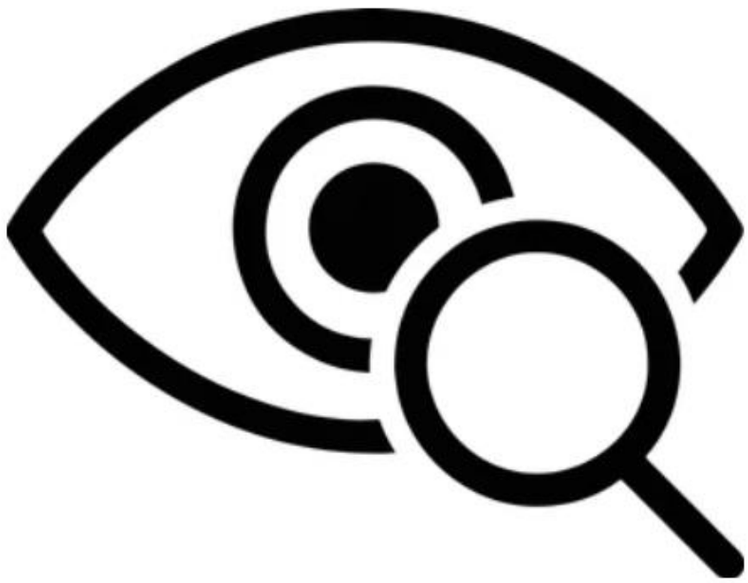
ROOM GUIDE · LARGE PRINT

Room 5

Marine biodiversity

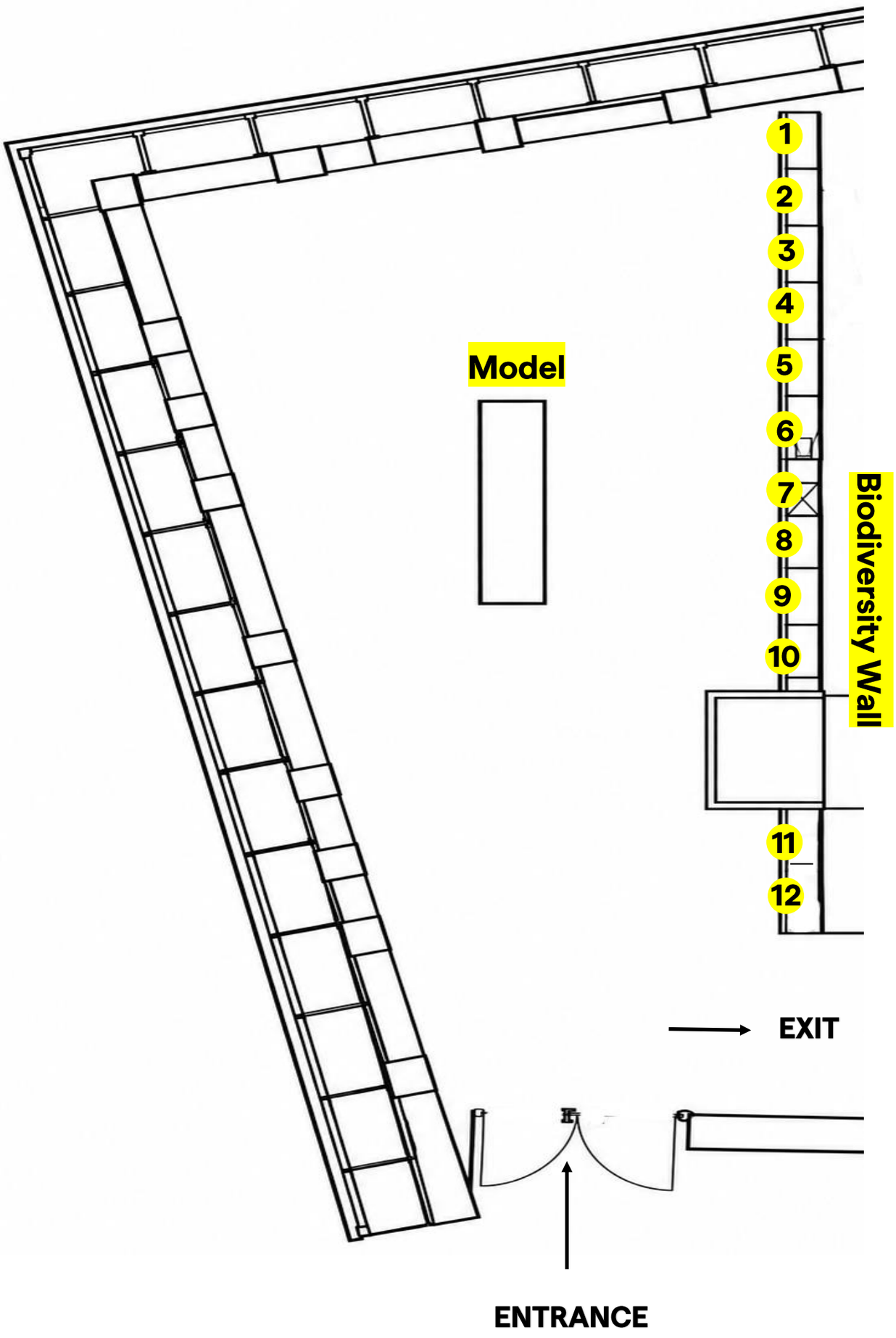


A sea of life

Atacama’s living diversity

From the depths of the Atacama Trench to the Region’s coast, the sea gathers a wide range of environments. Light, depth, currents and tides create diverse conditions and surprising adaptations among marine species that inhabit them.

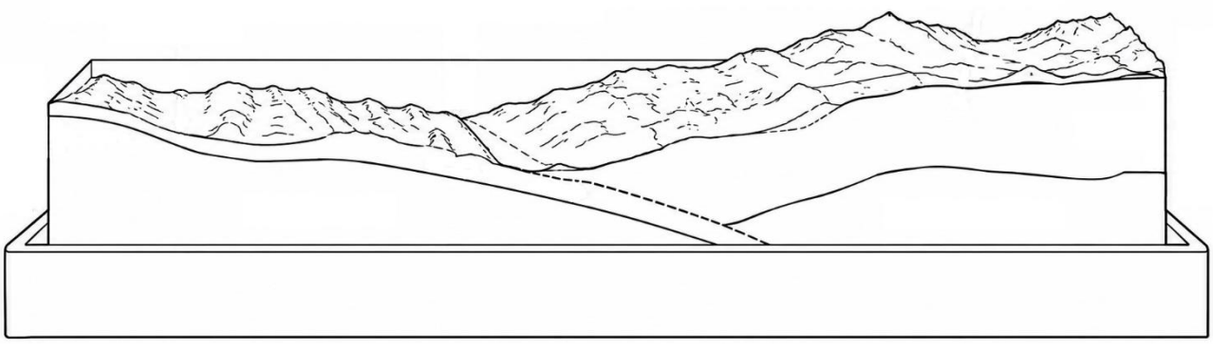
Room 5 plan



Model

Beyond the shore

This model represents the seabed off the fishing cove of Chañaral de Aceituno.



Touch and discover how the seabed descends towards the Atacama Trench.

Biodiversity wall

1. The water column

A sea of environments

At first glance, the ocean appears to be a vast, uniform body of water, but it contains many ecosystems shaped by depth and distance from the coast. Temperature, light and oxygen create distinct environments that are connected by marine currents carrying nutrients and organisms, forming a dynamic and ever-changing system.

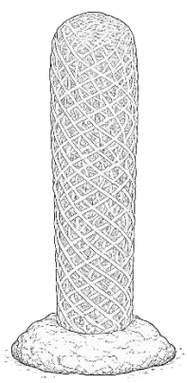
- On the seabed, there are valleys, mountains, canyons, and volcanoes, forming a landscape as diverse and complex as that of dry land

Ocean Layers

According to metres below sea level (m b.s.l.), the following categories are used:	According to the penetration of light, the following zones are distinguished:
EPIPELAGIC 0–200 m	PHOTIC: Receives sunlight
MESOPELAGIC 200–1,000 m	DYSPHOTIC: Little sunlight

BATHYAL 1,000–4,000 m	APHOTIC: No sunlight
ABYSSAL 4,000–6,000 m	
HADAL < 6,000 m+	

Featured collection

	**Glass sponge** | *Euplectella sp.* Replica | RM.1.2 Glass sponges are among the oldest animals on Earth, with a history of over 500 million years. This species of the genus *Euplectella* lives on seamounts off the Atacama coast and, when illuminated, its silica structure shines like glass.

2. The Atacama Trench

A dark and deep world

Off the coast of Chile lies an immense oceanic trench, the longest on the planet. It is a little-explored region where life faces extreme conditions: complete darkness, enormous pressure, intense cold and constant tremors caused by colliding tectonic plates. Its unique species are adapted to some of the ocean’s most inhospitable depths.

- It extends 7,500 km from Ecuador to the Aysén Region.
- It lies about 100 km off the Atacama coast.
- Its maximum depth is 8,081 m below sea level, off the coast of Antofagasta.

What is an ocean trench?

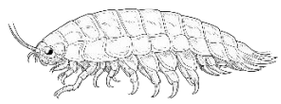
It is a deep, long and narrow depression in the seabed, usually formed by subduction where two tectonic plates meet. Here, the Nazca Plate sinks beneath the South American Plate.

Inhabitants of the underworld

Recent expeditions have revealed previously unimaginable species. Some detect vibrations and chemical signals to navigate in complete darkness, while most feed on “marine snow”, tiny organic particles falling from upper water layers.

- During a 2022 expedition, a plastic bag was found and species contaminated with microplastics from human waste were identified, posing a serious threat to these fragile ecosystems.

Featured collections

	**Amphipod** | *Eurythenes atacamensis* Replica | RM.1.5
	Set of small cups Compressed expanded polystyrene | 26.11 These polystyrene cups, painted by children from the Atacama Region, were submerged more than 8,000 m into the Atacama Trench in January 2025 during an expedition by the Millennium Institute of Oceanography. The enormous hydrostatic pressure —the weight of the water column— compressed their internal air bubbles, leaving them completely compacted.

3. From Twilight to Chiaroscuro

Thousands of metres below the sea

The Bathyal and Abyssal Zones

Rising from the depths, between 6,000 and 1,000 m below sea level, extreme conditions persist: complete darkness, intense cold and little oxygen. Organic matter falling from

the surface provides essential nutrients, supporting species with surprising survival strategies.

Adaptations to the deep

- Most fish in the aphotic zone are bioluminescent, producing their own light to attract prey or communicate.

- Fish make up 10% of the species living here. Some, such as rattail fish, have lighter, more flexible bodies that help them float and withstand the high pressure.

- Sea cucumbers recycle organic debris that fall from the surface.

- Some species, such as the jumbo squid, have a slow metabolism and reduce their activity to cope with low oxygen and scarce food.

- Tube worms depend on subsoil chemicals to survive.

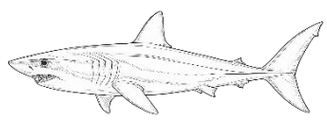
Life in motion

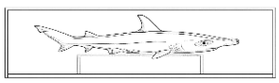
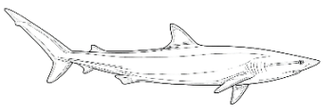
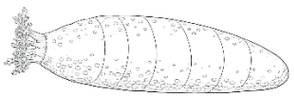
Following the light

Above 1,000 m depth, light increases slightly but remains insufficient for photosynthesis, so food is scarce. Each night, millions of creatures migrate towards the plankton-rich surface, then descend again at dawn to escape predators.

- This movement of species circulates nutrients and helps transport carbon into the depths, contributing to climate balance and planetary health.

Featured collections

	**Shortfin mako shark** | *Isurus oxyrinchus* Replica | RM.1.3 Despite their reputation, most sharks in Chile are harmless and play a vital role in marine ecosystems. In northern Chile, mako, blue and houndsharks are threatened by non-selective longline and net fishing, which catches both adults and juveniles that have not yet reached maturity.

	**Smooth hammerhead shark** | *Sphyrna zygaena* Donated by the Shark Conservation Programme, University of Antofagasta | RM.2A.8
	**Blue shark** | *Prionace glauca* Replica | RM.1.7
	**Sea cucumber** | *Athyonidium chilensis* Replica | RM.1.12

4. Under the Sun

Where currents sustain life

Above 200 m, photosynthesis supports abundant marine life. Phytoplankton, algae and seagrass form the base of the food web, capturing solar energy and turning it into sugars that feed other organisms. The Humboldt Current and upwelling bring nutrients and oxygen, supporting the ecosystem.

A sea of life

Thanks to the Humboldt Current and coastal upwelling, one of the world's most productive ecosystems extends along our coast. Although it represents less than 0.1% of the global ocean, it accounts for around 10% of the world's fish catch.

A sea that shapes a desert

The cold waters of the Humboldt Current limit evaporation, contributing to the formation of the Atacama Desert, one of the driest in the world.

Featured collections

	Chilean eagle ray | *Myliobatis chilensis* Donated by the Shark Conservation Programme, University of Antofagasta | RM.2A.9
	Humboldt penguin | *Spheniscus humboldti* Replica | RM.1.10 There are 18 penguin species worldwide, 9 of them in Chile. Adapted to the cold Humboldt Current, after which it is named, the Humboldt penguin has insulating plumage and flipper-like wings for fast swimming.

5. Plankton

Tiny essentials

These small organisms —including eggs and larvae of different species, microalgae and crustaceans— drift with marine currents, sustaining these ecosystems and forming the base of the food web.

Phytoplankton: Plant-like organisms that use sunlight for photosynthesis, producing energy as sugars and releasing oxygen.

Zooplankton: Animals that feed on phytoplankton and are, in turn, eaten by fish and other marine animals.

7. Chañaral Island

A Sea Garden

Located at the southern edge of the Region, it is part of the Humboldt Penguin National Reserve, home to the world's largest concentration of this species. A global biodiversity hotspot, it is also home to bottlenose dolphins, whales, Peruvian diving petrels *(yuncos),* large shoals of anchovies and krill.

Whale Shelter

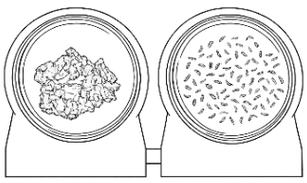
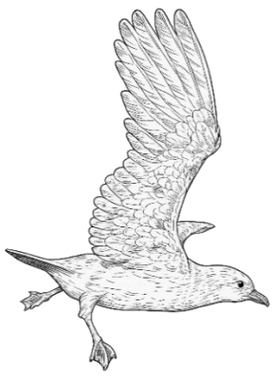
Each year, three ocean giants visit Atacama's waters: blue, humpback and fin whales. The abundance of krill —a small crustacean and their main food source— makes this an essential stop along their migratory routes.

- Humpback whale | *Megaptera novaeangliae*
  It can reach 17 m in length. Males sing complex songs that can change each season and are passed down through generations.

- Fin whale | *Balaenoptera physalus*
  At up to 25 m long, it is the world's second-largest whale and one of the fastest, reaching speeds up to 40 km/h.

- Blue whale | *Balaenoptera musculus*
  It is the largest animal on Earth. It can exceed 32 m — three times the length of this room— and its tongue alone can weigh as much as an elephant.

Featured collections

	**Fin whale faeces** | *Balaenoptera physalus* RM.2A.15 **Krill** | *Euphausia mucronata* RM.2A.14 Donated by the Centre for Advanced Studies in Arid Zones
	Sand dollars | *Clypeaster isolatus* Donated by the Biological Collections Unit, Universidad Católica del Norte | RM.2A.16
	**Peruvian diving petrel** | *Pelecanoides garnotii* Replica | RM.1.9 After 40 years without nesting on Chañaral Island, a yunco chick was born again. How was it achieved? By removing invasive species such as rabbits and foxes and using speakers to play their calls. A small but significant step towards recovering this seabird.

8. Kelp forests

Home and food

Chile's largest underwater forests grow off the coast of Atacama, formed by giant brown algae such as *huiro palo* and *huiro negro*. Their fronds —which function like leaves— can reach 25 m as they seek light. These forests shelter marine otters, sea lions, fish, starfish and shark and ray eggs.

- Chile is the world's leading exporter of brown algae, used in medicine, cosmetics and food. Local communities and scientists are working to prevent overexploitation and *barreteo*, a harvesting practice that damages the holdfast attaching the algae to rock.

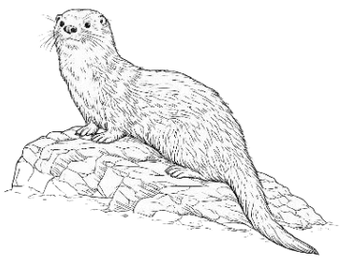
Not a plant!

Although algae photosynthesise, they do not have roots, stems or leaves like land plants.

A cradle of life

These environments act as natural "nurseries" for shark and ray eggs, which get entangled in the long fronds, hidden from predators.

Featured collections

	Northern coastal skate eggs | *Sympterygia brevicaudata* Donated by the Shark Conservation Programme, University of Antofagasta | RM.2A.25 These eggs got tangled in plastic netting, which harms marine wildlife.
	**Marine otter** | *Lontra felina* Replica | RM.1.16 It is the world's smallest marine mammal, and hunting this species is prohibited. Dogs, unregulated tourism, resorts, ports and roads have put it at risk of extinction.

9. Seagrass meadows

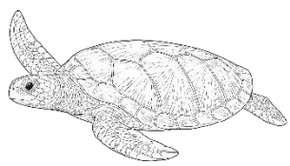
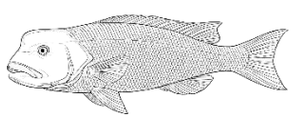
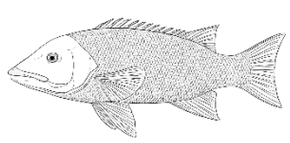
A feast for turtles

Bahía Chascos —near Puerto Viejo— is home to one of only two seagrass meadows in Chile. This endemic plant is a favourite food for green turtles, which travel from Ecuador's Galápagos Islands to feed before returning there to reproduce.

Climate hero

Like kelp forests and phytoplankton, seagrass plays a key role in reducing greenhouse gases and protecting the planet.

Featured collections

	**Green turtle** | *Chelonia mydas* Replica | RM.1.17 Plastic bags can look like jellyfish and siphonophores, which are part of sea turtles' diet. Mistaking them for food, they may swallow the bags and suffocate.
 	**Galápagos sheephead** | *Semicossyphus darwini* Male Replica | RM.1.14 **Galápagos sheephead** | *Semicossyphus darwini* Female Replica | RM.1.15 Observe the sexual dimorphism of this species: the differences in color and shape between males and females.

10. Oceanic islands

Far, far away

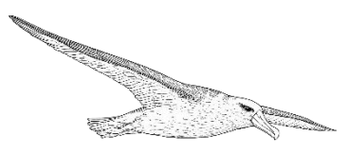
Some 850 km off the Atacama coast lie San Félix and San Ambrosio, known as the Desventuradas Islands. They are the only land in this vast part of the Pacific, providing key feeding, nesting and breeding grounds for fur seals, turtles, rays and fish such as swordfish and the endemic breca.

- These islands are part of a 2,900 km-long underwater volcanic chain that also includes Rapa Nui and Salas y Gómez. They are rich in biodiversity and endemic species.

Vital adaptation

Albatrosses and shearwaters spend most of their lives far from land. A gland above their eyes removes salt from the blood and releases it through their nostrils, allowing them to survive without fresh water.

Featured collection

	**Black-browed albatross** | *Thalassarche melanophris* Replica | RM.1.1

11. The intertidal zone

Surviving between land and sea

The intertidal zone stretches across 200 km of cliffs, sandy flats and terraces, where changing temperature, salinity, humidity and waves make life challenging.

Life in the rocks

In cracks and rock pools, algae, crabs, limpets, anemones and mussels find shelter and provide food for marine otters, sea lions and lizards, which also sit in the sun to dry off or regulate their temperature.

Facing the waves

When the tide rises, waves batter these organisms, forcing them to cling tightly to whatever they can.

- **Starfish** | *Stichaster striatus*

  Its tube feet help it cling and move safely.

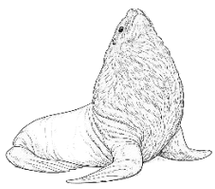
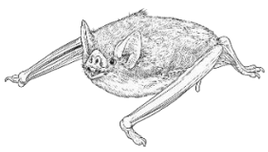
- **Chilean mussel** | *Mytilus chilensis*

  Adhesive proteins keep it firmly anchored to rocks.

- **Limpet** | *Fissurella maxima*

  A muscular foot at its base helps it cling to rocks.

Featured collections

	**South American sea lion**	*Otaria byronia* Replica	RM.1.19
	**Common vampire bat**	*Desmodus rotundus* Replica	RM.1.20 This blood-feeding bat has very sharp teeth and an almost imperceptible bite. Anticoagulants in its saliva let it feed for several minutes, while the tiny cut often goes unnoticed.

A bat in the gallery?

Don’t panic! Like many of the species on display, this is a lifelike replica created especially for the Museum, combining science and art.

12. The coastline

Hidden in the sand

Atacama's beaches, known for their white sands and clear waters, are home to countless invertebrates living between the grains, including sand hoppers, worms and clams. When the tide goes out, birds gather for a feast.

- Breeding is a challenge for shorebirds such as snowy plovers and oystercatchers. Most nest in small hollows above the high-tide line. Their eggs and chicks are camouflaged to protect them from predators.

A specialised beak

Along the shore, birds watch the waves and the tiny creatures they leave behind. Each species has a beak adapted to feed on particular animals at different depths.

- Rufous-chested dotterel | *Charadrius modestus*
  Its short, pincer-shaped beak catches sand hoppers and other animals in the sand.

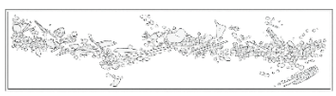
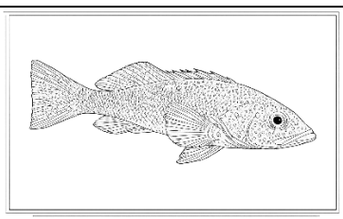
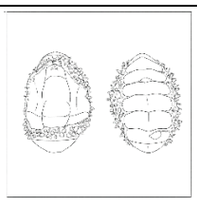
- American oystercatcher | *Haematopus palliatus*

  Its thick, strong beak breaks shells and forces clams and mussels open.

- Whimbrel | *Numenius phaeopus*

  Its long, slender, slightly curved beak probes burrows and cavities beneath the sand.

Featured collections

	**Microplastics** 26.12
	**Cabrilla** | *Paralabrax humeralis* Artwork by Jacinta Besa (2025) Modelling clay | RM.1.18
	**Chitons** | *Mesotomura echinata* Donated by the Biological Collections Unit, Universidad Católica del Norte | RM.2A.27
	Red algae collection RM.2B.4 ① **Lechuga** | *Ulva* spp. ② **Luga** | *Mazzaella laminarioides* ③ **Carola** | *Callophyllis variegate* ④ **Luche** | *Pyropia orbicularis* ⑤ **Pelillo** | *Agarophyton chilensis*

Script, curatorship and coordination

Exhibitions Department

Subdirección Nacional de Museos

Museo Regional de Atacama

Atacama Region

January 2026

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DE
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