



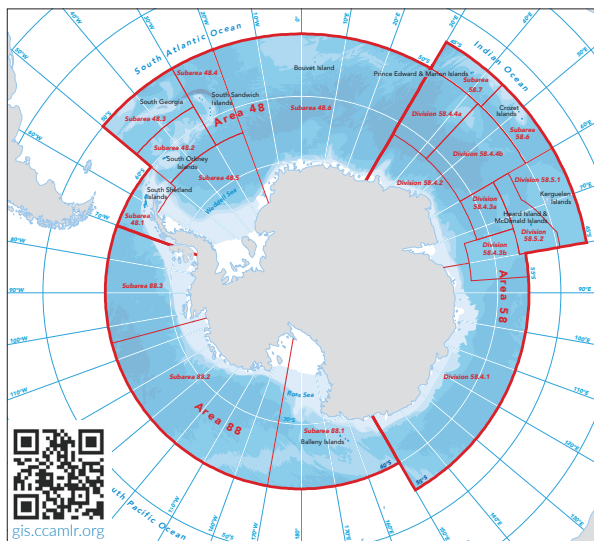
CCAMLR

Commission for the Conservation of Antarctic Marine Living Resources

The Convention on the Conservation of Antarctic Marine Living Resources (the Convention) is an international agreement established to conserve Antarctic marine living resources and is an integral part of the Antarctic Treaty system. The Convention applies to all marine living resources within the Antarctic marine ecosystem.

The objective of the Convention, set out in Article II, is the conservation of Antarctic marine living resources, where the term 'conservation' includes rational use. The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) gives effect to the Convention's objective and its principles of conservation. CCAMLR adopts conservation measures that regulate fishing and related activities in the Southern Ocean in accordance with the Convention's objective and principles of conservation.

CCAMLR Headquarters and the Secretariat are based in Hobart, Tasmania.



FORMATION OF CCAMLR

The marine life of the Southern Ocean has been harvested since 1790, when sealers first hunted fur seals for their pelts. By 1825, some populations of fur seals were close to extinction, and sealers began hunting elephant seals and some species of penguins for oil.

Whaling in the Southern Ocean began in 1904, with seven species of whales living there extensively exploited.

Large-scale fishing for finfish began in the late 1960s, targeting species such as mackerel icefish (*Champsocephalus gunnari*), marbled rockcod (*Notothenia rossii*) and Patagonian rockcod (*Patagonotothen guntheri*). By the late 1970s, some species had been overfished in some areas.

Krill fishing started in the mid-1970s and by 1980 more than 400 000 tonnes were being taken annually. Krill is a keystone species in the Antarctic ecosystem, as seabirds, seals and whales depend on it for food.

In 1978, concern over increased fishing and its effect on the wider ecosystem led the Antarctic Treaty Consultative Parties to convene a conference on the conservation of Antarctic marine living resources. The conference agreed to the Convention on the Conservation of Antarctic Marine Living Resources, signed in Canberra, Australia, on 20 May 1980.

The Convention came into force on 7 April 1982. It provides the foundation for marine living resource conservation in the Southern Ocean while recognising the prime responsibilities of the Antarctic Treaty Consultative Parties for the protection and preservation of the Antarctic environment and, in particular, their responsibilities under Article IX, paragraph 1(f) of the Antarctic Treaty in respect of the preservation and conservation of living resources in Antarctica.



CCAMLR MAKEUP AND RESPONSIBILITIES

CCAMLR is composed of 27 Members and 10 Acceding States (States that are Party to the Convention but not Members of the Commission). An Acceding State may become a Member if it is engaged in research or harvesting activities on Antarctic marine living resources.

Members of CCAMLR are Argentina, Australia, Belgium, Brazil, Chile, China, Ecuador, European Union, France, Germany, India, Italy, Japan, Republic of Korea, Namibia, Netherlands, New Zealand, Norway, Poland, Russia, South Africa, Spain, Sweden, Ukraine, United Kingdom, United States of America and Uruguay.

Acceding States are Bulgaria, Canada, Cook Islands, Finland, Greece, Mauritius, Pakistan, Panama, Peru and Vanuatu.

In the Convention, the Contracting Parties established the Scientific Committee as a consultative body to the Commission. The Scientific Committee has a number of subsidiary bodies, working to provide scientific advice on ecosystem monitoring and management; fish stock assessment; statistics, assessments and modelling; and acoustics, survey and analysis methods.

The Commission is also advised by two Standing Committees, one on Implementation and Compliance and one on Administration and Finance.

The Role of CCAMLR

CCAMLR's function is to give effect to the objective and principles set out in Article II of the Convention. It does this in a number of ways, including:

- formulating, adopting and revising conservation measures on the basis of the best scientific evidence available
- facilitating research into Antarctic marine living resources and the Antarctic marine ecosystem
- compiling, analysing and publishing data on the status and changes of Antarctic marine living resources and on the factors affecting the distribution, abundance and productivity of harvested species and dependent, or related, species or populations
- gathering, analysing and publishing catch and effort statistics on harvested populations
- identifying conservation needs and analysing the effectiveness of conservation measures
- implementing the Scheme of International Scientific Observation and System of Inspection established under the Convention
- monitoring compliance with the conservation measures to ensure that fishing is conducted in a sustainable manner, to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing in the Convention Area and maintain strong market controls to prevent trade in IUU fish.



THE CONVENTION ON THE CONSERVATION OF ANTARCTIC MARINE LIVING RESOURCES

The Convention applies to all marine living resources that occur south of the Antarctic Convergence, except for the management or harvesting of whales and seals. Whaling and sealing – which do not take place in the Southern Ocean – are recognised by CCAMLR to be the responsibility of the International Convention for the Regulation of Whaling, and the Convention for the Conservation of Antarctic Seals respectively. Nevertheless, the role of these species in the ecosystem is considered by CCAMLR when making its management decisions.

CCAMLR has adopted a comprehensive set of measures to support the conservation of Antarctic marine living resources, a large part of which is the management of fisheries in the Southern Ocean. Many of these conservation measures are reviewed and developed at each meeting of the Commission. All conservation measures are implemented by Members once they have been agreed by the Commission. These conservation measures are based on best available scientific evidence and best practice in monitoring, control and surveillance.

The conservation measures agreed by the Commission regulate fishing and related activities such as:

- the authorisation and monitoring of fishing vessels in the Convention Area, including licensing, inspection, vessel monitoring systems and reporting of activities and movements
- transshipment and trade of harvested marine species
- identification of illegal, unreported and unregulated (IUU) vessels and actions against such vessels
- requirements for initiating and participating in new and exploratory fisheries
- prohibiting the use of certain types of fishing gear
- collection and reporting of catch and effort data from fisheries
- conducting research activities on Antarctic marine living resources
- protecting the environment during fishing, minimising the mortality of incidentally caught birds and seals, and the impacts of fishing on the ecosystem
- catch limits for fisheries on toothfish, icefish and krill, as well as measures to limit the by-catch of species associated with these fisheries, and the closure of fisheries when catch limits set by the Commission are reached
- the designation of the opening and closing of areas, regions or subregions for the purpose of protection and scientific study, including marine protected areas, vulnerable marine ecosystems, and areas for scientific research.

There are currently three types of fisheries in CCAMLR waters. Toothfish are deep-water, slow-growing fish that live close to the seabed and can grow up to two metres long. They are caught on bottom-set longlines. Patagonian toothfish (*Dissostichus eleginoides*) are present in the northern region of the Convention Area, and Antarctic toothfish (*Dissostichus mawsoni*) dwell in the southern region. They are much sought after for human consumption. The combined annual catch is about 15 000 tonnes.



Antarctic krill (*Euphausia superba*) is a shrimp-like crustacean which lives close to the ocean surface. It is distributed throughout the Southern Ocean. Populations of Antarctic krill are very large and in the Scotia Sea (south Atlantic sector) alone there are about 60 million tonnes. Krill is a key prey item for many marine animals in Southern Ocean ecosystems. Catches of krill, taken by pelagic trawlers, are limited to a small proportion of the population. In the Scotia Sea, where most of the fishing takes place, the current precautionary catch limit is 5.61 million tonnes. However, until the Commission has defined an allocation of this total catch limit between smaller management units, the allowable catch is further limited to a trigger level of 620 000 tonnes, and catches must be distributed so as to protect dependent species such as penguins and seals. The catch in 2019 was about 390 000 tonnes. Krill is a source of oil, used as a health supplement, and is eaten as canned or frozen krill tails. It is also used in aquaculture feed.



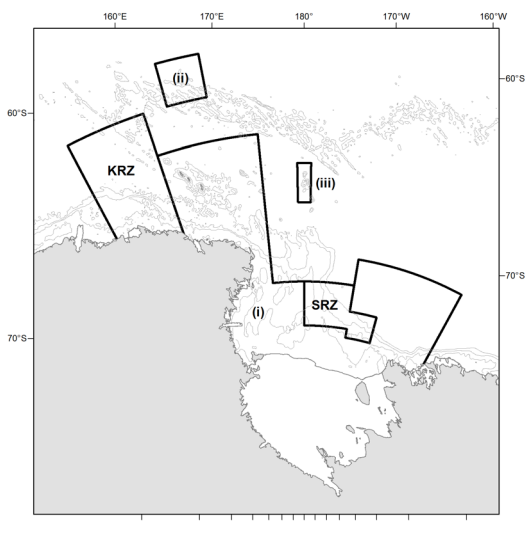
There is a small fishery for mackerel icefish (*Champscephalus gunnari*) around some sub-Antarctic islands. Icefish is sold as a table fish.

The area covered by the Convention extends northward to the marine area known as the Antarctic Convergence. At the Convergence, there is an abrupt increase in sea water temperature from south to north, where cold Antarctic water meets warmer temperate water. This creates an ecological boundary around the Southern Ocean.

CCAMLR has created a number of management areas, each with specific management requirements. Some areas are closed to certain types of fishing activity. Some are open to fishing but are subject to the requirements of conservation measures, including, but not limited to, when fishing can take place, seasonal catch limits, the data that need to be collected, restrictions on fish by-catch, and requirements for by-catch mitigation measures.

CCAMLR is developing marine protected areas (MPAs) that are representative of the marine ecosystems in the Convention Area. CCAMLR has approved a general framework for establishing such areas. MPAs may include restricted, prohibited or managed activities and each established MPA has management, and research and monitoring plans.

The first CCAMLR MPA was the South Orkney Islands southern shelf. The second was the Ross Sea region MPA. The Ross Sea region MPA is currently the largest high seas MPA in the world.



CCAMLR SCIENCE AND MANAGEMENT

Activities in the Convention Area are regulated through an ecosystem-based approach and a precautionary approach. Populations of harvested species are managed to avoid significant depletion and maintain ecological relationships. CCAMLR's decision rules minimise the risk of causing changes to marine populations, or the ecosystems on which they depend, that are not reversible over two or three decades. The precautionary approach to management embedded in CCAMLR enables the Commission to take decisions even when there is uncertainty in knowledge.

CCAMLR makes decisions based on the best available scientific evidence. The Scientific Committee uses a variety of data to support its ecosystem-based approach, gathered through research projects undertaken by CCAMLR Members, from scientific observers on board fishing vessels, and from research and monitoring programs.

CCAMLR Ecosystem Monitoring Program

CCAMLR's ecosystem approach to managing harvesting includes monitoring the effects of fishing on harvested species and on dependent and associated species. (Dependent species are marine predators with a major component of their diet comprising species harvested by fisheries.)

CCAMLR's ecosystem monitoring program aims to detect and record significant changes in critical components of the marine ecosystem within the Convention Area and distinguish between changes due to harvesting of commercial species and those due to environmental variability.

Indicator species used in the program are Adélie penguin (*Pygoscelis adeliae*), chinstrap penguin (*Pygoscelis antarctica*), gentoo penguin (*Pygoscelis papua*), macaroni penguin (*Eudyptes chrysolophus*), black-browed albatross (*Thalassarche melanophrys*) and Antarctic fur seal (*Arctocephalus gazella*).



Fisheries Management

CCAMLR determines catch limits and other measures necessary to manage fisheries through analysis of extensive data, including data collected by independent scientific observers, records of catches taken and the effort expended in taking those catches. All vessels fishing in CCAMLR waters provide this information.

Scientific surveys and research provide independent estimates of stock abundance and recruitment patterns. There are large-scale acoustic surveys of krill populations, a long-term toothfish tagging program implemented by fishing vessels that generates estimates of stock size, and trawl surveys to determine the stock size of icefish.

Researchers use these data to generate statistical models of toothfish and krill population dynamics. CCAMLR's precautionary decision rules are supported by projections from these models, allowing CCAMLR to set appropriate catch limits.

CCAMLR's Scientific Committee develops advice on management measures for each fishery by taking the calculated precautionary catch limits and adding other elements necessary to apply an ecosystem approach. These include measures to reduce by-catch of fish such as skates and rays, to minimise the incidental mortality of seabirds and marine mammals and to provide benthic impact assessments of the fishing gear.

For krill fisheries, catch limits are spatially defined to restrict the amount of fishing close to breeding colonies of penguins, other birds and seals.



Volker Siegel



Volker Siegel

Scientific Observers

All vessels fishing in CCAMLR fisheries must carry an independent scientific observer.

Observers provide CCAMLR with information on gear configuration, including measures to reduce incidental mortality of seabirds and marine mammals; fishing operations, including catch composition of target and by-catch species incorporating size, weight and breeding condition; information such as details of fish tagging and tag recaptures; observations on marine mammals and seabirds; and data on vulnerable marine ecosystems encountered by vessels.



Fishery Monitoring and Compliance

CCAMLR conservation measures include monitoring and compliance systems and tools that ensure that fishing in the Convention Area is conducted in a manner that meets the Convention's principles of conservation. Members are required to implement compliance systems that include:

- marking of fishing vessels and gear
- licensing of vessels
- inspection of vessels in ports
- vessel monitoring via satellite and reporting of vessel movements
- a catch documentation scheme for toothfish to track toothfish from harvest, through international trade around the globe, to the end market
- requirements for notifying and reporting of transshipments
- the system of inspection, which allows for at-sea inspection of authorised vessels by warranted CCAMLR inspectors.

Concerned that illegal, unreported and unregulated (IUU) fishing compromises the objective of the Convention, CCAMLR has adopted specific conservation measures to promote compliance by vessels and vessel operators. CCAMLR has a procedure for maintaining IUU vessel lists. CCAMLR notifies the Flag States of any IUU vessels sighted in the Convention Area and the State whose nationals have been identified as being involved with the vessel's activities, and encourages them to investigate and to advise CCAMLR of steps taken to address any non-compliant activity.

Controlling Marine Pollution

CCAMLR measures prohibit the discharge of plastic, oil or fuel products, and the use of plastic packaging bands by fishing vessels, unless they can be incinerated at sea. Waste discharge by vessels fishing south of 60°S is prohibited, including fish offal, discards, poultry waste and garbage. Discharging sewage is also prohibited if the vessel is close to land or ice shelves. If accidental loss of fishing gear occurs vessels are required to report these events.

CCAMLR monitors marine debris in the Convention Area. Members are requested to submit data from beach surveys on debris associated with seabird colonies, as well as observations of marine mammal entanglements and hydrocarbon soiling events of mammals and seabirds.



CCAMLR ACHIEVEMENTS

The CAMLR Convention provides the foundation for marine living resource conservation in the Southern Ocean. Since its establishment in 1982, CCAMLR has set global benchmarks for long-term conservation including the rational use of marine living resources. In recognition, CCAMLR was awarded the FAO Margarita Lizárraga Medal (2017).

CCAMLR has developed a number of important initiatives since 1982:

- an internationally recognised best-practice at-sea scientific observer program
- an international inspection system
- management decisions that consider the impacts on ecosystems and the conservation of marine resources
- rigorous scientific processes
- robust monitoring, control and surveillance and market control measures.

Specific achievements include:

- maintaining stocks of icefish, toothfish and krill at or above their target biomass level, safeguarding the sustainability of the ecosystem
- implementing the catch documentation scheme for toothfish species, which is one of the pillars of CCAMLR's traceability regime
- reducing, and effectively eliminating, illegal, unreported and unregulated fishing from the Convention Area
- effective control and management of fishing and related activities in all parts of the Convention Area
- establishing the largest high seas marine protected area in the world, the Ross Sea region MPA
- dramatically reducing seabird mortality through mitigation measures and changes to fishing practices
- monitoring the ecosystem since 1984 using standardised methods and dedicated surveys
- identifying and protecting vulnerable marine ecosystems.



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