the information was not structured according to the nine points of the Evaluation Criteria. To address this limitation, a summary of all available information was developed by the Task Team (Annex B – Summary of available information), and subsequently used as the basis for this assessment.

4.2 Results

A total of eight Members (n = 8) submitted the assessment for the Salas y Gómez and Nazca Ridges Area in response to request ref. G24-2026. A summary of the results provided by Members can be found in Table 1, which presents how many responses were classified as Yes (Y) or No (N) for each criterion (and associated sub-criteria where applicable). Due to some Members providing other responses rather than just the initially proposed Yes/No, a new Partially (P) option has been added to reflect this. Additionally, some Members provided comprehensive comments (Table 2), but the original comments can be found in their respective assessments, which are available in the SPRFMO SC Microsoft Teams site.

The number of *Yes* responses was greater than *No* and/or *Partially* responses for all criteria except for 6-a.

Table 1 Members responses (Yes-Y/Partially-P/No-N) to assess each criterion of the Evaluation Criteria for assessing spatial management proposals (p103 Annex 19 SC13 Report). Each type of response makes use of a colour palette, akin to a heatmap (Yes-Green, Partially-Beige, No-Red) with colour intensity ranging from zero (low intensity) to eight (n = 8, maximum number of responses) (high intensity).

Criteria	Summary	Meets Criteria (Y/P/N)		
		Y	P	N

1. Bioregional Representation	a. Area is known to contain unique, rare or distinct habitats or ecosystems that fishing operations will disturb.	6	1	1
	b. Areas with a comparatively higher degree of naturalness due to zero or a low level of human-induced disturbance or degradation from, for example, historical fishing activity.	7	1	0
2. Geographic and Geomorphological Representation	a. The area provides for important or desirable geographic representation within the SPRFMO area.	7	0	1
	b. The area proposed is known to contain unique or unusual geomorphological features that fishing operations may damage	5	1	2
3. Biodiversity Representation	a. The area is known to contain unique or rare (occurring in only a few locations) species, populations or communities.	7	1	0
	b. The area is known to contain a high diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	6	1	1
	c. The area is known to contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	8	0	0
4. Uniqueness and Rarity	a. The area warrants conservation and preservation due to their unique features, resources, and/or characteristics.	8	0	0
5. Vulnerability, Fragility, Sensitivity, or Slow	a. Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.	8	0	0

Recovery/Resilience				
6. Area is of Special Significance for Threatened or Important Species or Ecosystem Properties	a. There is evidence that the area is of special importance for life history stages of species and/or threatened species.	3	1	4
	b. There is evidence that the area contains habitat for the survival and recovery of endangered, threatened, declining species or is an area with significant assemblages of such species.	5	0	3
7. VMEs are Known to Occur and/or Triggering of VME Indicator Thresholds Reported for the Area Proposed	a. Known or consistent triggering of VME indicator thresholds occurs.	5	0	3
	b. VMEs have been observed through non-fishing operations.	7	1	0
8. Cultural Significance	a. The area has an exceptionally rich and long history and cultural significance	6	0	2
9. Scientific Interest	a. The area has scientific research interest associated with understanding ecosystem, biological, geological and biodiversity processes in the SPRFMO region	8	0	0

Table 2 Summary of Members' assessment and main comments

Criteria		**Summary**
1. Bioregional	a.	Overall, Members acknowledged that the area contains unique, rare or distinct habitats that can be disturbed from fishing activity, except one Member that disagreed. Some Members indicated that disturbance risk was mainly associated with bottom fishing, with other fisheries

Representation		(i.e., pelagic) likely to carry less risk, although the need for further data and a detailed evaluation of fishing impacts (for each fishery) was highlighted (see task "6.2.2 Provide an evaluation of fishing impacts for the Salas y Gómez and Nazca ridges area" in the 2026 SC Multi-annual work plan, currently being progressed by Chile).
	b.	Overall, Members agreed that the area has comparatively higher degree of naturalness due to less anthropogenic pressures, but one Member noted that past bottom fishing pressure was likely significant, albeit in discrete locations (e.g., underwater topographic features at fishable depths), and similar to levels registered in other parts of the SPRFMO Convention Area where bottom trawling historically occurred (seamounts of the Southwest Pacific). One Member indicated preference for a zoning approach, although I note the assessment is an independent step prior to the discussion of potential enhanced management measures.
2. Geographic and Geomorphological Representation	a.	Overall, Members agreed the area provides for important or desirable geographic representation within the wider SPRFMO area, particularly the eastern part of the Convention Area, except one Member that disagreed.
	b.	Most of the Members agreed the area hosts unique or unusual geomorphological features that fishing operations may damage, but emphasis was made in that further work required to assess potential impacts from the different fisheries that can occur in the area (currently or in the future) (see task "6.2.2 Provide an evaluation of fishing impacts for the Salas y Gómez and Nazca ridges area" in the 2026 SC Multi-annual work plan, currently being progressed by Chile). One of the two Members that disagreed indicated that evidence regarding uniqueness of topographic features such as seamounts remains limited and there is a large number of seamounts within the area.
3. Biodiversity Representation	a.	Overall, it was acknowledged the area hosts unique or rare species, populations or communities, with one Member indicating that the reasoning behind this was mainly based on known and likely distribution of benthic species.
	b.	All Members except one agreed the area is known to contain a high diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity, although a Member indicated there was no information regarding genetic diversity, and another Member highlighted the patchy distribution of VME indicator taxa.
	c.	All Members agreed the area is known to contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile or with slow recovery.

4. Uniqueness and Rarity	a.	All Members agreed that the area warrants conservation and preservation due to their unique features, resources, and/or characteristics.
5. Vulnerability, Fragility, Sensitivity, or Slow Recovery/Resilience	a.	All Members agreed that the area contains unique/rare/endemic species, populations, communities, habitats, ecosystems or geomorphological features.
6. Area is of Special Significance for Threatened or Important Species or Ecosystem Properties	a.	Half of the Members indicated that evidence of the area being of special importance for life history stages of species and/or threatened species is lacking, and that anecdotal records of such species do not necessarily mean that the area is of special importance to them (species). One of the disagreeing Members indicated that further research is needed to test this hypothesis. The other half of the Members agreed that the criterion is met, although one of them only agreed partially, due to information for most mobile species lacking.
	b.	Most Members agreed the area contains habitat for the survival and recovery of endangered, threatened, declining species or is an area with significant assemblages of such species. However, three Members disagreed and highlighted the lack of information to meet the criterion and the need for further research.
7. VMEs are Known to Occur and/or Triggering of VME Indicator Thresholds Reported for the Area Proposed	a.	Most Members agreed that known or consistent triggering of VME indicator taxa thresholds occurs, but three Members disagreed, citing that when the VME indicator taxa thresholds were adopted in CMM03, bottom trawling no longer occurred in the area. It was acknowledged however that VME indicator is known to occur in the area and that there has been accidental bycatch of VME indicator taxa (see next criterion 7.b).
	b.	The majority of Members agreed that VMEs occur in the area, with one Member partially agreeing but indicating the lack of a framework within SPRFMO to formally classify areas as VMEs.
8. Cultural Significance	a.	The majority of Members acknowledged the cultural importance of the area, except two Members. One of the disagreeing Members indicated that cultural values should be identified by Members in their respective areas of jurisdiction but not in the high seas, while the other pointed to the lack of a clear definition to assess “cultural significance”.
9. Scientific Interest	a.	All Members agreed in that the area has high scientific research interest.

5. Fishing in the Salas y Gómez and Nazca Ridges

5.1 Introduction

The remarkable ecological features of the Salas y Gómez and Nazca Ecologically or Biologically Significant Marine Area (EBSA) have attracted fisheries from around the world since operations began in the early 1970s (Gaymer et al., 2025). Until the 1980s, Soviet trawlers operated along the Salas y Gómez and Nazca ridges, targeting jack mackerel (*Trachurus murphyi*) and redbaits (*Emmelichthys* spp.), primarily utilising pelagic (midwater) trawls, and occasionally bottom trawls (Parin et al., 1997; Arana et al., 2009; Clark, 2009). During the 1990s, a commercial fishery for orange roughy (*Hoplostethus atlanticus*) and alfonsino (*Beryx splendens*) developed on seamounts around the Juan Fernandez Archipelago; however, it was closed in 2006 following the collapse of the fishery (Clark et al., 2009; Payá et al., 2005; Tingley & Dunn, 2019). More recently, Chilean and Russian vessels have targeted Chilean jagged lobster (*Projasus bahamondei*) and golden crab (*Chaceon chilensis*) utilising traps on the Nazca Ridge (Parin et al., 1997; Payá et al., 2005; Clark, 2009; Gálvez-Larach, 2009; Vega et al., 2009; Yáñez et al., 2009; Arana, 2014). Along the Salas y Gómez Ridge, pelagic longline fisheries targeting tunas, including *Thunnus obesus* and *T. albacares*, as well as swordfish (*Xiphias gladius*), have operated for the past three decades (Vega et al., 2009; Gálvez, 2012; Friedlander et al., 2013).

Today, fishing within the EBSA is dominated by pelagic fisheries targeting jumbo flying squid (*Dosidicus gigas*), tunas, and swordfish, together with smaller-scale benthic fisheries targeting hapuka (*Polyprion oxygeneios*), Chilean jagged lobster, and golden crab (SPRFMO, 2024). Fishing activity is concentrated mainly along the eastern Nazca Ridge adjacent to Peruvian waters, where jigging for jumbo flying squid is the predominant activity, while bottom longlining, potting, and pelagic purse seining occur at lower levels (SPRFMO, 2024, 2026), noting that bottom trawling is currently not authorised under current SPRFMO bottom fishing regulations. Nevertheless, fishing within the EBSA remains relatively low, accounting for approximately 5% of the fishing activity recorded across the broader southeastern Pacific, according to data from the SPRFMO and the Inter-American Tropical Tuna Commission (IATTC, 2026).

5.2 Materials and methods

Fishing activity on the EBSA was evaluated based on two different sources: (1) data from the two regional fisheries management organizations (RFMOs) currently managing the main resources exploited in international waters of the South and Eastern Pacific Ocean, SPRFMO (data, 2008–2024), which manages jumbo flying squid (*Dosidicus gigas*) and jack mackerel (*T. murphyi*) fisheries among others, and (2) IATTC (data, 1990–2022), which manages tunas and swordfish resources (Sánchez-Espinoza et al., 2026).

The spatial and temporal distribution of jumbo flying squid catches was analysed separately for the Chinese, Korean, and Chinese Taipei fleets using georeferenced catch data reported by the SPRFMO. Two datasets were used: a publicly available dataset containing annual catches by flag at a spatial resolution of 5° × 5° for the period up to 2021 (https://sprfmo.org/data-sets), and a dataset provided directly by the SPRFMO at a resolution of 1° × 1°, which was used to complete the 2022–2024 period. The southeastern Pacific, approximately corresponding to FAO Major Fishing Area 87, was used as the spatial reference area. Because the datasets differed in spatial resolution and temporal coverage, they were analysed independently. Analyses were restricted to years in which each fleet reported jumbo flying squid catches within the high seas portion of the Salas y Gómez and Nazca Ridges Area . Geographic coordinates were projected to UTM Zone 18S using the WGS 84 datum. Annual catch-intensity surfaces were subsequently generated for each fleet using inverse distance weighting (IDW) spatial interpolation. For the Korean fleet, spatial interpolation was not performed for 2013 and 2014 because of the limited number of available georeferenced catch records.

5.3 Results

The species composition of catches in the study area during the 2008–2024 period was dominated by *D. gigas*, which accounted for nearly all catches in most of the years analysed (Figure 13). Catches showed marked interannual variability, with relatively low levels between 2011 and 2015, generally below 10,000 t per year. From 2016 onward, *D. gigas* catches increased substantially, reaching approximately 45,000 t in both 2016 and 2019. The highest catch levels in the entire time series were recorded in 2022 and 2023, with approximately 71,000 and 56,000 t, respectively.

Although *D. gigas* clearly dominated the time series, greater diversity in the species composition of catches was observed in 2021 and 2022. In 2021, catches of *B. splendens* and *E. nitidus* reached approximately 4,000 t each. Subsequently, in 2022, catches of *T. murphyi* approached 4,000 t, whereas *S. japonicus* catches were approximately 2,000 t.

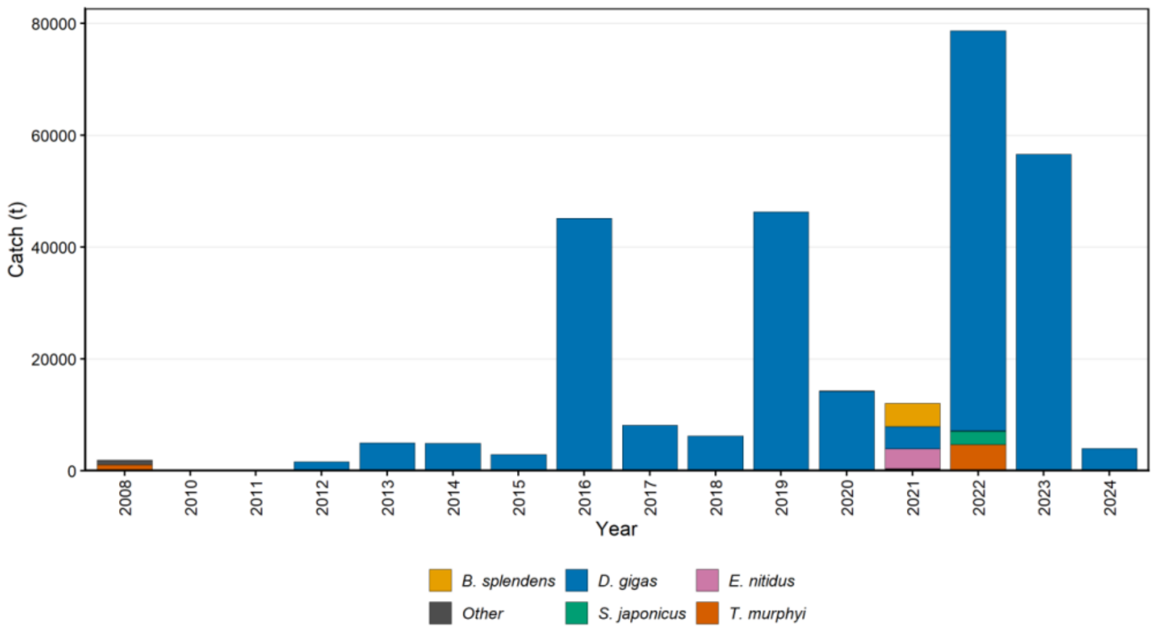

Figure 13 Annual composition of catches (t) by species in the Salas y Gómez and Nazca EBSA during the 2008–2024 period. Sourced from Sánchez-Espinoza et al. (2026). Data from SPRFMO.

5.3.1 Contribution of the Salas y Gómez and Nazca EBSA to the major fisheries managed by SPRFMO and IATTC

The contribution of the Salas y Gómez and Nazca EBSA to high-seas jumbo flying squid catches showed marked interannual variability during the 2011–2024 period, with no clear temporal trend (Table 3). On average, the area accounted for 5% of the catches recorded on the high seas, with values ranging from 0.02% to 18.63%. Between 2011 and 2015, the contribution of the area was consistently low (Figure 14), remaining below 2%. Subsequently, the highest relative contributions of the time series were recorded in 2016 and 2019, reaching 18.63% and 14.77% of the total high seas catch, respectively. In absolute terms, the highest catches within the area were recorded in 2022 and 2023 (71,547 t and 56,634 t), equivalent to 13.91% and 11.45% of high-seas catches, respectively.

High-seas jumbo flying squid catches were led mainly by the fleets of China, Korea, and Chinese Taipei during the 2011–2024 (Table 4). Among these fleets, China accounted for the highest levels of high-seas catches, with an annual average of 333,238 t, substantially higher than those recorded by Chinese Taipei (9,203 t) and Korea (4,675 t). China also recorded the highest catches within the Salas y Gómez and Nazca EBSA, particularly in 2022 and 2023, when the highest values of the time series were observed. However, given the magnitude of its total high-seas catches, the relative contribution of the Salas y Gómez and Nazca EBSA was low, representing an average of 6% of its catches and reaching maximum values of approximately 14% in 2016, 2019, and 2022.

Unlike the Chinese fleet, Korea and Chinese Taipei recorded lower catch volumes in absolute terms; however, a considerably larger proportion of their catches was concentrated within the Salas y Gómez and Nazca EBSA, in the Nazca portion of it (Table 4). In the case of Korea, jumbo flying squid fishing in this area began in 2011 with low catch levels (73 t), subsequently increasing between 2012 and 2020. During this period, catches from the high seas portion of the Salas y Gómez and Nazca Ridges Area represented between 19% and 89% of the fleet's total high-seas catches. From 2021 onward, no jumbo flying squid catches were recorded for this fleet, except for marginal catches in 2024. Chinese Taipei, meanwhile, recorded catches within the high seas portion of the Salas y Gómez and Nazca Ridges Area between 2016 and 2021. Initially, from 2016 to 2019, these catches represented between 33% and 74% of its reported high-seas catches. However, during the final two years of the analysed time series, 2020 and 2021, this contribution decreased substantially, reaching approximately 10%–17%.

Table 3 Annual catches (t) of the jumbo flying squid (*Dosidicus gigas*) fishery during the 2011–2024 period, disaggregated into total catches across the SPRFMO Convention Area, including both the high seas and exclusive economic zones; catches taken exclusively on the high seas; and catches taken specifically within the Salas y Gómez and Nazca EBSA. The percentage of catches within the Salas y Gómez and Nazca EBSA relative to the total catches reported on the high seas is also presented

Year	Total (t)	High seas (t)	Salas y Gómez and Nazca EBSA (t)	Percentage of catch in the Salas y Gómez and Nazca EBSA relative to high seas
2011	871,030	292,873	73	0,02
2012	927,462	283,496	1,656	0,58

2013	835,129	277,815	5,016	1,81
2014	1,095,419	345,795	4,939	1,43
2015	996,951	338,275	2,956	0,87
2016	745,770	242,518	45,176	18,63
2017	755,735	312,255	8,169	2,62
2018	860,833	353,987	6,278	1,77
2019	900,053	313,333	46,287	14,77
2020	908,726	361,127	14,092	3,90
2021	995,831	422,640	4,038	0,96
2022	1,074,784	514,500	71,547	13,91
2023	1,220,428	494,500	56,634	11,45
2024	601,523	274,033	4,052	1,48
Mean	913,548	344,796	19,351	5

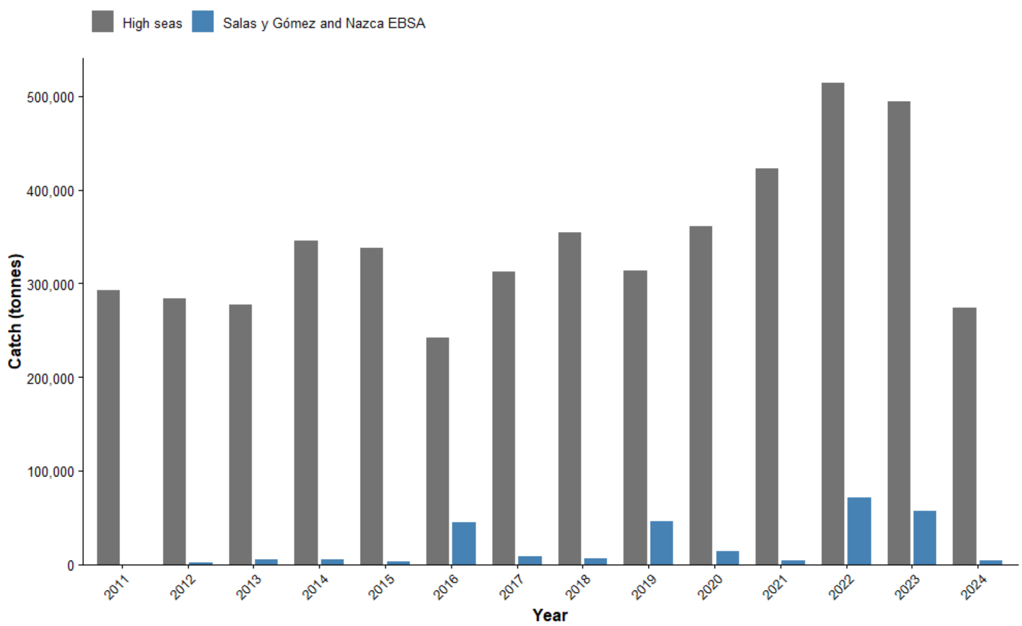

Figure 14 Annual catches (t) in the High Seas (grey) and within the Salas y Gómez and Nazca EBSA (Blue) during the 2011–2024 period. (Data source: SPRFMO 2026).

Table 4 Annual catches (t) of jumbo flying squid (*Dosidicus gigas*) reported by China (CHI), Korea (KOR), and Chinese Taipei (CT) during the 2011–2024 period, disaggregated into total catches across the SPRFMO Convention Area, including both the high seas and exclusive economic zones; catches taken exclusively on the high seas; and catches taken specifically within the Salas y Gómez and Nazca EBSA. The percentage of catches within the Salas y Gómez and Nazca EBSA relative to the total catches reported on the high seas is also presented.

	High seas (t)			High seas portion of the Salas y Gómez and Nazca ridges (t)			Percentage of catch in the high seas portion of the Salas y Gómez and Nazca ridges relative to the wider high seas		
Year	**CHI**	**KOR**	**CT**	**CHI**	**KOR**	**CT**	**CHI**	**KOR**	**CT**
2011	250,000	7,410	35,418		73			0,98	
2012	261,000	8,310	14,177		1,656			19,92	
2013	264,000	6,034	7,759		5,016			83,12	
2014	332,523	7,203	4,795		4,435			61,57	
2015	323,636	4,263	10,072	99	2,856		0,03	67,01	
2016	223,300	4,388	12,989	32,028	3,111	9,692	14,34	70,90	74,61
2017	296,100	3,460	7,338	543	2,505	5,121	0,18	72,41	69,78
2018	346,200	3,651	3,848	3,488	1,511	1,279	1,01	41,39	33,23
2019	305,670	5,577	2,085	43,344	2,004	939	14,18	35,92	45,03
2020	358,000	1,003	2,087	12,829	895	369	3,58	89,23	17,66
2021	422,000		665	3,966		72	0,94		10,81
2022	514,500			71,547			13,91		
2023	494,500			56,634			11,45		
2024	273,900	128		4,052	0,54		1,48	0,42	
Mean	333,238	4,675	9,203	22,853	2,187	2,912	6	49	42

With respect to the IATTC, the tuna fishery is the second largest fishery in the Salas y Gómez and Nazca EBSA. Since the beginning of the fishery in 1990 catches in the EBSA have remained low (< 400 [t]) with a single peak of 1,572 (t) in 2001 (Table 5). From 2007 onward, catches showed marked interannual variability, with several years exceeding 1,000 t and the highest catches recorded in 2018 (3,190 t), 2020 (3,900 t), and 2021 (3,488 t). Despite these increases, catches within the EBSA represented, on average, only 0.22% of total IATTC high-seas tuna catches over the study period. Even during the two highest-catch years, 2020 and 2021, catches within the EBSA represented 0.87% and 0.75% of high-seas catches, respectively. (Figure 15).

Katsuwonus pelamis (64%) led the catches of tuna followed by *T. obesus* (22%) and *T. albacares* (14%). The extraction of *K. pelamis* was executed primarily by the Latin-American countries of Ecuador (44%), Panama (20%), Colombia (14%), and Venezuela (7%), while catches in the EBSA represented < 8% among these countries when considering all tuna species combined. Specifically, the contribution of the EBSA to the IAATC high seas portion to these countries was between 0.01% and 1.4% for Ecuador, while ranged between 0.01% and 7% for Panama (reported catches: 2009-2022), Colombia (reported catches: 2013-2022), and Venezuela (reported catches: 2006-2020).

The fisheries for *Thunnus obesus* and *T. albacares* followed a similar pattern with Ecuador (76%) and Panama (13%) dominating the fishery. Catches in the EBSA compared to the High Seas were < 3.5% for all the fishery years reported. Noteworthy, like the jumbo flying squid fishery, most of these catches occurred in the northern portion of the Nazca Ridge.

Table 5 IATTC annual catches (t) for the tuna (*Katsuwonus pelamis, Thunnus obesus*, and *T. albacares*) fishery reported during 1990-2022, broken down by the Total (HS+EEZ) (High Seas and Exclusive Economic Zone) extraction, only High Seas, and from the Salas y Gómez and Nazca EBSA. The percentage of captures in the Salas y Gómez and Nazca EBSA was calculated with respect to the High Sea's catches.

Year	Total (t)	High Seas (t)	Salas y Gómez and Nazca EBSA (t)	Percent catches in the Salas y Gómez and Nazca EBSA relative to the high seas fishing zone
1990	483,480	179,837	5	0.00
1991	440,981	140,889	8	0.01
1993	439,476	129,568	98	0.08
1994	442,063	179,664	141	0.08
1995	503,510	234,704	32	0.01
1996	513,969	229,126	43	0.02
1997	588,134	288,885	22	0.01
1998	540,049	246,566	397	0.16
2001	713,230	422,022	1,572	0.37
2002	743,312	403,379	16	0.00
2003	831,578	436,967	77	0.02
2004	624,818	337,481	3	0.00
2005	680,459	301,611	79	0.03
2006	606,937	335,522	36	0.01
2007	492,725	259,561	255	0.10
2008	608,377	299,646	281	0.09
2009	599,076	365,639	726	0.20

2010	510,371	316,726	616	0.19
2011	589,689	333,488	2,760	0.83
2012	589,516	376,593	418	0.11
2013	601,242	372,259	1,227	0.33
2014	608,328	390,565	654	0.17
2015	699,134	421,343	624	0.15
2016	693,580	449,407	1,172	0.26
2017	655,281	412,594	1,870	0.45
2018	639,134	409,512	3,190	0.78
2019	690,381	454,160	1,464	0.32
2020	635,084	446,291	3,900	0.87
2021	672,710	467,763	3,488	0.75
2022	664,723	492,208	1,696	0.34
Average	603,378	337,799	896	0.22

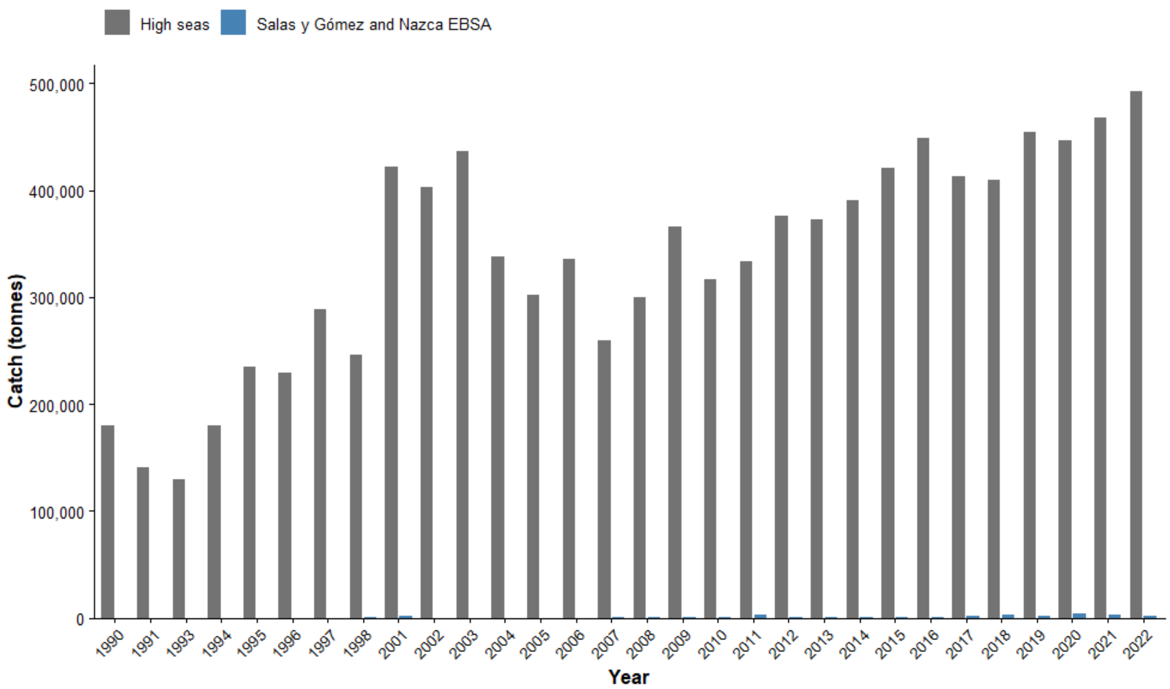

Figure 15 Total annual catches (t) (1993-2022) of *Thunnus albacares*, *T. obesus*, and *Katsuwonus pelamis* in the High Seas area managed by IATTC (grey bars) and in the Salas y Gómez and Nazca EBSA (blue bars) (data source: IATTC).

For the swordfish*,* the IAATC fishery data reports started in 1990 with most catches occurring in countries Exclusive Economic Zones. Catches in the Salas y Gómez and Nazca EBSA were lower than 20 (t) until 2001 when they significantly increased to ~1,500 (t), with peaks in 2001 and 2002 representing 27.9% and 16%, respectively, compared to the High Seas catch. In contrast, a decreasing trend was observed during the last three operating years in the EBSA when catches dropped to lower than ~200 (t) (Table 6, Figure 16). Between 1990 and 2022, swordfish fishing has been led by the Spanish fleet with more than 99% of the total IAATC catch. Data available from the high seas portion of the Salas y Gómez and Nazca Ridges Area for this period has shown that the biomass of swordfish caught in the EBSA contributes to an average of 6.21% with respect to the IATTC catches in High Seas. During the last three years catches in the EBSA declined to < 1.5% of the high seas catch.

Table 6 IATTC annual catches (t) for the swordfish (Xiphias gladius) fishery reported during 1990-2022, aggregated by the Total (HS+EEZ) (High Seas and Exclusive Economic Zone) extraction, only High Seas, and from the Salas y Gómez and Nazca EBSA. The percentage of catch in the high seas area of the Salas y Gómez and Nazca ridges was calculated with respect to the wider High Sea's catches.

Year	Total (HS +EEZ) (t)	High Seas (t)	Salas y Gómez and Nazca EBSA (t)	Percentual capture in the Salas y Gómez and Nazca EBSA relative to the high seas fishing zone
1990	10,873	407	0	0.07
1991	14,995	489	1	0.15
1992	14,091	225	0	0.06
1993	10,605	248	1	0.60
1996	9,558	337	0	0.05
1998	13,049	1,086	18	1.63
2000	11,316	2,128	14	0.67
2001	17,975	5,470	1,530	27.98
2002	19,718	10,231	1,646	16.09
2003	18,519	8,864	627	7.08
2004	15,683	8,597	836	9.73
2005	13,241	5,940	346	5.83
2006	13,697	6,442	652	10.11
2007	14,033	5,475	839	15.33
2008	15,325	7,099	761	10.72
2009	19,448	9,610	563	5.86
2010	22,880	10,962	1,027	9.37

2011	25,504	11,512	896	7.78
2012	30,740	11,624	1,104	9.50
2013	27,904	12,899	498	3.86
2014	27,667	12,037	365	3.03
2015	32,186	14,540	341	2.35
2016	31,887	14,246	515	3.62
2017	30,517	13,625	1,071	7.86
2018	31,610	16,680	1,262	7.56
2019	31,119	14,052	800	5.69
2020	28,259	14,496	103	0.71
2021	23,993	11,960	94	0.78
2022	24,684	14,329	198	1.38
Mean	20,727	8,469	555	6.21

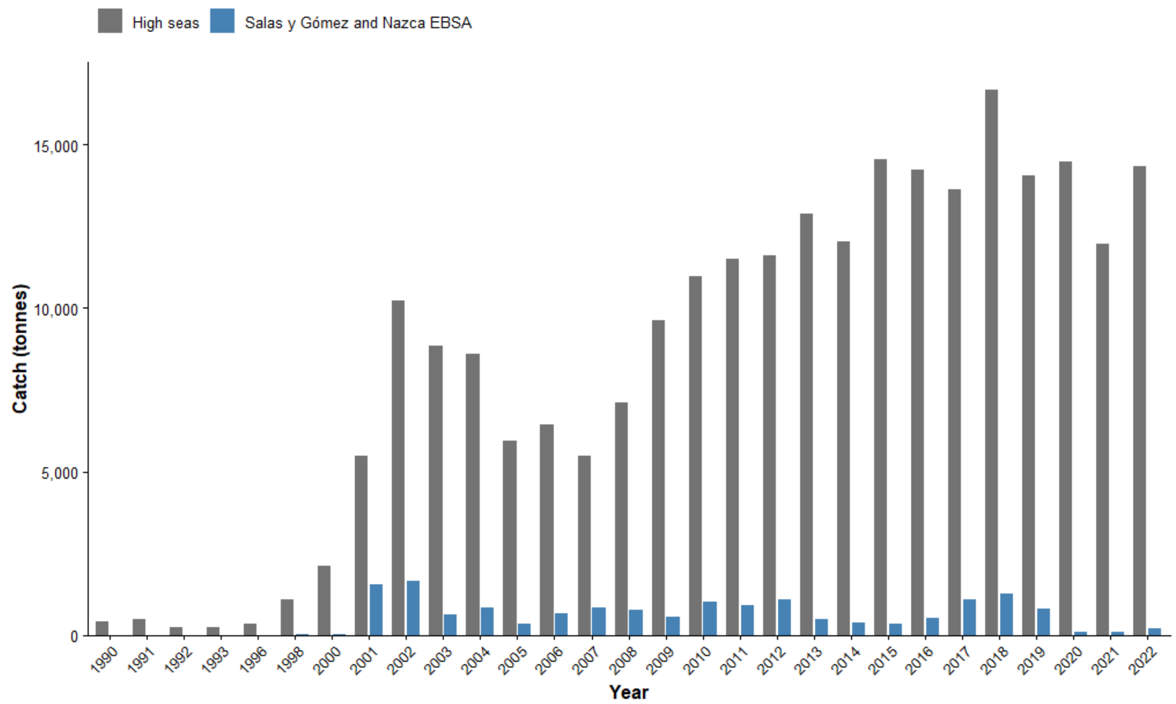

Figure 16 Annual catches (t) (1990-2022) of swordfish (*Xiphias gladius*) in the High Seas and in the Salas y Gómez and Nazca EBSA (data source: IATTC).

5.3.2 Annual percentage composition of jumbo flying squid catches by fleet

Jumbo flying squid harvesting in the study area was conducted by fleets from China, Korea, and Chinese Taipei (Figure 17)**.** The percentage composition of catches showed substantial changes in the relative contribution of these fleets during the study period. Between 2011 and 2014, all catches were taken by the Korean fleet. In 2015, although Korea remained the predominant fleet (96.6%), China participated in the fishery for the first time. From 2016 onward, the composition of catches by flag became more diverse. In that year, China accounted for the largest proportion of catches (71.4%), followed by Chinese Taipei (21.6%) and Korea (6.9%). In 2017, Chinese Taipei reached its highest relative contribution, accounting for 62.7% of catches, whereas Korea and China represented 30.7% and 6.6%, respectively. From 2018 onward, China regained its predominance in the fishery, progressively increasing its relative contribution. Finally, from 2022 onward, 100% of the recorded catches corresponded to the Chinese fleet.

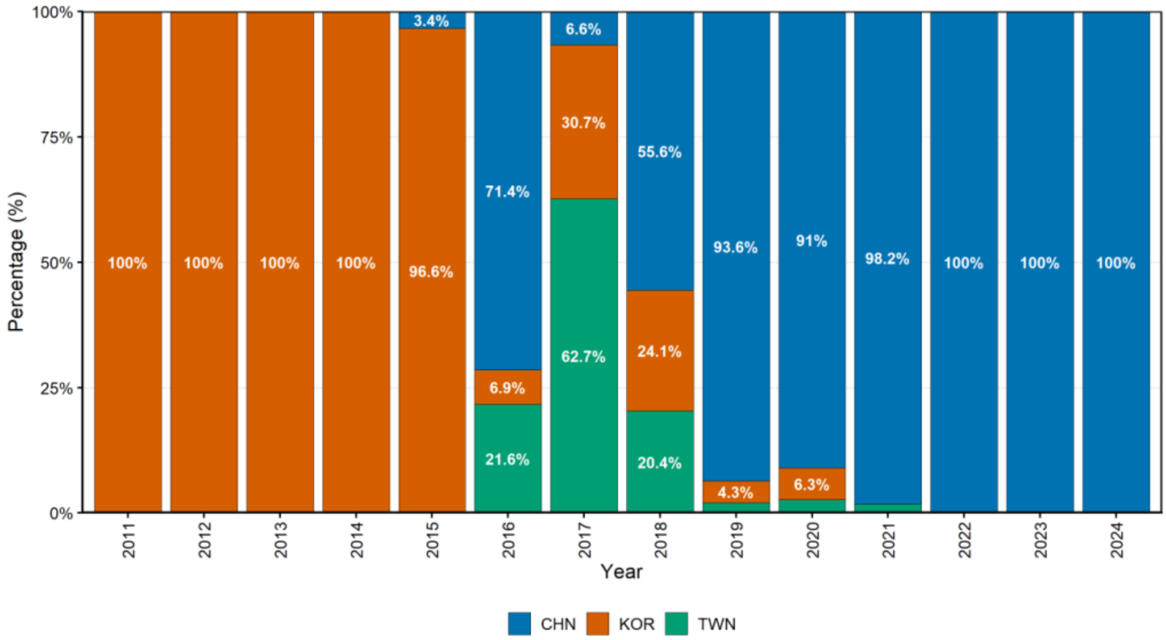

Figure 17 Annual percentage contribution (%) of jumbo flying squid (*Dosidicus gigas*) catches by fleet (CHN, KOR, and TWN) within the high seas portion of the Salas y Gómez and Nazca EBSA during the 2011–2024 period (Figure taken from: Sánchez-Espinoza et al., 2026. Data from SPRFMO).

5.3.3 Spatial and temporal distribution of jumbo flying squid catches by fleet in the high seas of the southeastern Pacific

Figures 18–20 show important spatial differences in the distribution and magnitude of jumbo flying squid catches among the Chinese, Chinese Taipei, and Korean fleets in the southeastern Pacific. Overall, the Chinese fleet had the broadest spatial coverage, with records widely distributed across the southeastern Pacific, from remote oceanic sectors to the eastern margin of the Pacific Ocean. In contrast, the Chinese Taipei and Korean fleets operated within considerably smaller areas and exhibited more restricted spatial distributions.

The spatial distribution of jumbo flying squid catches by the Chinese fleet showed high interannual variability in both the location and magnitude of the main fishing areas (Figure 18). During the early years of the time series (2015–2016), the highest catches were primarily located in international waters adjacent to Peru and near the eastern end of the study area. Subsequently, between 2017 and 2021, the areas of highest catches expanded toward oceanic sectors farther from the South American continental margin, with important catch hotspots observed in the north-central portion of the operational area, particularly between 90°W and 110°W. Finally, between 2022 and 2024, the highest catches were again predominantly located toward the eastern sector of the operational area, although the fleet maintained broad spatial coverage and catches were also recorded in remote oceanic sectors.

Regarding the Salas y Gómez and Nazca EBSA, Figure 3 shows a recurrent presence of catches both within and in areas adjacent to the EBSA, particularly around the Nazca Ridge. However, the highest catches tended to occur predominantly outside the EBSA boundaries, mainly in the north-central oceanic sectors of the operational area and in international waters adjacent to Peru. This is consistent with the information presented in Table 2, where catches taken by the Chinese fleet within the EBSA represented a relatively small fraction of its total high-seas catch, reaching maximum values of approximately 14% in some years.

The Chinese Taipei fleet exhibited less spatial extent and variability than the Chinese fleet, with its activity concentrated mainly in the eastern sector of the operational area (Figure 19). Throughout the study period (2016–2021), the highest catches were consistently located in international waters adjacent to Peru and near the eastern end of the Salas y Gómez and Nazca EBSA, particularly around the Nazca Ridge. According to Table 2, between 2016 and 2019, catches taken by Chinese Taipei within the EBSA represented between 33% and 74% of its total reported high-seas catches. In contrast, catches in oceanic sectors farther from the South American continental margin were considerably lower and more spatially dispersed. A progressive decline in catch magnitude was also observed toward the end of the study period, with the lowest levels recorded for this fleet occurring in 2021.

The Korean fleet exhibited a spatial distribution extending farther south in latitude, although it was relatively more restricted longitudinally (Figure 20). Nevertheless, as observed for Chinese Taipei, the highest catches were consistently located in international waters adjacent to Peru and near the eastern end of the Salas y Gómez and Nazca EBSA, particularly around the Nazca Ridge. This is also consistent with the information reported in Table 2, where catches originating from the area represented between 19% and 89% of Korea's total high-seas catches. Finally, in 2024, a marked spatial contraction of fishing activity was observed, with almost all catches concentrated in a localised area off Peru. This contraction was also accompanied by a substantial decline in catch magnitude compared with previous years. It should be noted that, for 2013 and 2014, it was not possible to conduct a robust spatial interpolation for the production of heat maps because of the low number of georeferenced catch records available for those years.

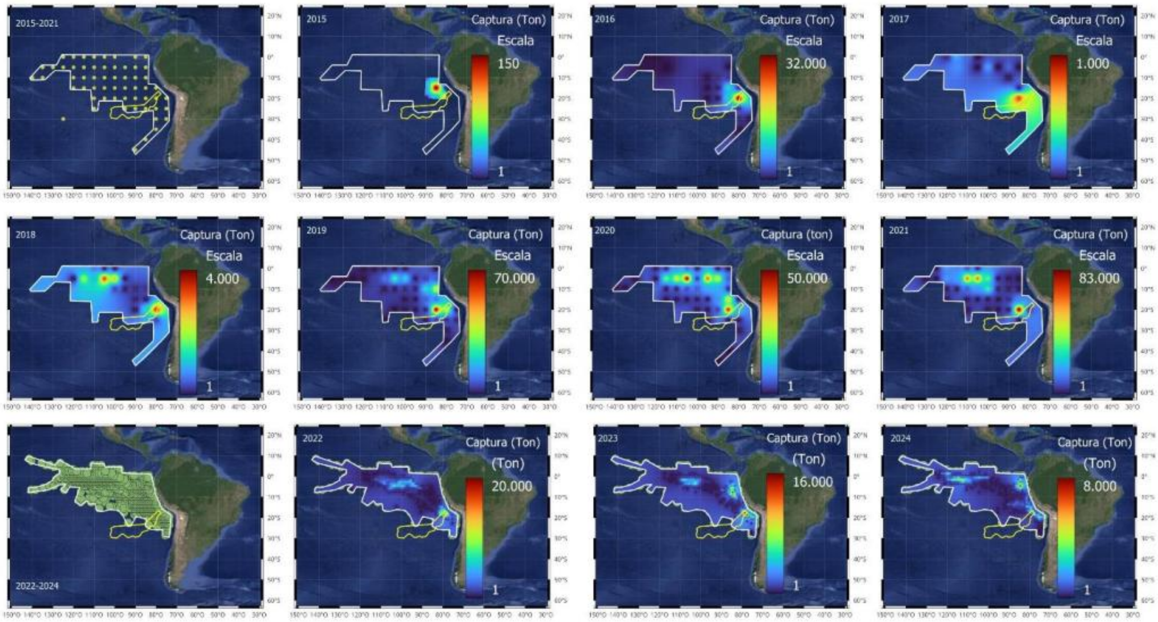

Figure 18 Spatial distribution and intensity of jumbo flying squid (*Dosidicus gigas*) catches by the Chinese fleet in the southeastern Pacific during the 2015–2024 period. The polygon outlined in yellow corresponds to the Salas y Gómez and Nazca EBSA (Figure taken from: Sánchez-Espinoza et al., 2026. Data from SPRFMO).

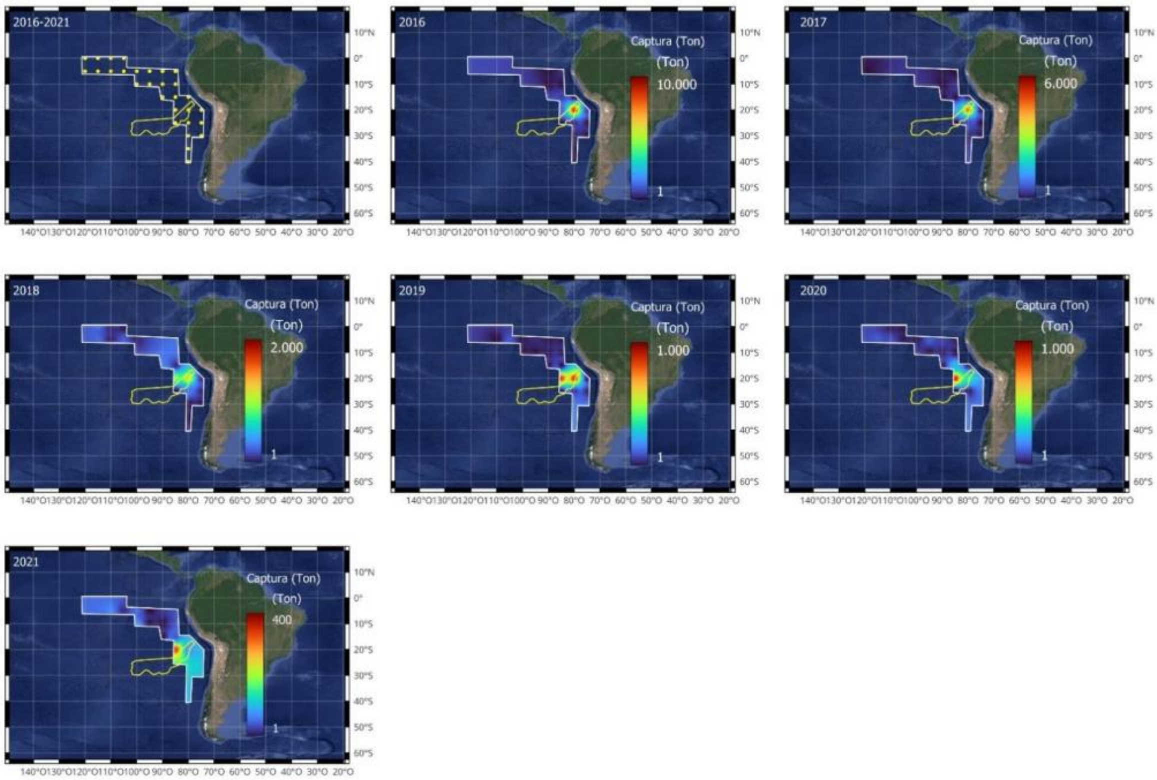

Figure 19 Spatial distribution and intensity of jumbo flying squid (*Dosidicus gigas*) catches by the Chinese Taipei fleet in the southeastern Pacific during the 2016–2021 period. The polygon outlined in yellow corresponds to the Salas y Gómez and Nazca EBSA (Figure taken from: Sánchez-Espinoza et al., 2026. Data from SPRFMO).

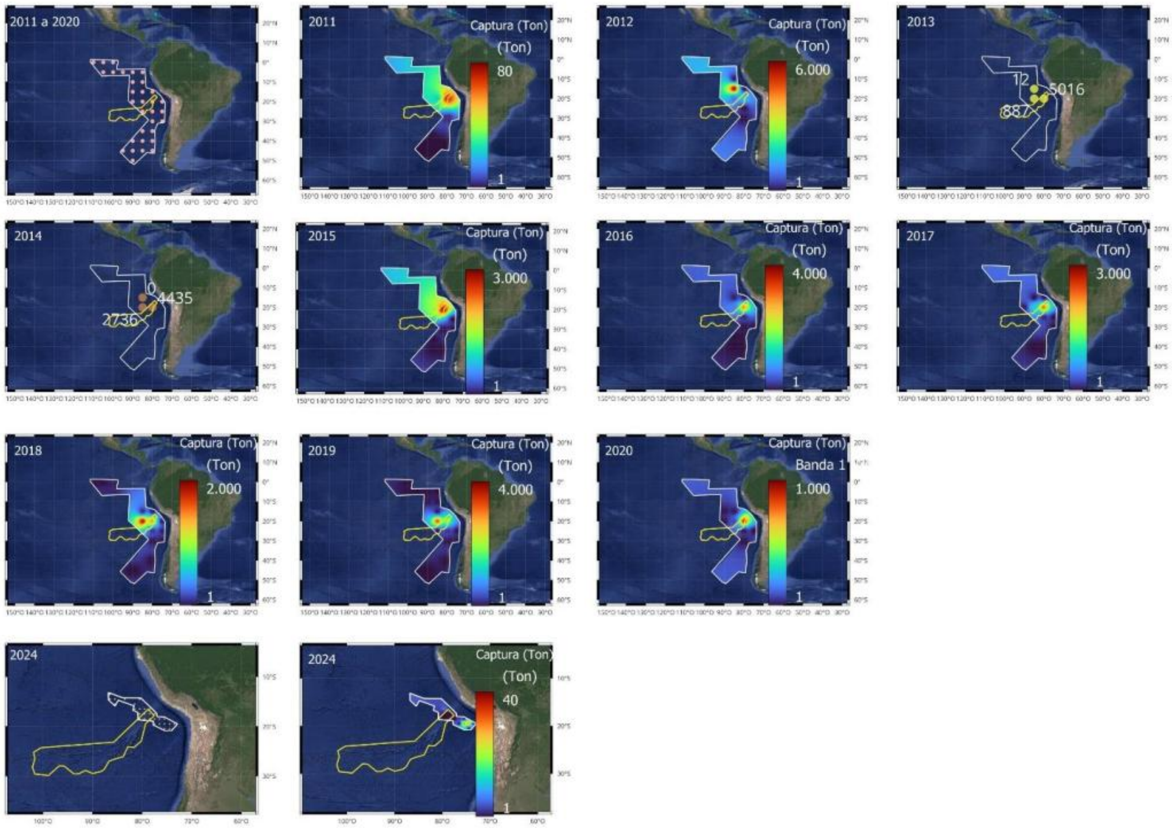

Figure 20 Spatial distribution and intensity of jumbo flying squid (*Dosidicus gigas*) catches by the Korean fleet in the southeastern Pacific during the 2011–2024 period. The polygon outlined in yellow corresponds to the Salas y Gómez and Nazca EBSA (Figure taken from: Sánchez-Espinoza et al., 2026. Data from SPRFMO).

6. Evaluation of fishing impacts

Fishing in the Salas y Gómez and Nazca (SGN) EBSA has historically been dominated by pelagic fisheries targeting jumbo flying squid (*Dosidicus gigas*), tuna species (i.e., *Katsuwonus pelamis*, *Thunnus obesus*, *T. albacares*), and swordfish (*Xiphias gladius*), along with smaller-scale demersal fisheries targeting species such as orange roughy (*Hoplostethus atlanticus*), alfonsino (*Beryx splendens*), jagged lobster (*Projasus bahamondei*), and golden crab (*Chaceon chilensis*) (SPRFMO, 2024). At present, effort associated with SPRFMO fisheries is primarily concentrated in the eastern part of the Nazca Ridge, adjacent to Peruvian waters, where jigging for jumbo flying squid represents the predominant activity, while bottom longlining, potting, purse seining, and trawling occur at lower levels and in other parts of the ridges (SPRFMO, 2024; 2026). Although overall fishing across the part of the EBSA that falls within the high seas remains relatively low compared to the broader southeastern Pacific, different fishing methods generate distinct ecological impacts (SPRFMO, 2024).

Pelagic fishing, by directly removing biomass (available organic matter), can disrupt the natural cycle of transport of organic matter to the deep sea by reducing the amount of fish and invertebrate biomass, and faecal material, that may otherwise eventually sink to the seafloor, thereby potentially altering the vertical transfer of carbon from surface waters (Aksnes et al., 2023). This natural process is important in oligotrophic and ultra-oligotrophic environments such as those found in parts of the Salas y Gómez and Nazca Ridges (Cornejo, 2026). This reduction in carbon availability can have significant consequences for the stability and functioning of deep-sea ecosystems, which may rely on a continuous supply of organic matter to sustain biological communities (Smith et al., 2009). There is however no localised quantification of this hypothetical impact across the Salas y Gómez and Nazca Ridges, and studies from the Peruvian coast suggest that pelagic fish biomass is mostly remineralised in the water column and is unlikely to drive deep-sea carbon budgets (SC12-Doc37; SC13-SGN01_rev1).

Fishing impacts vary fundamentally depending on the specific gear utilised and the vulnerability, fragility, recovery rate, and conservation status of the affected species and habitats (Clark et al., 2010). In the Salas y Gómez and Nazca Ridges Area , within the context of SPRFMO, the current fishery is dominated by pelagic jigging for jumbo flying squid, which accounts for approximately 89% of active vessels. Scientific evidence indicates that jumbo flying squid (*Dosidicus gigas*) targeted by the high-seas jig fishery undertake diel vertical migrations and concentrate in the upper pelagic layer at night, typically within the upper 0-200 m of the water column, where they are harvested using jigging gear (SC9-WP02_rev1). Habitat impacts are likely to be minimal, given that the fishery mainly utilises highly selective jigging methods, which are associated with limited habitat disturbance. Potential ecosystem effects of industrial squid jigging are more likely to arise from vessel lighting than from physical gear impacts. Artificial lights used to attract squid have been documented in other areas as attracting and disorienting seabirds, increasing the risk of collisions and other vessel-related interactions (SC5-Doc29). While the SPRFMO Scientific Committee has “recognised the potential for seabirds to interact with squid jig fishing activity at levels that may pose conservation concern for some seabird species” (SC05-Report_Final), there is a lack of evidence of this potential impact within the Salas y Gómez and Nazca Ridges Area .

In contrast, benthic habitat degradation in this region is a legacy of historical bottom trawling activities, which ceased entirely when the orange roughy fishery was closed in 2006. Currently, bottom-contact fishing is limited to localised, small-scale exploratory trap and bottom long line fisheries, which have a lower and more restricted physical footprint than mobile bottom-contact fishing methods such as bottom trawling (SC11-DW01_rev1).

6.1 Materials and methods

6.1.1 SPRFMO

By-catch data were obtained from the SPRFMO observer database (SPRFMO, 2026), comprising all georeferenced incidental capture records reported between 2008 and 2024 for the southeastern Pacific. Records included fishing method, year, species identity, geographic position, and the number of incidental captures. Fishing methods reported were bottom longline (BL), jigging (J), purse seine (PS), potting (PT), and trawling (TR).

Heatmaps were produced to visualise the temporal distribution of by-catch among fishing methods and species, with a colour palette to indicate bycatch intensity, representing the number of reported individuals. Relative species composition was calculated annually as the proportion of total reported by-catch contributed by each taxonomic group. Because the South American sea lion (*Otaria byronia*) represented most reported incidental captures during some years, an additional analysis excluding this species was conducted to better illustrate temporal variation in the remaining by-catch assemblage.

The conservation status of each recorded species was assigned according to the IUCN Red List of Threatened Species, and annual by-catch composition was summarised by IUCN category. Furthermore, the ten most frequently reported by-catch species were also identified to evaluate the conservation relevance of the incidental catches.

All records were mapped using their reported geographic coordinates to describe the spatial distribution of by-catch across the southeastern Pacific and within the SGN EBSA using ArcGIS Pro 3.3.0.

For the environmental impacts of bottom-contact fishing, see section 6.3.

6.1.2 Inter-American Tropical Tuna Commission (IATTC)

Georeferenced shark by-catch data were obtained from the IATTC for the period 1995–2024 (Sánchez-Espinoza et al. 2026). The dataset comprised spatially aggregated fishing events associated with tuna purse seine and swordfish long line fisheries, reported on regular spatial grids of 1° × 1° and 5° × 5°, respectively. Only fishing events located within the SGN EBSA (A0) and the four surrounding reference areas (A1–A4) were retained for analysis. Catch per unit effort (CPUE) was calculated separately for each fishing gear according to the corresponding effort metric. For long line fisheries, CPUE was expressed as the number of sharks captured per hook, whereas for purse seine fisheries it was calculated as the number of sharks captured per set.

All maps generated for assessing georeferenced shark by-catch data were built in QGIS software.

6.2 Results

Pelagic purse-seine and longline fishing have historically been conducted in the area by fisheries regulated under the IATTC, primarily targeting tuna and swordfish. These fisheries have reported relatively high levels of by-catch, consisting predominantly of sharks, such as *Sphyrna lewini*, *Sphyrna zygaena*, *Prionace glauca*, *Carcharhinus falciformis*, *Carcharhinus longimanus*, and *Isurus oxyrinchus* (Vega et al., 2009; Gálvez, 2012; IATTC, 2025) (Figure 21). Spatial analyses indicate that the highest probabilities of shark encounters occur predominantly outside the high seas portion of the Salas Salas y Gómez and Nazca Ridges Area , although the distribution differs between purse-seine and longline fisheries (Sánchez-Espinoza et al., 2026) (Figure 22).

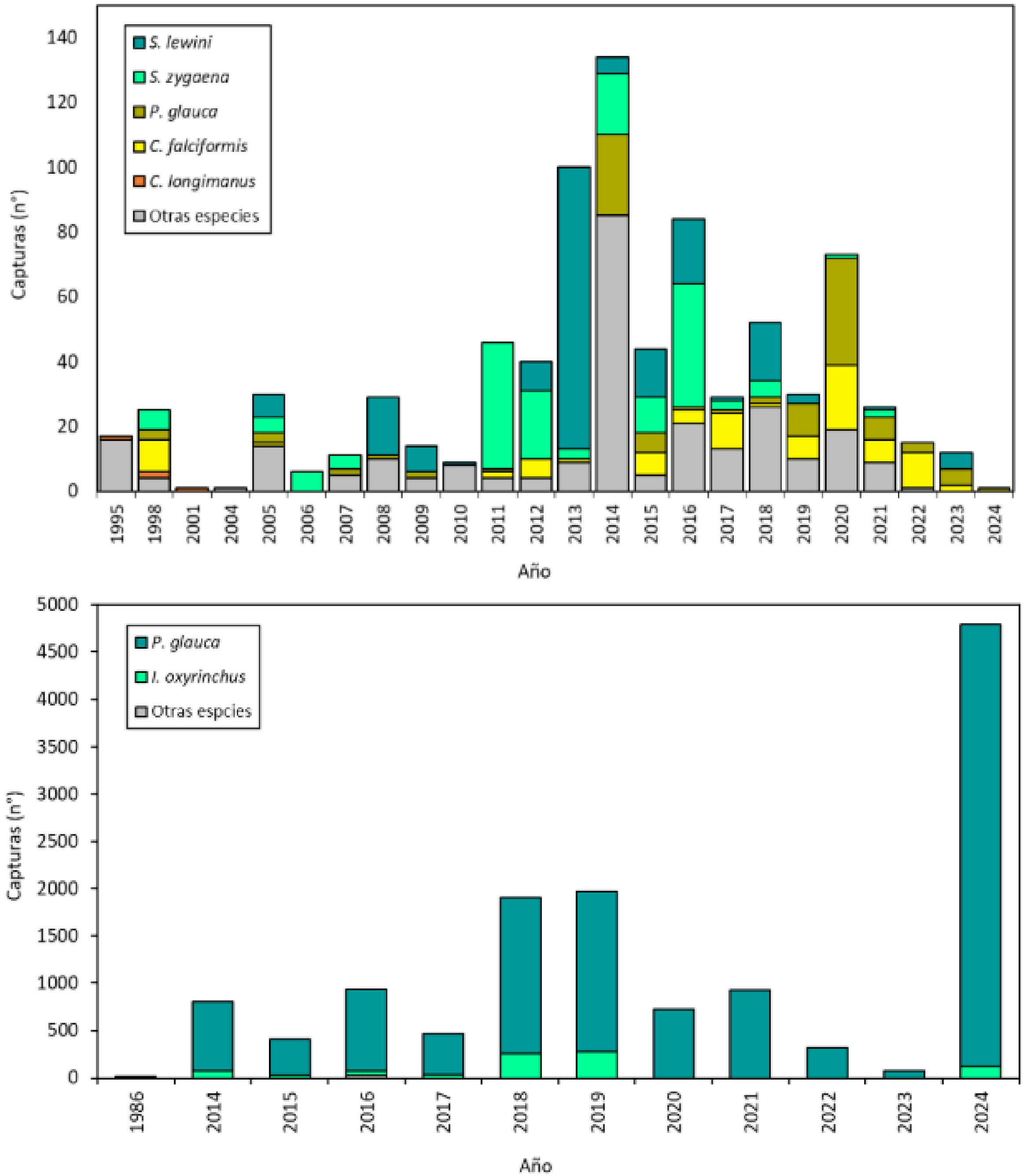

Figure 21 Inter-American Tropical Tuna Commission (IATTC) by-catch reported in the Salas y Gómez and Nazca ridges by purse seine (1995-2024, upper panel) and longline (1986-2024, lower panel). The major non-target species were S. lewini, S. zygaena, P. glauca, C. falciformis, and C. longimanus for purse seine and blue (Prionace glauca) and mako (Isurus oxyrinchus) sharks for long line. Data sourced from IATTC.

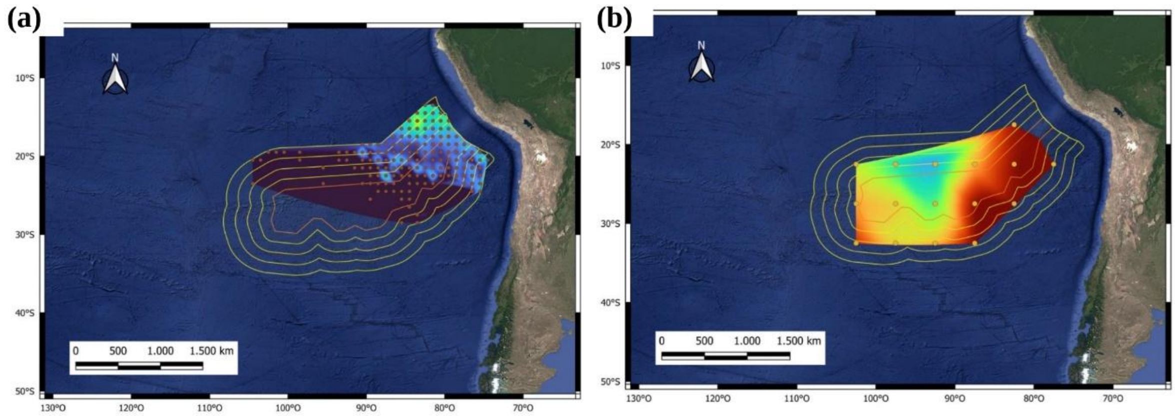

Figure 22 Spatial distribution of the estimated probability of shark encounters in the Salas y Gómez and Nazca EBSA (A0) and the surrounding reference areas (A1–A4) for (a) purse-seine and (b) longline fisheries. Warmer colours indicate higher encounter probabilities, whereas cooler colours indicate lower probabilities. Points represent the centroids of spatial grid cells with available fishing records. The red polygon delineates the high seas portion of the Salas y Gómez and Nazca Ridges Area , and the surrounding polygons correspond to the four reference areas.

Information provided by SPRFMO (2026) showed bottom longline (BL), jigging (J), purse seine (PS), potting (PT) and trawling (TR) are the most common used fishing methods in the area, being jigging the predominant one as the jumbo flying squid (*Dosidiscus gigas*) fishery- led by the Chinese fleet- is the biggest fishery operating in the area, although geographically restricted to the eastern-most portion of the Nazca Ridge.

By-catch data associated to these fishing methods, as reported by SPRFMO in the southeast Pacific (not only within the Salas y Gómez and Nazca Ridges Area) indicate that PS presents the highest value of by-catch dominated by marine mammals, seabirds, and turtles, primarily occurring in the EEZ of Chile, and secondly east of Desventuradas Islands within the high seas. Trawling showed a high number of the porbeagle sharks, seabirds, and marine mammals; the BL was mainly associated with seabirds; and the J had the lowest bycatch reported with one loggerhead turtle (*Caretta caretta*) (Figure 23). It is noteworthy that even though by-catch report started in 2008, incidental catches associated to the *D*. *gigas* fishery, 2021 is the only year reporting incidental captures.

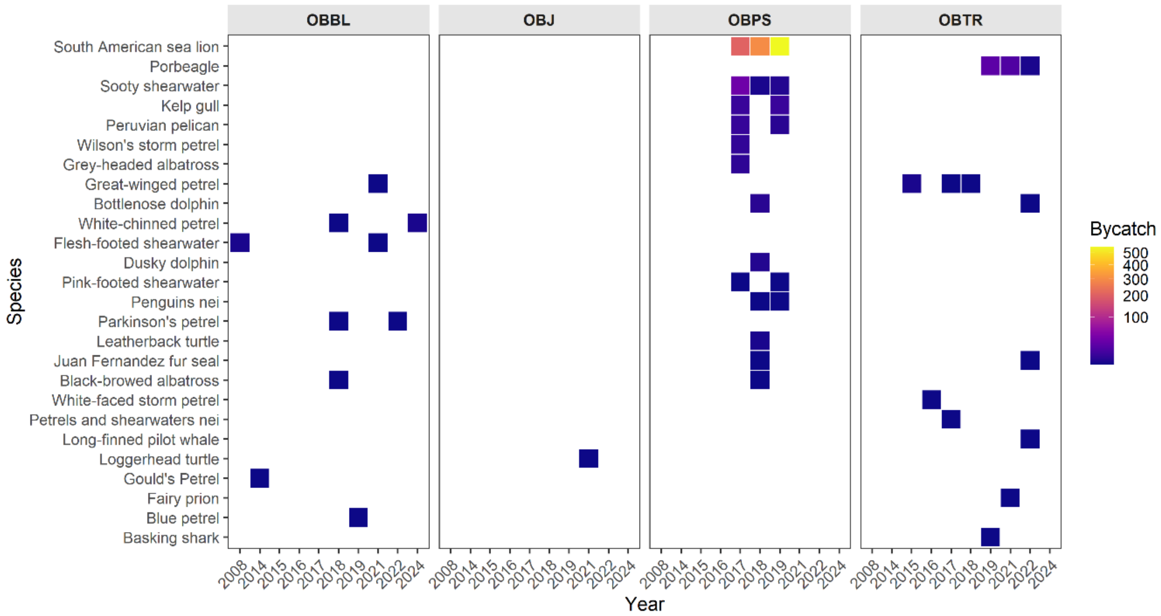

Figure 23 Observed by-catch by species, year and fishing method. Colour intensity represents the number of incidental captures according to the obtained SPRFMO observer data (SPRFMO, 2026). Bycatch recorded by observer is presented by gear: bottom line (OBBL), jigging (OBJ), purse seine (OBPS), trawling (OBTR).

SPRFMO by-catch data disaggregated by year show that the highest levels of incidental catch occurred between 2017 and 2021. The relative composition of the total reported by-catch indicates that, in most years, non-target species consisted primarily of seabirds and sharks, with marine mammals representing a smaller proportion. However, this pattern differed between 2017 and 2019, when the South American sea lion (*Otaria byronia*) accounted for approximately 75% of total reported by-catch in 2017 and nearly 90% in both 2018 and 2019, all within the EEZ of Chile (SPRFMO, 2026). To account for this anomaly, *Otaria byronia* was excluded (Figure 24).

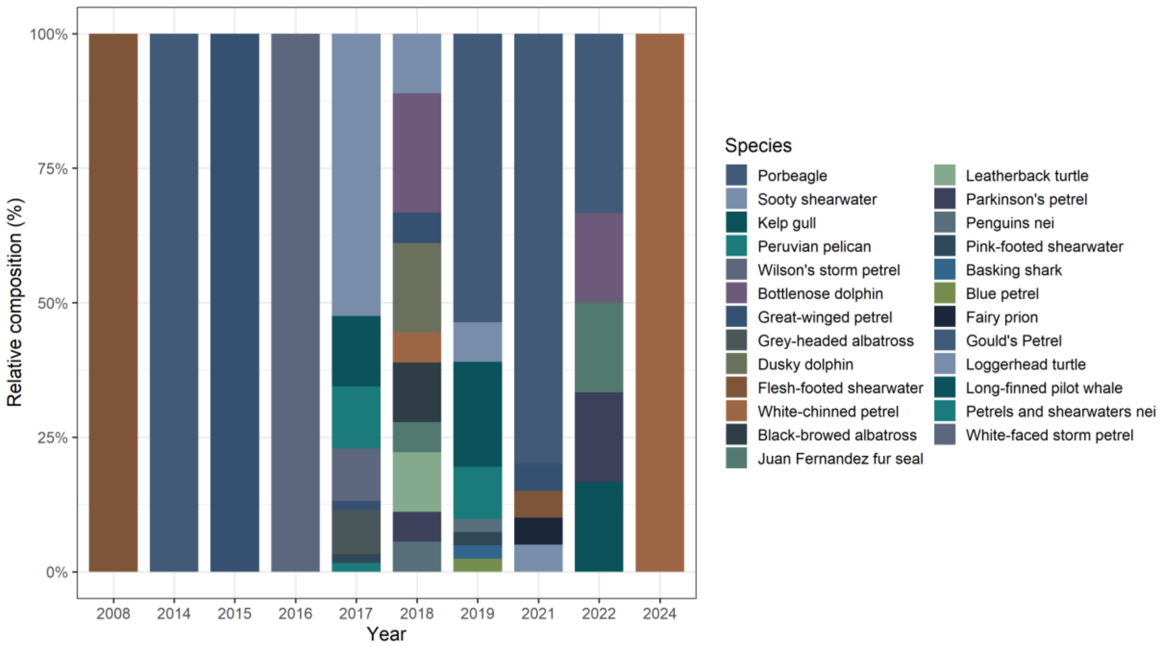

Figure 24 Total relative by-catch species composition from data obtained from SPRFMO, excluding the South American sea lion according to the obtained SPRFMO observer data (SPRFMO, 2026).

The composition of reported SPRFMO by-catch, categorised according to IUCN conservation status, ranges from Not Evaluated (NE) to Endangered (EN). Vulnerable species dominated the by-catch most of the years (Figure 25). Among the ten most frequently recorded by-catch species, 50% are classified as Near Threatened or threatened (NT–EN) according to the IUCN Red List of Threatened Species. Specifically, one species is listed as Endangered (EN; *Thalassarche chrysostoma*), two species as Vulnerable (*Lamna nasus* and *Procellaria aequinoctialis*), and two species as Near Threatened. The remaining five species (50%) are classified as Least Concern. These findings highlight that several of the most frequently reported by-catch species are of conservation concern, underscoring the importance of continued monitoring and mitigation measures within the fishery (Table 7).

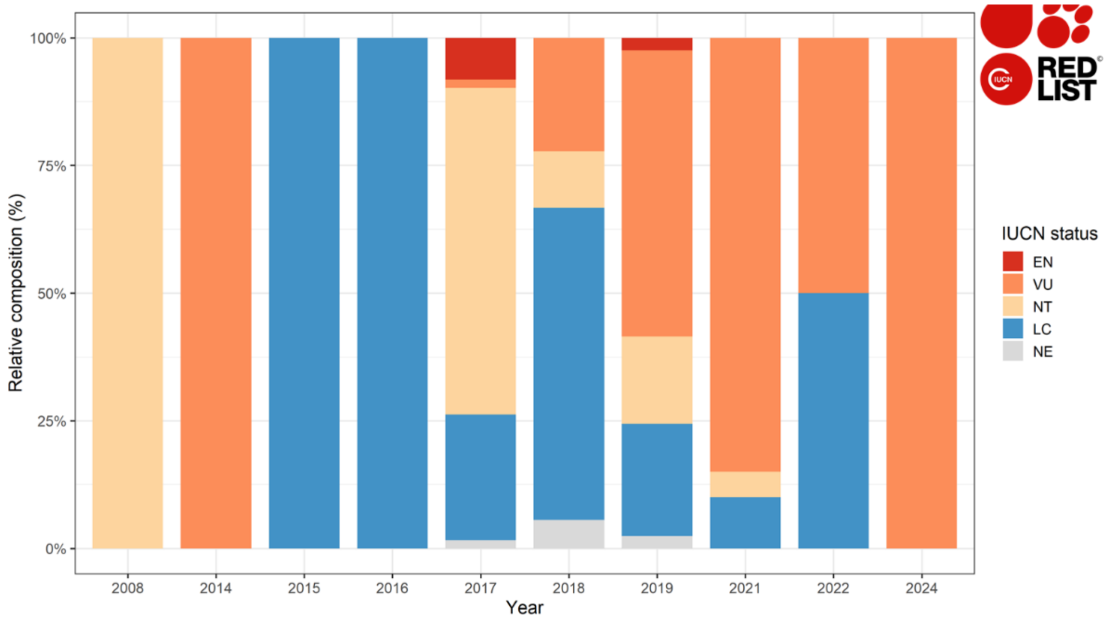

Figure 25 Relative by-catch composition by year reported by SPRFMO, according to IUCN species status, excluding South American sea lion according to the obtained SPRFMO observer data (SPRFMO, 2026).

Table 7 Most recent conservation status of by-catch species reported by SPRFMO according to the obtained SPRFMO observer data (SPRFMO, 2026), and according to the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.

Rank	Species Code	Scientific name	Common name	Number of reported individuals	IUCN status
1	SEL	*Otaria byronia*	South American sea lion	1057	LC
2	POR	*Lamna nasus*	Porbeagle	40	VU
3	PFG	*Puffinus griseus*	Sooty shearwater	37	NT
4	LDO	*Larus dominicanus*	Kelp gull	16	LC

5	TWH	*Pelecanus thagus*	Peruvian pelican	11	NT
6	OCO	*Oceanites oceanicus*	Wilson's storm petrel	6	LC
7	DBO	*Tursiops truncatus*	Bottlenose dolphin	5	LC
8	PDM	*Pterodroma macroptera*	Great-winged petrel	5	LC
9	DIC	*Thalassarche chrysostoma*	Grey-headed albatross	5	EN
10	PRO	*Procellaria aequinoctialis*	White-chinned petrel	3	VU

SPRFMO by-catch data for the Salas y Gómez and Nazca Ridges EBSA, indicates that the eastern portion of the area, adjacent to Peru's jurisdictional waters, is the only area were by-catch has been reported. In 2022, a total of seven individuals representing four species were reported as by-catch: three blue sharks (*Prionace glauca*), two ocean sunfish (*Mola mola*), one bottlenose dolphin (*Tursiops truncatus*), and one long-finned pilot whale (*Globicephala melas*). All these reports corresponded to trawling (TR) fishing method. When considering only by-catch records reported for the High Seas by SPRFMO, excluding the EEZ of the coastal states, a different spatial pattern emerges as by-catch is concentrated between the Desventuradas EEZ and the continental Chile EEZ, and in the previously mentioned eastern portion of the Nazca ridge, adjacent to the Peruvian jurisdictional waters, and corresponds mainly to Trawling, Potting, Bottom Longline and Jigging (Figure 26).

Figure 26 Georeferenced By-catch spots in the Southeast Pacific, from 2008 to 2024, as provided by SPRFMO 2026.

It is important to note that, although only a few bycatch events have been officially reported along the SGN ridges, there is a degree of uncertainty associated to the diverging levels of observer coverage among fleets and fisheries. The same fishing methods used in areas where bycatch has been documented by SPRFMO, but also by IATTC, operate along the SGN ridges, where some species and similar assemblages are also present. Given the current low levels of fishing activity under SPRFMO, by-catch numbers are also low, but could potentially increase if fishing effort is to increase in the area. Improving the collection and reporting of bycatch information is essential to an accurate and realistic evaluation of fishing impacts in the SGN ridges. Similarly, projection of bycatch estimates proportional to the fishery-specific levels of coverage is also lacking.

6.3 Impacts of demersal fishing

Mobile bottom contact fishing methods can cause widespread degradation of benthic habitats and significant damage to non-target species (Althaus et al., 2009; Clark et al., 2010; Koslow et al., 2001; Petit et al., 2026) (Figure 27). These impacts are particularly pronounced in highly vulnerable marine ecosystems (VMEs), such as seamounts, which are dominated by some of the longest-lived species on the planet (Petit et al., 2026).

These habitat forming species provide spawning grounds, nursery areas, feeding spots and refuge for commercial and non-commercial important demersal species (Cañete & Häussermann, 2012; Watling & Auster, 2017; Stevens, 2021). In particular, habitat degradation from bottom trawl fishing in these sensitive environments is linked to a significant decrease in species richness, cover, and abundance, leading to a reduction or complete loss of habitat complexity (e.g., three-dimensionality, functional role redundancy) and species functional roles (Watling & Auster, 2017; Hiddink et al., 2020; Petit et al., 2026).

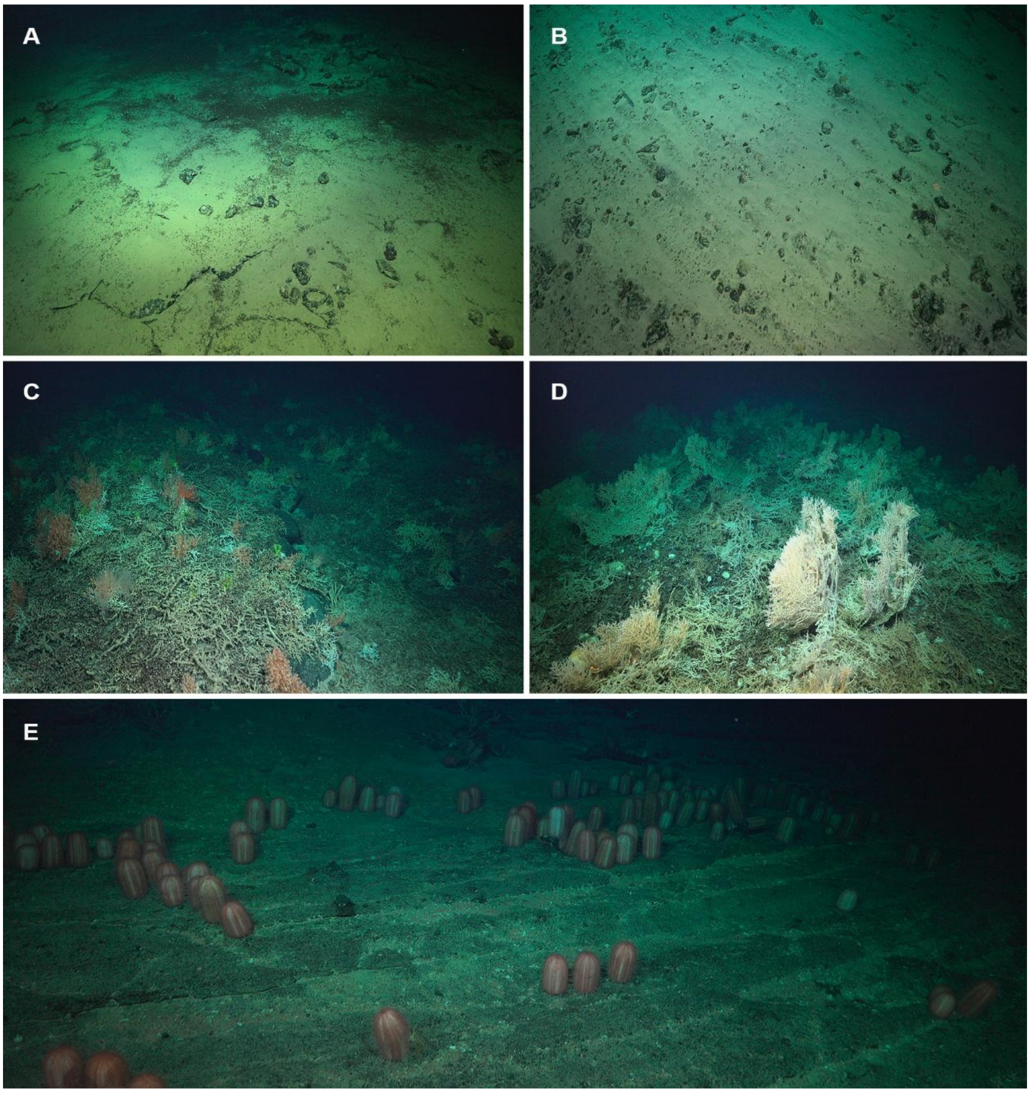

Figure 27 (A) Habitat disturbed by bottom trawl fishing with coarse sand, flattened rocky slabs, coral rubble, and trawl scars. (B) Sandy plain displaying linear drag marks consistent with intensive bottom trawl fishing. (C-D) High-relief rocky habitat in non-trawled seamounts. (E) Degraded benthic environment after 25 years of bottom trawl fishing dominated by the sea urchin *Dermechinus horridus*. Credits: Schmidt Ocean Institute/ESMOI. Adapted from Petit et al. (2026).

Bottom trawl fishing not only causes the immediate mechanical degradation of benthic habitats but also leads to long term ecological impacts by altering species composition (Figure 28) and modifying ecological succession patterns (Petit et al., 2026). Severe habitat damage may facilitate the proliferation of certain taxon such as echinoderms, which at the same time might increase predation pressure on a wide variety of prey, including millenary and slow recovery deep-sea corals (e.g., Keratoisididae branched) (Figure 29)

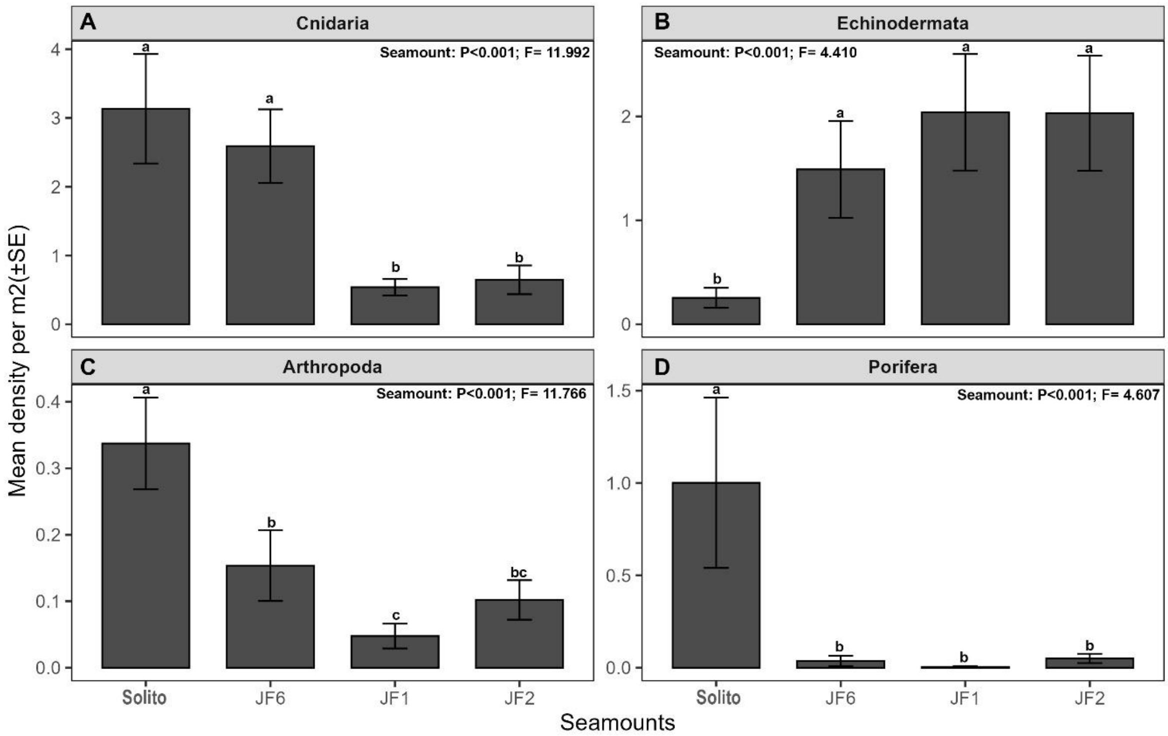

Figure 28 Species density at different trawled and non-trawled seamounts (see Petit et al., 2026). Solito seamount has no bottom-contact trawling evidence, being considered a pristine habitat (Tapia-Guerra et al., 2026). In contrast, JF1, JF2, and JF6 are seamounts that were bottom trawl fished for orange roughy and alfonsino more than 25 y ago. The four major phyla Arthropoda, Cnidaria, Echinodermata, and Porifera were considered based on their dominance across all study sites. Bars with the same letter were not significantly different (ANOVA, p > 0.05). Image adapted from Petit et al. (2026).

Figure 29 Several *Dermechinus horridus* potentially feeding on a bamboo coral (Keratoisididae branched) near a trawled area at 490 m depth in the Juan Fernández ridge. Credits: Schmidt Ocean Institute/ESMOI. Adapted from Petit et al. (2026).

Undersea features in both the Salas y Gómez Ridge and the southern portion of Nazca Ridge were trawled for orange roughy and alfonsino more than 26 years ago (Figure 30). Evidences of this past activity were recorded during the Falkor *too* expeditions in 2024 (Figure 31).

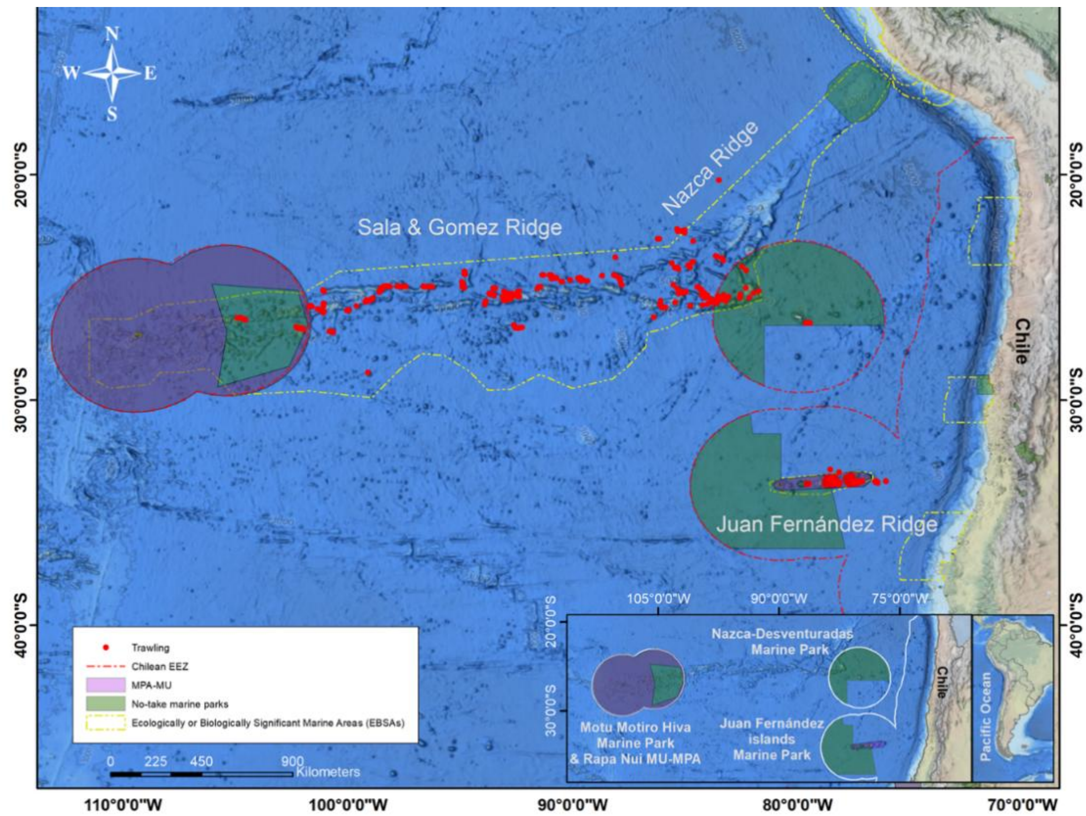

Figure 30 Trawled spots in the Salas y Gómez and Nazca ridges more than 26 years ago. Source: Captain A. Smith, personal record.

Figure 31 Lost fishing gear in a trawled area from the Nazca Ridge, as recorded by a Falkor too expedition in 2024. Credits: Schmidt Ocean Institute/ESMOI.

Another benthic fishing method used in the Salas y Gómez and Nazca Ridges Area is crustacean fishing traps, which primarily target the jagged lobster (*Projasus bahamondei*) along the Nazca Ridge (Arana, 2014). Trap fishing commonly involves setting multiple traps connected by groundlines, which can drag across the seafloor during deployment or retrieval, causing damage to benthic habitats dominated by habitat-forming species such as corals and sponges (Stevens, 2021). Lost or abandoned fishing gear (Figure 32) can further degrade these habitats, particularly when currents or storms move the gear across the seabed, extending its impacts over larger areas and longer time periods (Stevens, 2021). In addition, multiple vertical trap lines may cause the entanglement and death of pelagic fauna (e.g., marine mammals) (Hamilton & Baker, 2019).

Figure 32 Examples of lost crustaceans fishing traps found at 285-294 m depth within the high seas portion of the Nazca Ridge, as recorded during Falkor too expeditions in 2024. Credits: Schmidt Ocean Institute/ESMOI.

In 2025, as part of their potting and bottom long lining exploratory fisheries, the Cook Islands undertook one trip that fished within the Salas y Gómez and Nazca Ridges area. The Cook Islands vessel fished in four discrete areas with droplines and one area with traps where 10 traps were deployed. The Cook Island vessel found areas with high fish abundance on echo sounder surveys on seamounts within the Salas y Gómez and Nazca Ridges Area . These echo sounder marks matched those of hapuka in the Foundation Seamount Chain, but dropline fishing caught mostly unidentified sharks and dogfish (all were released), as well as some terakihi. The Cook Islands vessel deployed 10 traps, but no target species were caught. On retrieval, 50% were empty, 20% contained non-target crabs which were released, and 30% contained sea urchins and/or starfish (all were released). In 2022 the Cook Island vessel deployed traps in two other areas within the Salas y Gómez and Nazca area landing 140kg of golden crabs (*Chaceon* sp.) On both dropline and trap deployments no VME indicator taxa were accidentally caught.

7. Recommendations

The Salas y Gómez and Nazca Task Team recommends that the Scientific Committee:

- **Notes**:
    - That the Salas y Gómez and Nazca Task Team have provided (through this report) a compilation and review of all relevant scientific information and data about the Salas y Gómez and Nazca Ridges area, as requested by the Commission in Decision 17-2024.
    - That the Salas y Gómez and Nazca Task Team have completed an assessment of all relevant scientific information and data against the Evaluation Criteria, which was previously endorsed by the Scientific Committee in 2025 and can be found in Annex A of this report.

- **Agrees**:
    - That the compilation and review of all relevant scientific information and data presented by the Salas y Gómez and Nazca Task Team through this report provides a sound basis for the Scientific Committee to formulate advice to the Commission, as requested by the Commission in Decision 17-2024.
    - That the results of the Salas y Gómez and Nazca Task Team assessment of information against the Evaluation Criteria indicate that overall, the Evaluation Criteria for the Salas y Gómez and Nazca Ridges area have been met, and said assessment provides a robust evidence-based basis for proposed enhanced levels of protection.
- **Recommends**:
    - That given
        - the multiple criteria met regarding benthic habitats within the Salas y Gómez and Nazca Ridges area, including occurrence of vulnerable marine ecosystems, their vulnerability to disturbance, and their ecological importance (criteria 1.a, 1.b, 2.a, 2.b, 3.1, 3.b, 4.a, 5.a, 7.b), and
        - that bottom trawling and midwater trawling targeting bentho-pelagic species (i.e., alfonsinos) are not currently permitted within the Salas y Gómez and Nazca Ridges Area

      That SPRFMO should not authorise these methods to fish in the Salas y Gómez and Nazca Ridges Area until a decision on enhanced levels of protection is made.

8. Acknowledgements

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10. Annex A – Evaluation Criteria for assessing spatial management proposals

Objectives

The objective/s for the area must be clearly stated and the proposal clearly demonstrates which of the criteria are met.

The proposal should state which of the evaluation criteria meet the objectives by completing the table below and noting that the evaluation criteria list has no particular ranking of importance.

Evaluation Criteria

1. Bioregional representation
    a. Area is known to contain unique, rare or distinct habitats or ecosystems that fishing operations will disturb.
    b. Areas with a comparatively higher degree of naturalness due to zero or a low level of human-induced disturbance or degradation from, for example, historical fishing activity.
2. Geographic and/or geomorphological representation
    a. The area provides for important or desirable geographic representation within the SPRFMO area.
    b. The area proposed is known to contain unique or unusual geomorphological features that fishing operations may damage.
3. Biodiversity representation
    a. The area is known to contain unique or rare (occurring in only a few locations) species, populations or communities.
    b. The area is known to contain a high diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.
    c. The area is known to contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.
4. Uniqueness and rarity
    a. The area warrants conservation and preservation due to their unique features, resources, and/or characteristics.
5. Vulnerability, fragility, sensitivity, or slow recovery/resilience
    a. Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.
6. Area is of special significance for threatened or important species and/or ecosystem properties

   a. There is evidence that the area is of special importance for life history stages of species and/or threatened species.
   b. There is evidence that the area contains habitat for the survival and recovery of endangered, threatened, declining species or is an area with significant assemblages of such species.

7. VMEs are known to occur and/or triggering of VME indicator taxa thresholds reported for the area proposed
   a. Known or consistent triggering of VME indicator thresholds occurs.
   b. VMEs have been observed through non-fishing operations.
8. Cultural Significance
   a. The area has an exceptionally rich and long history and cultural significance
9. Scientific interest

The area has scientific research interest associated with understanding ecosystem, biological, geological and biodiversity processes in the SPRFMO region.

11. Annex B – Summary of available information

Table 8 Summary of evidence provided to Members (ref. G24-2026) to complete the assessment against the Evaluation Criteria (Annex A). Throughout the summary table, references to the "area" refer to the entire area of the 'Salas y Gómez and Nazca Ridges'. Acknowledging that there are multiple nomenclatures for both ridges which may have arisen from differences in language, culture and/or history, for simplicity purposes the summary document refers to the 'Salas y Gómez Ridge' and the 'Nazca Ridge' individually, where needed.

Criteria	Summary
1. Bioregional Representation	a. Area is known to contain unique, rare or distinct habitats or ecosystems that fishing operations will disturb. Vulnerable Marine Ecosystems (VMEs), including structurally complex deep-sea corals and sponges, which have been documented at multiple surveyed sites within the area (Georgian et al., 2021) are globally rare and highly susceptible to physical disturbance (Wagner et al., 2021; Gaymer et al., 2025). b. Areas with a comparatively higher degree of naturalness due to zero or a low level of human-induced disturbance or degradation from, for example, historical fishing activity Large portions of the area remain relatively undisturbed by historical fishing, retaining intact benthic communities, high predator diversity, with ongoing discoveries of suspected new species indicative of high ecological integrity (Wagner et al., 2021; Easton et al., 2024; Sellanes et al., 2024; Petit et al., in review).
2. Geographic and Geomorphological Representation	a. The area provides for important or desirable geographic representation within the SPRFMO area. The region comprises two interconnected but distinct geomorphological and oceanographic systems: the Salas y Gómez Ridge and the Nazca Ridge, the latter having been classified as an oceanic plateau (Harris et al., 2014; Harris et al., 2023) in which morphologies corresponding to a contourite drift system have developed (Calvès et al., 2021). While both ridges exhibit physical continuity, the Nazca Ridge follows a northeast-southwest orientation extending over 1,200 km from the Peru-Chile trench off the coast of Peru, whereas the Salas y Gómez Ridge is a longitudinal ridge approximately extending 1,600 km from the East Pacific Rise to the Nazca Ridge (Woods & Okal, 1994; Gaymer et al., 2025; SPRFMO SC12-Doc 37). Both ridges are likely to encompass distinct oceanographic and ecological conditions, spanning multiple oceanographic and biogeographic zones, but together they can be considered a biogeographical area more closely related to the Indo-West Pacific than to the eastern Pacific (Parin et al., 1997). b. The area proposed is known to contain unique or unusual geomorphological features that fishing operations may damage

	The area is characterised by a high concentration of geomorphological features including more than 110 seamounts and guyots within a relatively small region, (94% of the Southeast Pacific and 11% of the Pacific Ocean (Kitchingman et al., 2008)), with summits ranging from 150m to 1,000m below the surface. This density of seamounts is significant (Harris et al., 2014) and contributes to the areas distinctive bathymetric profile, with depths ranging from >4,000 m to ~20 m below the surface (mean ~2,100 m) (Gálvez-Larach, 2009; Wagner et al., 2021; Gaymer et al., 2025). The area is under the influence of the oceanic section of the Humboldt Current, characterised by cold subsurface waters, low levels of oxygen and high nutrient content. Additionally, the Nazca Ridge is influenced by the Peruvian upwelling system and an oxygen minimum zone approximately 700 m thick (SPRFMO SC13-SGN01_rev1; SPRFMO SC12-Doc 37; Graco et al., 2007), making it act as a primary sink for energy and particulate organic carbon via the propagation of mesoscale eddies by trapping the upwelling waters (SPRFMO SC13-SGN01_rev1; SPRFMO SC13-ECO04). The combination of extreme depth gradients and distribution of underwater topographic features make the area unique and particularly vulnerable to threats, including those posed by fishing operations (particularly those that can significantly impact the benthos).

3. Biodiversity Representation	a. The area is known to contain unique or rare (occurring in only a few locations) species, populations or communities. Gaymer et al. (2025) reported the deepest known light-dependent coral and algal communities (>300 m), occurring on the seafloor of Salas y Gómez Ridge, enabled by exceptional water clarity, representing globally rare ecological formations. Past deep-sea surveys of seamounts across the area have documented species that are new to science (Wagner et al., 2024 and references in therein). Additionally, preliminary post-cruise reports from recent expeditions conducted along the Salas y Gómez Ridge, including areas adjacent to the Desventuradas Islands, have identified several taxa suspected to be new to science (Easton et al., 2024; Sellanes et al., 2024; Schmidt Ocean Institute, 2024). b. The area is known to contain a high diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity. The area supports highly diverse ecosystems, including seamount-associated pelagic and benthic habitats. Predictions of suitable habitat for vulnerable marine ecosystems indicator taxa such as sponges and stony corals indicate greatest occurrence on prominent features such as seamounts, guyots, ridges, and escarpments along the area (Georgian et al., 2021). The Nazca Ridge and the eastern end of Salas y Gómez Ridge are considered to be a nursery area for swordfish (Yañez et al., 2004, 2006). Nursery areas for sharks have been identified in the western Salas y Gómez Ridge, and recruitment areas for Chilean jack mackerel have been determined based on the observed latitudinal gradient in size composition (Arcos, 2001) with further scientific publications superimposing these biological data onto the area (Gaymer et al., 2025; Wagner et al., 2021). c. The area is known to contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery The seamounts found within the area support a high proportion of sensitive deep-sea corals, gorgonians, and sponge dominated communities, as well as associated species that form structurally complex habitats characteristic of Vulnerable Marine Ecosystems (VMEs). These benthic habitats, communities and species are functionally fragile, highly susceptible to disturbance from human activities, often millenary in age, and exhibit low recovery rates (Gaymer et al., 2025; Wagner et al., 2021).
4. Uniqueness and Rarity	a. The area warrants conservation and preservation due to their unique features, resources, and/or characteristics. The area harbours unique and rare species (Gaymer et al. 2025; Sellanes et al., 2024). Regional endemism estimates for fish and invertebrates range from 40% to 46.3% (Chavez-Molina et al., 2023), although these rates have not been validated for the Nazca Ridge and are based on previous surveys spatially biased towards the western part of the Salas y Gómez Ridge (Parin et al., 1991; Wagner et al., 2021).

	Previous studies, primarily around the Desventuradas Islands, have documented one of the highest levels of marine endemism on our planet (Friedlander et al., 2016; Sellanes et al., 2019). The western part of the Salas y Gómez Ridge is located near the centre of the South Pacific Gyre, a large-scale oceanographic feature characterised by extremely nutrient-poor waters, which creates unique conditions for species living here (e.g. enabling the presence of the deepest known light-dependent coral and alga communities (see Section 3a) (Gaymer et al. 2025). The eastern end of the Nazca Ridge acts as a primary sink for energy and particulate organic carbon exported from coastal upwelling via mesoscale eddies, exhibiting significant seasonal productivity which differs from the oligotrophic conditions of the central gyre (SPRFMO SC13-SGN01; SPRFMO SC12-Doc37).
5. Vulnerability, Fragility, Sensitivity, or Slow Recovery/Resilience	a. Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features. Unique and endemic species and communities, rare and distinct seamount and coral ecosystems, and unusual geomorphological and oceanographic features, have been observed in surveyed sites across the area (Gaymer et al., 2025). Oceanic seamounts and coral ecosystems, found throughout Areas Beyond National Jurisdiction (ABNJ), are considered among the most fragile environments to anthropogenic activities and climate change (Friedlander et al., 2021). Surveyed seamounts in the area are dominated by long-lived species, particularly deep-sea corals and sponges. These organisms are fragile, vulnerable to disturbances, and very slow to recover (Gaymer et al. 2025). These characteristics are further supported by documented high endemism (Section 4a), unique and rare ecosystems (Section 3a), and distinctive geomorphological and oceanographic features (Sections 2b and 4a).
6. Area is of Special Significance for Threatened or Important Species or Ecosystem Properties	a. There is evidence that the area is of special importance for life history stages of species and/or threatened species. The area hosts several sessile and low mobility taxa, including at least 16 species of corals and one species of sea cucumber. Species classified as endangered, near threatened, or vulnerable have been observed in the area, and include 25 species of sharks and rays, 21 species of birds (some of which breed at the neighbouring islands scattered around the different archipelagos present in the area), 7 species of marine mammals, 7 species of bony fishes and 5 species of marine turtles (Wagner et at., 2021; Gaymer et al., 2025). However, there is not enough evidence to assert that the area is of special importance for the life-history stages of most of these species. The area has received several international recognitions regarding their importance to threatened species and to the critical ecosystem functions they indirectly provide (Wagner et al., 2021), including being designated as an Ecologically or Biologically

	Significant Area (EBSA) under the Convention on Biological Diversity (CBD) (Gálvez-Larach, 2012). The designation reflects rates of high endemism in some parts of the area (Parin, 1991), unique seamount and deep vulnerable marine ecosystems susceptible to physical disturbance, and likely routes for pelagic species (including shark, marine turtles and cetaceans) (CBD, 2020). b. There is evidence that the area contains habitat for the survival and recovery of endangered, threatened, declining species or is an area with significant assemblages of such species. The structural complexity provided by the seamounts and associated algal and coral communities referenced in Section 3(c) constitutes essential habitat for diverse benthic assemblages, including deep-sea corals, gorgonians, and sponge-dominated communities characteristic of vulnerable marine ecosystems (Nat. Geo. & Oceana, 2013).
7. VMEs are Known to Occur and/or Triggering of VME Indicator Thresholds Reported for the Area Proposed	a. Known or consistent triggering of VME indicator thresholds occurs. Scientific expeditions have shown that the Area host multiple VME indicator taxa, including deep-sea corals such as *Lophelia pertusa*, *Solenosmilia variabilis*, antipatharians (black corals), stylasterid hydrocorals, and large hexactinellid sponges, which meet FAO Deep-sea Fisheries Guidelines VME criteria for structurally complex and fragile benthic communities (FAO, 2009; SPRFMO CMM03-2025 Annex 5). VME indicator taxa has been caught in the past by bottom trawl, but bottom fishing measures in SPRFMO, including the encounter protocol and the move-on rule, were introduced after bottom and mid-water trawling for bentho-pelagic species stopped in this area. b. VMEs have been observed through non-fishing operations Scientific expeditions using ROVs and other non-fishing survey methods have directly observed structurally complex deep-sea coral, gorgonian, and sponge assemblages characteristic of VMEs across the area (Easton et al., 2024; Sellanes et al., 2024; Schmidt Ocean Institute, 2024; Gaymer et al. 2025).
8. Cultural Significance	a. The area has an exceptionally rich and long history and cultural significance The area has an exceptionally rich and long history of seafaring and cultural significance. These ridges have been key for voyaging, fishing and transportation of commodities. The Salas y Gómez Ridge is culturally significant to the Rapanui people, forming part of their ancestral seascape and traditional voyaging routes (~1000 years ago). Genetic and botanical evidence (specifically the dispersal of the sweet potato, *Ipomoea batatas*) suggests that these maritime corridors allowed prehistoric contact between Polynesians and Amerindians predating the arrival of Europeans in the area (Delgado et al., 2022; Gaymer et al. 2025).
9. Scientific Interest	a. The area has scientific research interest associated with understanding ecosystem, biological, geological and biodiversity processes in the SPRFMO region Seamounts along the area host highly distinct, endemic communities with species

	new to science, making the region a key system for studying speciation, connectivity, and deep-sea biodiversity processes (Wagner et al., 2021; SPRFMO SC13-SGN 01_rev1; Gaymer et al., 2025). Large un-surveyed areas and documented discovery potential further reinforce its importance for advancing ecological research in the SPRFMO region (Wagner et al., 2021; Gaymer et al., 2025).

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12. Annex C – Salas y Gómez and Nazca Ridges area

Table D1 List of coordinates for each of the points depicted in Figure 1, demarcating the Salas y Gómez and Nazca Ridges area referred to in this report.

Point	Longitude	Latitude
1	-101.933915	-25.211512
2	-100.384911	-24.277359
3	-85.748889	-23.171855
4	-78.789679	-16.534979
5	-77.574806	-17.807870
6	-79.326597	-19.471695
7	-80.166460	-22.940783
8	-81.624576	-23.242129
9	-82.896111	-24.104733
10	-83.816938	-26.088117
11	-85.244218	-26.471023
12	-86.687409	-27.001524
13	-87.628621	-28.593028
14	-88.263112	-29.069173
15	-90.027482	-29.484802
16	-91.453560	-28.857328
17	-92.794074	-29.541845
18	-93.792329	-29.570367
19	-95.702721	-28.009486
20	-96.727198	-27.944638
21	-98.923359	-29.884104
22	-101.657308	-29.590651
23	-104.719284	-29.771170
24	-102.161216	-28.215516
25	-101.642708	-26.434649