INTERSESSIONAL REPORT

of the International Whaling Commission

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INTERNATIONAL
WHALING COMMISSION

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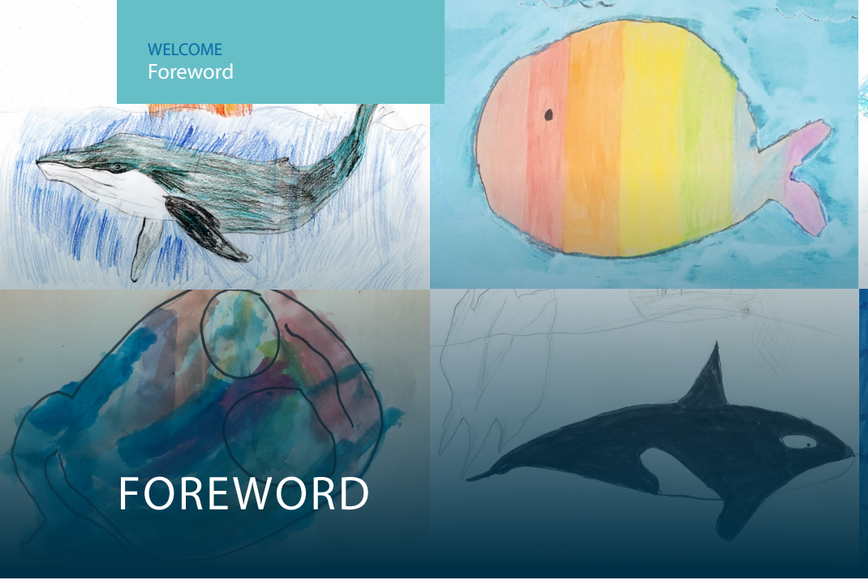
Front cover photograph: Entanglement responders at the Center for Coastal Studies add Covid precautions to existing safety protocols as they work to free an entangled humpback. Credit: CCS



FOREWORD

When our last meeting closed in Brazil, we expected the next intersessional period to be challenging, but no-one could foresee the nature and magnitude of this challenge or the global changes to come. Covid-19 led to an unprecedented four-year gap between IWC meetings and this report aims to reflect the main events of the prolonged intersessional period.

The first point I would like to make is that work continued. The IWC was not unique in finding ways to make progress despite the pandemic but, as a global organisation whose work ranges from boat-based surveys to lab work to multi-disciplinary workshops, we faced a range of different obstacles. Across the IWC community, work was prioritised and re-organised to address restrictions imposed by the pandemic on our travel, fieldwork, meetings and even our 75th anniversary commemorations. It wasn't perfect but we managed to maintain momentum and I pay tribute to the commitment, creativity and resilience of everyone involved.

The second point I would like to make is that the challenge isn't over. Whilst we fervently hope the threat from Covid-19 has subsided and economies will recover, we have yet to answer the questions posed in Brazil regarding financial and governance reform. Covid-19 and the four-year gap between meetings created some additional time and space to consider these questions. But it also compounded some of the problems.

As we discussed during our Virtual Special Meeting in September 2021, the increased financial pressures of the pandemic have impacted on IWC payment schedules, arrears and voting status. The issue is particularly acute for governments of limited means.

The Working Group on Operational Effectiveness will present proposals for addressing this at the beginning of our meeting in October. In parallel we must find a way to achieve balanced budgets and agree a package of governance reforms that allow us to work more collaboratively and efficiently in future. So, my message is that the commitment, creativity and resilience shown across our community over the last four years are still needed. We must all bring these attributes to Portoroz and we must expect to work very hard if we are to address these issues and ensure the IWC is in good shape to tackle whatever challenges lie ahead. I look forward to welcoming you back to Slovenia in October.

Andrej Bibič
IWC Chair

OPERATIONAL OVERVIEW

'Species of the Week' pictures created by children around the world.

The last few years have been extraordinarily difficult. I certainly don't want to underplay the personal losses and hardships endured by so many during the pandemic, but I do want to focus on one area where progress has definitely not been hindered: IWC's goal to increase accessibility.

The most impressive example of this is the dramatic increase in attendance at virtual meetings of the Scientific Committee. Double the average attendance was achieved at the 2021 and 2022 meetings. Many were first-time attendees and many from developing countries. New resources were created in multiple languages to encourage active participation and feedback was overwhelmingly positive.

Other events also used the virtual format to broaden audiences. The Climate Change Workshop was broadcast over YouTube. A 'Species of the Week' competition introduced home-schooling children to the work of the IWC, and the Commission itself held a Virtual Special Meeting including a 75th anniversary virtual toast!

Increased accessibility was a key goal of two other long-term projects which made good progress during this unique intersessional period. The Database of Recommendations (DoR) has been under development for several years and launched in 2021. The DoR records all the recommendations made by the Commission and its main sub-groups. It is searchable and allows users to assess the implementation and effectiveness of our recommendations. Also launching (more precisely re-launching) in 2021 was the *Journal for Cetacean Research and Management*. The IWC's journal has a new website, new layouts and a number of different tools have been introduced to improve visibility and accessibility.

The efforts I have mentioned are diverse but each helps improve access, inclusion and participation at the IWC. The pandemic prevented us from doing everything we hoped to during this intersessional period, but there are a few areas where circumstances enabled good progress to be made. I want to thank all those who were astute enough to recognise these opportunities and demonstrate once again, the IWC's ability to identify positives and evolve with them.

I must close with a statement of gratitude to the team in the IWC Secretariat, who have been incredibly resourceful and flexible throughout these difficult times, committed as ever to delivering our mission.

Dr Rebecca Lent
Executive Secretary

Attaching a satellite tag to a fin whale in the North Pacific. Credit: IWC-POWER

SCIENCE >

Strong science is the cornerstone of the Commission's work on cetacean conservation and management.

The IWC's Scientific Committee brings together world leading experts in a wide range of topics related to cetaceans including population status and structure, biology, ecology, habitat, health and human impacts. Some of these topics are covered in this section, whilst others can be found elsewhere in the report.

POPULATION MODELLING

Obtaining good information about wild animal populations can be difficult. It becomes even more complex when many of the species studied are highly migratory and spend most of their time underwater, often in remote places.

The Scientific Committee has pioneered a modelling approach that quantifies and incorporates the uncertainties inevitably present in information on whales by examining thousands of potential scenarios. This approach was developed at the request of the Commission in order to calculate sustainable and precautionary commercial whaling catch limits. It has not been used for this purpose but has been adapted to calculate safe limits for aboriginal subsistence hunts, for other direct impacts such as ship strike and entanglement and for more 'subtle' threats such as chemical pollution and habitat degradation. (For more information on these subjects, see below and under *Conservation, Welfare and Whaling*).

The Scientific Committee maintains an ongoing programme to assess the status of different species and ocean areas. In some cases the focus is on populations that are hunted (these are reviewed formally, usually every 6 years, see below under *Whaling*). In other cases the focus is on species or populations heavily hunted in the past, to examine whether or not they are recovering. This long-term work allows emerging research to be reviewed, and modelling updated to incorporate new information. In many cases, the biggest challenge is to understand population structure: the number of distinct populations of the same species in a region, and extent of any crossover amongst them.

Ongoing or completed reviews and assessments during the reporting period included common minke whale populations in the North Atlantic and off Greenland, Chukotka and Makah gray whales, bowhead whales off west Greenland and in the Bering-Chukchi-Beaufort Seas, and North Pacific populations of Bryde's, humpback and sei whales. (See also below under *Conservation* for work on North Pacific gray whale population structure).

The Scientific Committee is also working to share more of its Population Modelling work publicly and in simplified formats that show whether or not individual populations are healthy, and the degree of accuracy with which this can currently be assessed.

SCIENCE
Population Modelling

One of the foundations of IWC scientific work is 'population modelling.' Computer models are used to integrate different types of information: numbers of animals, population structure and the impact of specific human activities such as whaling, ship collisions or entanglement in fishing gear. This allows scientists to assess conservation status, and to identify and prioritise conservation and management issues.

Beach-based sighting survey, Congo. Credit: Tim Collins

FIELD RESEARCH

Each year, the IWC initiates, facilitates or supports a range of field research programmes. These are diverse in scope and scale, and conducted all over the world. The Covid-19 pandemic limited the amount of intersessional work that could be conducted during this intersessional period, but flexibility and creativity enabled a number of projects to go ahead. Below is a small sample of the work undertaken.

IWC-POWER

The IWC-North Pacific Ocean Whale and Ecosystem Research (IWC-POWER) programme is a long-term, international collaboration focused on developing a scientific basis for conservation and management of whales in the North Pacific. A primary focus is on surveying areas which have not been covered for over forty years, and providing baseline data from which trends can be estimated in the future.

The design of the programme and choice of scientists is the responsibility of the Scientific Committee. The surveys use sightings data to estimate population sizes as well as collecting biopsy samples, acoustic and photo-identification data to consider population structure and movements. Cruises have taken place since 2010 using a vessel and crew generously donated by the Government of Japan. After more than 30,000 nautical miles of survey effort, the short-term objectives are now almost complete and the programme will move into the next phase.

IWC-SORP

The IWC-Southern Ocean Research Partnership (IWC-SORP) is a multi-faceted and long-term international consortium. It has seven distinct themes running concurrently and is co-ordinated by the IWC-SORP Scientific Steering Committee. The themes include research into the predator/prey relationship between baleen whales and krill; killer, southern right and fin whale themes including analysis of abundance, distribution and migration patterns; and the flagship Antarctic Blue Whale Project which is improving understanding of these critically endangered whales, including their role in the ecosystem, current numbers, and rate of population recovery post-industrial whaling.

Since it was established in 2009, the IWC-SORP initiative has produced 248 peer-reviewed scientific papers and 190 primary papers have been presented to the IWC Scientific Committee.

The IWC-SORP ethos is one of open collaboration, communication and data sharing.

SCIENCE
Field Research

Small Cetaceans Voluntary Fund (SCVF)

In recent years, voluntary contributions from governments and non-governmental organisations have enabled the IWC to fund high priority conservation projects focused on vulnerable populations of small cetaceans: dolphins and porpoises.

Every few years, as funds are available, applications are invited for both new and ongoing projects. These are assessed by the Scientific Committee with grants awarded up to a maximum of £20,000. Successful applications are diverse and range from fishing community collaborations testing porpoise-friendly nets to assessments of abundance, status and distribution. What the projects have in common is robust research methodology and a strong focus on both capacity building and engagement with wider society. Since 2010, the SCVF has provided funding for twenty three different programmes in Africa, Asia, Oceania, Central and South America.

Interviewing fishermen in Vietnam. Credit: Long Vu

SCIENCE
Environmental Concerns

Surface debris, Pacific Ocean. Credit: NOAA

Healthy cetacean populations require a healthy habitat. There are many ways (direct and indirect) that human activities can have an adverse effect on the cetacean environment.

Understanding the links between these activities, the habitat and cetaceans is complex. Whilst the connection between fishing nets and a whale entanglement can be clearly visible, the impacts of chemical pollutants in the water, coastal and off shore development, ocean noise or retreating polar ice are less easy to establish.

ENVIRONMENTAL CONCERNS

The Scientific and Conservation Committees of the IWC work together to understand and develop ways to minimise potential threats to cetaceans. This immense task is being tackled through a range of activities. Key amongst these are expert workshops that provide advice on specific issues to the Commission. The State of the Cetacean Environment Report is another tool requested by the Commission to track environmental concerns. These reports are produced annually and each one assesses the environmental concerns within a specific region, rotating on a 5-year cycle.

One current focus of work is ocean noise. The addition of human-generated noise to the marine soundscape can have a major effect on some species, including cetaceans. The IWC is working on this issue with several organisations, including the International Maritime Organisation, responsible for regulation of shipping, and the oil and gas industries which conduct seismic surveys and drilling on the seabed. In 2018, the IWC adopted a Resolution, reiterating concerns and making a series of recommendations to address underwater noise at national and international levels.

Marine debris is another major concern. In 2019, the IWC held the third in a series of workshops. The first two focused on scientific and policy issues respectively. The third one assessed new information on each of the different debris-related threats: ingestion, entanglement, micro-debris and toxicity. The workshop reported that the impacts on cetaceans are more substantial than previously thought and highlighted the importance of standardised responses to strandings, including necropsy protocols, in order to build a better understanding of the impacts of different types of debris and better identify their sources. (See below under *Welfare: Strandings* for information on how this is being actioned at IWC).

Often less visible but equally concerning is chemical pollution, the focus of another long-term programme which held its latest workshop in 2021. The Pollution 20+ initiative has progressed from examining tissue concentrations for priority pollutants to developing a web-based mapping tool to estimate the impact of different pollutants at the population level. The focus has now shifted to cumulative effects, and the 2021 workshop recommended further work to tackle the difficult task of mitigation planning when multiple different stressors may be acting together.

Increasingly and across many strands of its work programme, the Scientific Committee is assessing relationships between different threats, and their cumulative impacts on whale populations. Climate change is perhaps the overriding example and the fifth in another long-term series of workshops was held in 2021. This assessed increasing evidence of distributional shifts in some whale and prey species. In response to warming waters, melting ice caps and other climate change impacts, some cetacean populations are forced into different breeding and feeding grounds, solving one problem but potentially creating others as new habitat may coincide with busy shipping lanes or areas of concentrated fishing activity. Climate change presents vast challenges and the workshop recommended prioritisation and collaboration as key to making progress. (Also see below under *Conservation: Ecosystem Services*).

SCIENCE
Status of Stock

STATUS OF STOCKS

Right Whales

All three species were heavily exploited pre-20th century and substantially reduced[1].

North Atlantic

(Eubalaena glacialis). One of the most endangered species of whales[2] hunted since at least the 11th century[3,4]. In the east, sightings are extremely rare[5]. In the west, the population numbers were estimated below 400 in 2019[6,7], with signs of decreasing since 2010. The main threats are entanglement and ship strikes[8,9]. High mortality has been observed since 2017[10].

North Pacific

(Eubalaena japonica). Very endangered with few signs of appreciable recovery and numbers are in the hundreds. In 2012 the population estimate for the northwest Pacific was around 1000[11]. Sightings in the eastern North Pacific are rare[12–14]; the current abundance is not expected to exceed ~30 individuals[15].

Southern right whales

(Eubalaena australis). Pre-exploitation abundance is estimated at 70000-100000 animals[16–18]. In 2009, there were around 14000[18] distributed on calving grounds off Argentina/Brazil[19], South Africa[20], New Zealand[21] and Australia. Populations are recovering at different rates but low abundances persist in Brazil, SE Australia and Chile-Peru[17,22]. Demographic changes of concern -including low numbers of cow-calf pairs and increased calving intervals - are observed in South Africa since 2015[23,24]. The southwest Atlantic and Eastern Pacific populations are the subject of CMPs. See below under *Conservation: CMPs*.

Sei Whales

(B. borealis) were heavily exploited from the late1950s to the mid-1970s[66].

North Atlantic

There are insufficient data to assess their present status. Surveys show little sign of an increase in the northeast Atlantic. There were less than 10000 whales in 2007 in the central region[67], 1500 and 700 in West and East Greenland respectively[68]. No recent abundance estimates are available off Canada where few whales have been sighted[69].

North Pacific

Recent surveys indicate current abundance is over 30000[70,71]. An assessment of North Pacific sei whales is underway.

Southern Hemisphere

Little information is known about their abundance and trends. Anecdotal and opportunistic reports allude to increasing occurrence in the coastal waters of southern South America[72–74] and the Falkland Islands, where sei whales number around 700 individuals (2018)[75].

Blue Whales

(Balaenoptera musculus) were severely exploited across their distribution range.

North Atlantic

Present status has not been fully assessed, but encouragingly, evidence suggests they were increasing, at least in the central area. There were 3000 animals in central N. Atlantic (in 2015) particularly in the west and north of Iceland, showing a significant increase since 2001[25]. They remain rare in the northeast Atlantic[25,26] (refers to 2007 and 2015) where they were once common. Several hundred were seen in their summer feeding ground in the Gulf of St Lawrence[27–30].

North Pacific

Blue whales are sighted in surveys in the west North Pacific[11] but there are insufficient data to comment on their present status in the region. There are around 2,000 animals in the eastern North Pacific[31]. Under careful management, the population has reached levels close to recovery[32,33].

Southern Hemisphere

Pre-exploitation size of Antarctic blue whales (*Balaenoptera musculus intermedia*) may have been as many as 2-300000 whales[34]. They are currently thought to exceed 2000 individuals (based on circumpolar estimates in the 1990s and early 2000s)[35,36]. Although they have shown an increasing trend since the 1970s, their levels remain low compared to pre-exploitation[34]. There have been no assessments of the pygmy blue whale (Balaenoptera musculus brevicauda) to date but efforts are made to separate the two subspecies in terms of historical catch and distribution[37,38].

Sperm Whales

(Physeter macrocephalus). Cosmopolitan species[53], heavily exploited, particularly during the 1960s[54]. The IWC has no recently accepted reliable estimates of abundance because their estimation is complicated by their long dive times and their behaviour[54]. Local surveys estimate 20000 (2015) whales in the central Atlantic[25], less than 4000 (2015) in the northeast Atlantic[40], and 10000 (2012) in the western north Pacific[11]. Although not endangered the species has probably not recovered to pre-whaling levels[54]. There have been no recent assessments of status by the IWC but plans are being developed to undertake an assessment.

Gray Whales

(Eschrichtius robustus). Heavily exploited pre-20th century. They have been protected since the 1930s apart from some subsistence whaling. After the 2019/2020 unusual mortality event[55], the eastern North Pacific population abundance is around 20000[55] (2019/2020). The situation for the western North Pacific population is uncertain, and it is the subject of a CMP. Around 200 gray whales regularly feed off Sakhalin Island but numbers are increasing by 4%[56,57]. Primary threats are entanglement and activities related to oil and gas. A basin-wide assessment is almost complete. In the Atlantic gray whales are considered extinct since the 1700s[58] but some recent sightings have been reported[59,60].

Bryde's Whales

Currently classified as *Balaenoptera edeni* but its taxonomy is reviewed[61]. They occur in warm, tropical waters[62]. They have not been heavily exploited and their populations are not endangered[63]. In the western North Pacific, the 2011-2014 (partial) abundance estimate is 41000[64,65].

Fin Whales

(B. physalus) were heavily exploited across their distribution range during the 20th century[39].

North Atlantic

Total abundance, based on the most up-to-date estimates available, is around 74,000[25,39–41] whales although not all areas have been surveyed. Assessments show the Central and West Greenland populations to be in a healthy state. Recent catches in West Greenland do not exceed 8 whales per year (2017-2021). Their status in other areas has not been fully assessed but fin whales in the northern Gulf of St. Lawrence are showing signs of decline[42]. Ship strikes are one of the greatest threats for fin whales in the Mediterranean[43–47].

North Pacific

There are insufficient data to assess their present status. Partial estimates for the eastern North Pacific show around 3000 (2013)[48] whales in the Gulf of Alaska, 1000 (2010)[49] on the eastern Bering Sea shelf and around 400 (2009-2014) along the Canadian continental self[50], more than 8000 (2014)[51] in California, Oregon, and Washington waters.

Southern Hemisphere

There has been no recent full assessment of the status. There is some evidence that populations summering in the Antarctic are increasing[52] but abundance trends are unknown.

Bowhead Whales

(Balaena mysticetus). Heavily expolited pre-20th century. The population in the Bering-Chukchi-Beaufort Seas has been recovering[126,127]. In 2019 its abundance was 14000-17000 animals[128]. The eastern Arctic-West Greenland population numbers 6500 individuals (2013)[129–131]. The Okhotsk Sea stock amounts to 200 whales (in 2016)[132] and the Svalbard stock 300 (in 2015)[133].

Antarctic Minke Whales

(Balaenoptera bonaerensis). The exploitation of Antarctic minke whales began in the early 1970s[76]. The most recent estimate (1998) of total abundance in the surveyed areas south of 60°S is higher than 500000[77]. However, there has been an appreciable decline in estimated abundance between the 1985/6-1990/91 and 1991/92- 2003/04 circumpolar surveys. Work continues to determine whether this decline is real or an artefact. Climate change has been a concern[78].

SCIENCE
Status of Stock

Humpback Whales

(Megaptera novaeangliae) have been heavily hunted throughout their distributional range[99].

North Atlantic

In the northeast Atlantic, they number a little less than 25000 animals[25,26,40,100]. Abundance estimates from surveys of the Canadian feeding ground are partial and estimate some 12000 whales in the area[101]. Less than 1000 individuals are estimated for west Greenland[26], where the population has been increasing[102,103]. Increasing or stabilising trends are observed for most North Atlantic regions but it is not clear whether they can be attributed to population growth or distributional shifts[100]. They are vulnerable to entanglement.

North Pacific

During the period 2004-2006 humpback whales in the North Pacific numbered more than 21000 individuals[104]. They have been increasing in most areas for which there are data[105], although abundance in their Asian wintering area may be only about 1000[106,107]. A full assessment of status is underway.

Southern Hemisphere

Southern Hemisphere humpbacks were primarily exploited between 1904-1965 on both their Southern Ocean feeding grounds and low-latitude breeding grounds[108]. In many areas, they have shown evidence of strong recovery with high annual increase rates (7-12%) recorded around the Antarctic[109], in the south-west Atlantic[108,110,] off Australia[111–114,] Southern Africa and South America[115,116]. Population models predicted > 96000 in the southern hemisphere (2015)[117]. Estimates of abundance from the majority of the Southern Hemisphere breeding grounds can be found in literature[111,113,118–125].

Common Minke Whales

(Balaenoptera acutorostrata).

North Atlantic

(B. acutorostrata acutorostrata) These stocks are in a healthy state. Recent reliable abundance estimates for the north-eastern and central North Atlantic and off West Greenland total around 200000 animals[26,79–82]. The Canadian East coast stock numbers some 20000 whales[83].

North Pacific

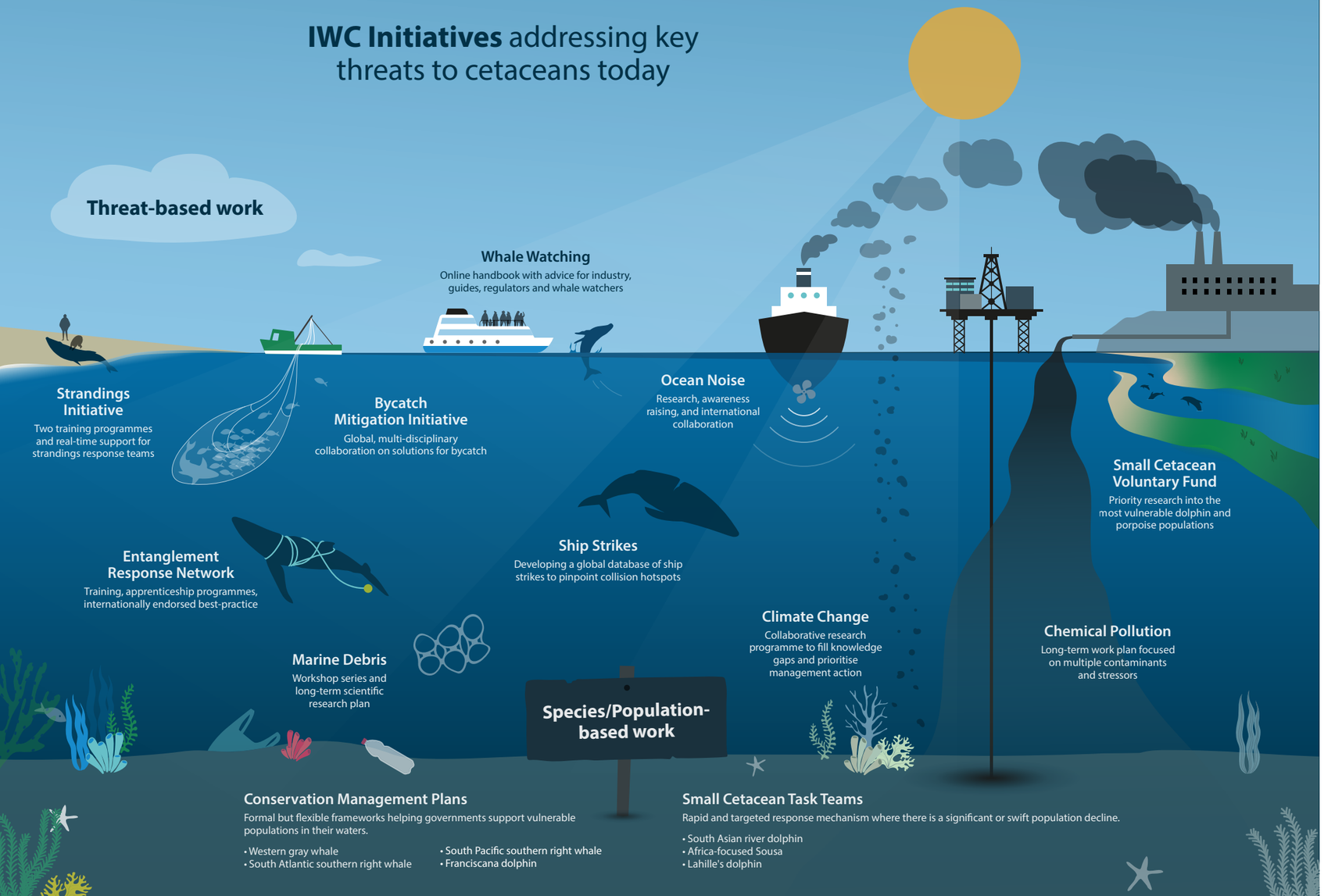
(B. acutorostrata scammoni) They were heavily hunted in the western North Pacific. Stock structure complexity makes conclusions on status difficult. There is no estimate for the entire North Pacific. Abundance estimates in the western North Pacific total 23000[84–88]; Japan takes an average of 120 whales per year (2017-2021)[89]. There is concern over the status of the 'J-stock(s)', whose range includes the Yellow, East China, and Sea of Japan/East Sea, where there is considerable bycatch in fishing gear[90–94]. In the eastern North Pacific, surveys do not cover the distribution of the species; partial estimates total 4000[49,95–98] individuals. A new assessment is underway.

Southern Hemisphere

The dwarf minke whale *(B. acutorostrata* unnamed subs.*)* typically occurs from the Equator to the Antarctic. There are knowledge gaps regarding the biology, population structure and abundance of minke whales.

CONSERVATION >

IWC Initiatives addressing key threats to cetaceans today



Growth in the number and nature of conservation concerns is one of the biggest challenges facing the IWC today

The International Convention for the Regulation of Whaling was one of the first international agreements to make a link between conservation and sustainable exploitation. Since its creation in 1946, the IWC has been charged with conservation of whale stocks. The challenges posed by this mandate have changed a lot since then.

In the early days, the IWC focused almost solely on the introduction of sustainable whaling catch limits. Regulation of whaling remains a central function of the Commission, but the threats to whales have changed dramatically. Today the IWC Conservation Committee manages work programmes to address bycatch, collisions with vessels, whale watching, habitat degradation and ecosystem functioning. It also works closely with the Scientific Committee on issues including marine debris and underwater noise. The growth in the number and nature of conservation concerns is one of the biggest challenges facing the IWC today.

BYCATCH

Lightstick trials to reduce bycatch in the Indian Ocean.
Credit: Umair Shahid

Lethal encounters with fishing gear are estimated to kill more than 300,000 cetaceans every year, and the IWC recognises bycatch as the most serious, direct threat to whales, dolphins and porpoises. In 2016, the IWC endorsed a new Bycatch Mitigation Initiative (BMI). Collaboration is central to the BMI which brings together those responsible for fisheries management, technology and industry as well as economists, legal experts, fishing communities and other inter-governmental organisations such as the FAO and regional Fisheries Management Organisations.

Much current work is focused on the Indian Ocean where high bycatch is estimated in extensive gillnet fleets, but information is lacking on the extent of the problem and applicability of possible solutions. The first BMI workshop took place in Kenya in 2019 with a particular focus on the Indian Ocean. It was attended by representatives from 18 countries, many from the Indian Ocean region. The workshop identified high risk areas in the region and potential collaborations, both to obtain more information and to conduct pilot projects. Pilot projects range from testing technologies such as pingers and lights, and low-cost, experimental solutions such as setting nets lower in the water column. Recent research in the region found this reduced cetacean bycatch by 79%.

The BMI has four interrelated areas of work:

- improved assessment of bycatch to determine priorities and to measure success;
- investigation of mitigation methods and management approaches alongside the fishing sector and national governments (no single universal solution exists for all fishing gears or cetacean species);
- transfer of expertise, technology and management measures, building capacity to tackle the issue;
- engagement with other relevant international organisations, including fisheries management bodies.

CONSERVATION MANAGEMENT PLANS

The IWC developed Conservation Management Plans (CMP) as a tool that can be flexibly targeted to maximise coordination and therefore effectiveness of conservation work on some high-risk cetacean populations. Regional collaboration and range-state leadership are key to the CMP concept which is designed to complement and support local and national initiatives. Four CMPs now operate through the IWC.

North Pacific Gray Whale

A range-wide review of this population was instigated by the Scientific Committee in 2014 and is ongoing. This followed a CMP-supported tagging programme which revealed some crossover between two populations of gray whales previously understood to be completely distinct: healthy east Pacific gray whales, and those subject to the CMP in the western Pacific which are critically endangered. The conclusions of the range-wide review may have implications for understanding the population structure but at present, the western gray whales feeding off Sakhalin Island, a region of high oil and gas activity, are believed to number less than 200. A workshop to update this CMP with new scientific developments is planned for 2023. To date, the focus has been collaboration between range states, industry and other intergovernmental organisations, especially the IUCN (International Union for the Conservation of Nature). A Memorandum of Cooperation has been signed by a number of range states.

South Atlantic Southern Right Whale

One important component of this CMP is to understand the reasons for the large numbers of mainly newborn calves that have stranded onshore each season since 2003. Previous satellite tagging identified multiple feeding areas visited by the tagged whales across vast areas of the South Atlantic and research has examined stress hormones and nutritional condition, focusing on the impact of attacks from kelp gulls which feed on the whales' blubber.

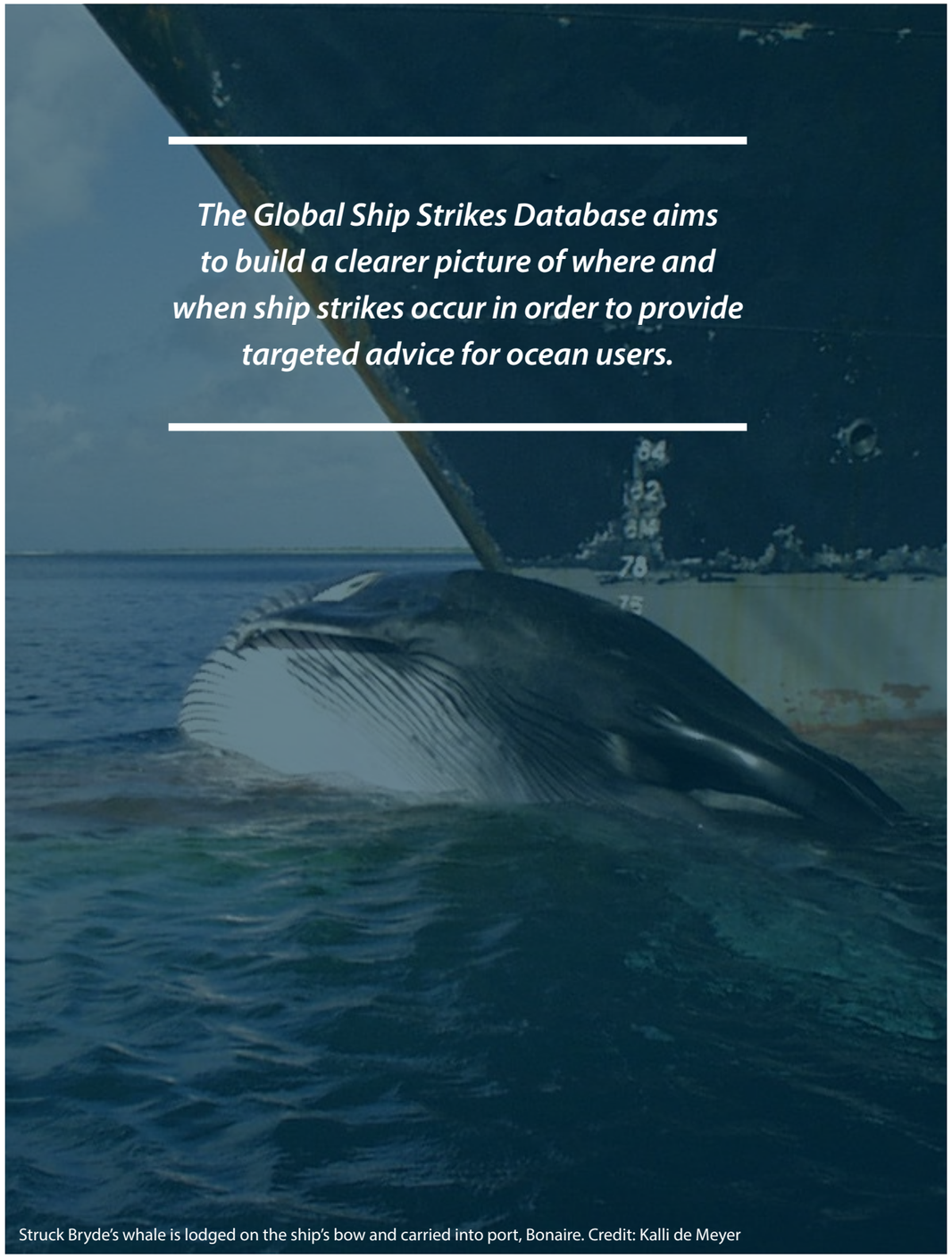
A 2022 workshop focused on identifying hotspots where human activities may adversely impact on the whales and improved monitoring, including enhancement of existing strandings networks and increased capacity to perform necropsies.

Eastern Pacific Southern Right Whale

The CMP for this critically endangered population of just 50 adults was developed in 2012 and prioritises efforts to minimise manmade threats such as entanglement and ship collisions. A Passive Acoustic Monitoring programme is ongoing and is helping to identify the usual locations of the whales. This has formed the basis of awareness-raising amongst the fishing and wider local communities. Range-states are also exchanging information on regulation of whale watching and research permits.

Franciscana Dolphin

The franciscana is the first small cetacean subject to a CMP. Bycatch mitigation and creation of protected areas are key components, as well as raising awareness and supporting work on a long-term plan to reduce interactions between marine mammals and fisheries. Two franciscana workshops were held during the intersessional period. The first in 2020 examined abundance, trends and existing management and conservation initiatives at national level. The second in 2022 assessed new information including on distribution and ecology, and research into bycatch impacts and mitigations as well as other threats. The expansion of gillnet fisheries is accelerating the decline of this species and tackling gillnets is key to reversing this trend.



The Global Ship Strikes Database aims to build a clearer picture of where and when ship strikes occur in order to provide targeted advice for ocean users.

Struck Bryde's whale is lodged on the ship's bow and carried into port, Bonaire. Credit: Kalli de Meyer

SHIP STRIKES

It is hard to assess the scale and impact of collisions between vessels and whales because incidents are often unnoticed and therefore unreported unless the struck animal strands or becomes lodged on a ship's bow. However evidence is growing that this is a concern that may have long-term consequences for some cetacean populations.

The IWC has developed a Ship Strikes Mitigation Strategy and a Global Ship Strikes Database to record ship strikes as thoroughly and accurately as possible. Comprehensive data will enable scientists to build a clearer picture of where and when ship strikes occur and the vessel types, speeds and species involved, in order to provide targeted advice on prevention for ocean users.

To raise awareness of the ship strike risk and the database, and to encourage international coordination on the issue, the IWC has been working with the International Maritime Organization, who are encouraging their member governments to alert national authorities and mariners to the issue.

In 2019, a collaborative workshop was also held with the International Union for the Conservation of Nature (IUCN) and the Agreement for the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS). The IUCN has been systematically identifying Important Marine Mammal Areas and the workshop looked at how these can be overlaid with shipping information to pinpoint ship strike hotpots.

WHALE WATCHING

Whilst regulation of whale watching is a national responsibility, the IWC is in a unique position to share best practice and support countries or regions seeking to develop a responsible and sustainable whale watching industry.

In partnership with the Convention for Migratory Species, the Whale Watching Handbook was launched at the beginning of this intersessional period, in 2018. It is a living, online and global resource with sections for regulators, tourists, whale watching operators and educators. Designed for use on phones, tablets or computers, the Handbook contents includes an interactive map, country profiles, species guides, and industry case studies. It is available in English, French and Spanish and to-date has been accessed by users in over 200 countries.

SMALL CETACEANS

Some of the most vulnerable mammal species are dolphins and porpoises and the IWC has developed several work programmes in response to particular threats to small cetaceans.

At its Virtual Special Meeting in 2021, the Commission reiterated its call for urgent action to prevent the extinction of the vaquita, a small porpoise found only in Mexican waters in the upper Gulf of California and already the subject of an IWC Resolution. Despite many calls for action, including from the IWC and its Scientific Committee, the vaquita now faces imminent extinction unless illegal fishing is stopped and policed, and nets are removed.

Three IWC work programmes are currently focused specifically on dolphins and porpoises, including the Small Cetaceans Voluntary Fund which sponsors scientific research projects all over the world *(see Science: Fieldwork, above)*. Information about the other two programmes is provided below.

Wildmeat

During this intersessional period, the IWC held the third workshop in a series seeking to understand more about catches of small cetaceans for food, bait, trade and use in traditional customs.

These catches are small-scale, sometimes opportunistic, usually poorly documented, and may be unsustainable for some of the populations concerned. The IWC has developed a toolkit to teach local groups how to collect accurate data, for example DNA analysis and zoonotic tests for disease. This information will be used to assess the extent and impact of this type of hunting. The third workshop was held in Kenya in 2019 following earlier events in Thailand and Brazil.

Task Teams

The IWC established the Small Cetacean Task Team Initiative as an agile mechanism to deliver swift and targeted actions. Task Teams bring together relevant governments and expertise, and facilitate urgent conservation actions. Task Teams are currently in operation for South Asia river dolphins, Lahille's bottlenose dolphins and Indian Ocean Humpback Dolphins in Africa. In 2019, a workshop was held in Malaysia for the South Asia River Dolphin Task Team. The expert group agreed plans for tackling trans-boundary issues, particularly related to water sharing and flow management.

Necklace made of dolphin teeth, Solomon Islands. Credit M Oremus.

ECOSYSTEM SERVICES

The IWC has long recognised the importance of whales in the functioning of ecosystems, and the IWC adopted a second Resolution on this issue in 2018.

In recent years, a range of global organisations have contributed to a rapid increase in knowledge and interest in the role played by whales in ecosystems. In 2019, the International Monetary Fund published a report exploring the economic value of whales in ecosystem functioning. The report estimated that each great whale sequesters approximately 33 tons of carbon, equivalent to 30,000 trees, and suggested an average monetary value of $2M for each animal based on global carbon market prices. In 2022, the Sixth Assessment Report of the International Panel on Climate Change proposed whales as potential blue carbon ecosystems.

In response to the latest IWC Resolution, a workshop was held in 2022. Social scientists and economists joined marine ecologists and biologists to identify knowledge gaps, advance research and find ways to incorporate the contribution of cetaceans to the marine ecosystem into wider decision-making processes, both in the IWC and other organisations concerned with climate change mitigation.

How do whales contribute to reducing carbon in the atmosphere?

Firstly, just as trees capture carbon in the terrestrial ecosystem, whales capture carbon in the ocean ecosystem. A large whale can store a vast amount of carbon over the course of a life that may last 100+ years. When the animal dies it sinks to the sea-bed, 'locking-in' this large carbon store for centuries.

Whale excrement performs a second important service to the ecosystem. It acts as a fertiliser for phytoplankton, a microscopic creature that lives at the ocean's surface and is very effective at both capturing carbon and releasing oxygen. The whale's waste contains the iron and nitrogen that phytoplankton need to grow. Whales feed in deep water and come to the surface to breathe, bringing these valuable minerals up to the phytoplankton in a cycle known as 'the whale pump.'

Entanglement responders at the Center for Coastal Studies add Covid precautions to existing safety protocols. Credit: CCS

WELFARE >

The IWC has evolved in response to its historical context, and the development of its welfare agenda reflects this perhaps more clearly than any other area of work.

WELFARE

Welfare considerations were first added to the IWC agenda in 1959 in order to improve the humaneness of commercial whaling. In 1978 the IWC asked countries to begin providing welfare data for analysis that could lead to improvement in hunting techniques in terms of safety and quicker times to death. The prohibition of cold (non-explosive) harpoons followed in 1980.

Aboriginal subsistence whaling communities continue to work through the IWC's welfare committee to maximise the humaneness of the hunts. The remit of this committee has also expanded to consider other, non-whaling threats. Ship strikes, live stranding and entanglement are today all recognised as significant cetacean welfare concerns.

Since 2012, the IWC has been working to approach welfare issues more strategically, coordinating different programmes into a single action plan, improving general understanding of the issue, and integrating welfare considerations into the wider IWC agenda.

Entanglement response training, Greenland.

Practicing disentanglement techniques on land and at sea, Kenya. Credit: IWC.

ENTANGLEMENT

Bycatch in fishing gear is responsible for more cetacean deaths than any other direct threat. Some animals, particularly large whale species, survive the initial entanglement, but cannot free themselves from the gear and are forced to tow heavy nets and lines. These cut through skin causing infections, amputations or starvation as animals are unable to swim freely and too exhausted to feed effectively. Entanglement is an extremely serious welfare issue.

Human safety is another very important concern. Handling any large, wild animal is dangerous. Responding to one at sea, and that is likely to be injured and distressed, requires training and calm, careful implementation of safety protocols, minimising risk to the responders and conducting the most effective disentanglement possible, whatever the scenario.

In 2011, the IWC appointed an expert advisor who was tasked with the development of a Global Whale Entanglement Response Network (GWERN). The initiative brought together international experts to establish safe and effective entanglement response protocols which were then developed into a capacity building training programme, available to all national governments. Since then, the IWC has trained more than 1200 entanglement responders across thirty four countries and five continents. Six GWERN apprentices are now equipped to conduct training themselves and the training has diversified to include advanced training sessions, and combined stranding and entanglement response workshops. The pandemic halted training during this intersessional period but not before three more workshops had taken place in Kenya, Argentina and Scotland, all in 2019.

While physical trainings have been placed on hold during the pandemic, the IWC initiative has facilitated virtual workshops on releasing entangled Orca, and entangled, but free-swimming river dolphins in South America.

STRANDINGS

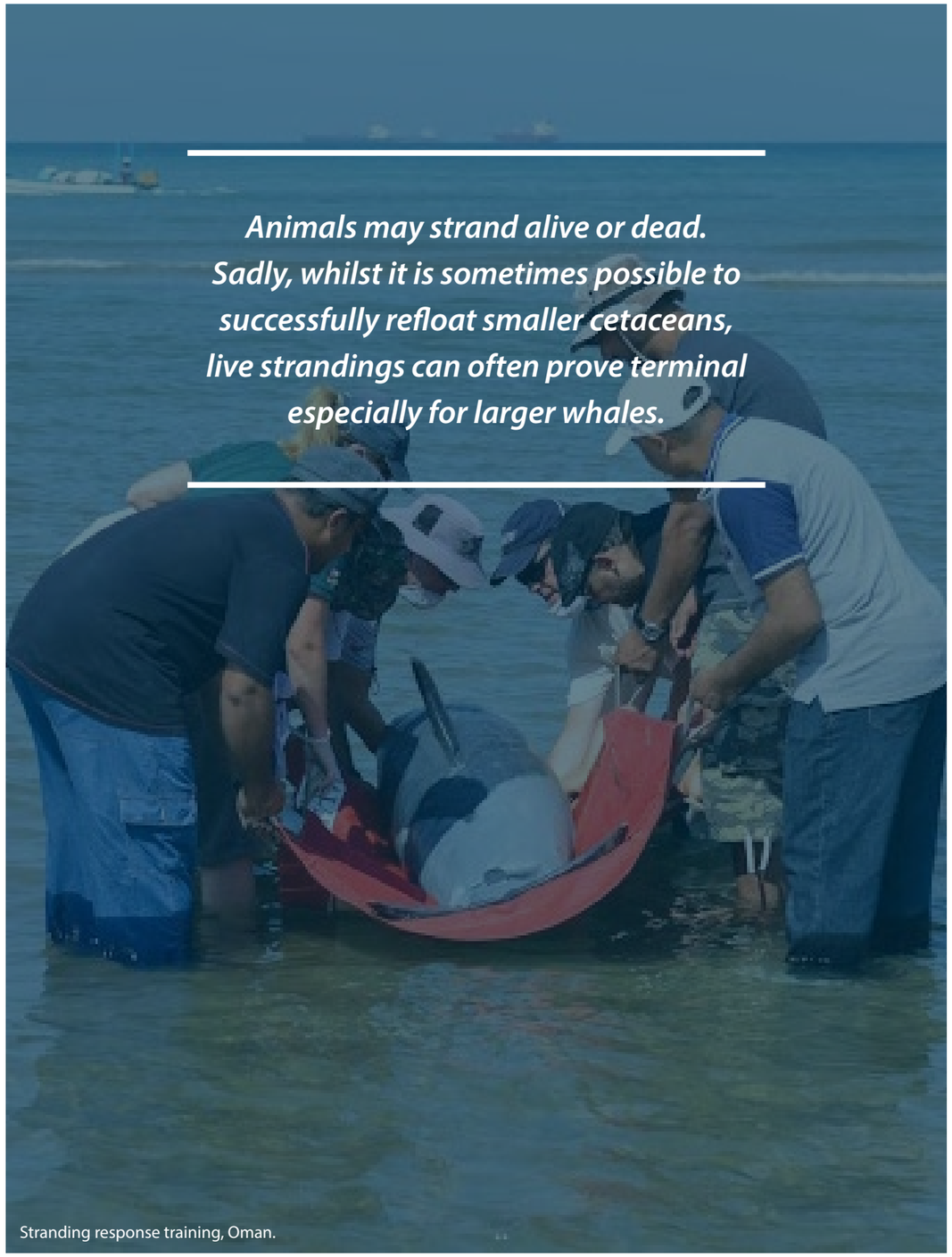
There are many reasons why whales, dolphins and porpoises strand. Natural causes include disease or navigational mistakes. Strandings can also have human causes such as ship strike or loud, disorientating ocean noise. It is usually difficult to establish definitive reasons for cetacean stranding, particularly as there may be a combination of causes, including combinations of natural and human factors.

Animals may strand alive or dead. Sadly, whilst it is sometimes possible to successfully refloat smaller cetaceans, live strandings can often prove terminal especially for larger whales. Without the support of water, the organs of large whales are subjected to immense weight and pressure. A whale suffering severe internal injuries may appear healthy which is why expert response is so important. Re-floating a stranded whale may lead to painful and more prolonged death, and euthanasia can be the most humane response.

The IWC Strandings Initiative was launched in 2017. It focuses jointly on supporting live emergency response and improving strandings investigations. An Expert Panel provides real-time support and advice to responders on the ground, whilst workshops build capacity to conduct necropsies and collect data, sharing international best practice and introducing consistent approaches. During this intersessional period, new members have joined the Expert Panel to broaden expertise and geographic coverage, and support has been provided remotely due to the pandemic. This included support to four mass strandings and using virtual meeting software to administer real-time necropsy assistance. Going forward, hybrid workshops are planned, with theory delivered remotely and supported by in-person practical training.

Necropsy workshop, South Africa. Credit: IFAW

WELFARE
Strandings



Stranding response training, Oman.


Bowhead whale, Greenland.

WHALING >

Whaling is a complex and often controversial issue, and the IWC has a responsibility to hear and respect views on all sides of the debate.

The IWC recognises three different types of whaling:

The first of these is aboriginal subsistence whaling which has been regulated by the IWC since the organisation was formed in 1946, although catch/strike limits were primarily introduced after 1976.

The second is commercial whaling. Regulation of commercial whaling was the principal reason for the establishment of the IWC. Concerns led to the introduction of a moratorium (setting of catch limits to zero) in 1986, which remains in place today.

The third type of whaling recognised by the IWC is called special permit (or scientific) whaling. This type of whaling has always been managed by national governments who develop their own scientific programmes and issue their own permits.

The IWC is often asked why it does not regulate the hunting of small cetaceans (dolphins and porpoises). The IWC has never regulated small cetacean hunts and could only do so in the future if the Commission reached agreement that this type of hunting should fall within its remit.

ABORIGINAL SUBSISTENCE WHALING

From the outset, the IWC recognised that indigenous or aboriginal subsistence whaling is not the same as commercial whaling. Aboriginal whaling does not seek to maximise catches or profit but to meet the nutritional and cultural needs of the community. The IWC currently regulates four aboriginal subsistence whaling (ASW) hunts, in Alaska, Chukotka, Greenland and Bequia.

Whalebone arch, Greenland. Credit: IWC

Aboriginal whaling hunting limits are set in blocks, usually of six years and most recently at the Commission meeting in 2018. Also at that meeting a number of new initiatives were endorsed in order to facilitate a more straightforward process when catch limits are next considered at the 2024 meeting of the Commission.

The new initiatives include:

- a new timetable for sharing information from the hunts, and receiving feedback, maximising discussion time and transparency;
- agreement that status quo catch limits would be renewed automatically, assuming a series of agreed steps continue to be completed;
- a commitment to establish closer ties with international and inter-governmental organisations focusing on indigenous rights.

During the intersessional period preparatory work has been completed that will enable the Commission to take forward a Survey of Indigenous and Human Rights Instruments. This aims to inform the Commission's role in addressing indigenous rights.

At the Commission meeting in 2018, the Scientific Committee concluded a long-term programme to develop a complete set of Strike Limit Algorithms (SLAs) for aboriginal hunting. An SLA is a mathematical calculation, assessed by testing a huge range of scenarios to account for the large and varied uncertainty in knowledge and modelling of whale biology. SLAs are used to evaluate whether proposed catches are sustainable. A separate SLA is required for each species hunted in each region. This complex work has taken 24 years to complete and the 2018 Commission meeting was the first time that this robust approach was available to underpin discussions on every ASW hunt.

COMMERCIAL WHALING

The moratorium on commercial whaling has been in place for more than thirty years. Aside from non-IWC member countries, the only commercial whaling conducted at present is by members exercising an objection or reservation to the moratorium (Norway and Iceland respectively). These countries share catch and other relevant data with the Commission and the Scientific Committee, although this whaling is not regulated by the IWC. (See *Catch Data* below).

SPECIAL PERMIT WHALING

The International Convention for the Regulation of Whaling ((ICRW) - see below under *Governance*) does not give the IWC any regulatory role in special permit whaling. This type of whaling is instigated and managed by national governments although the ICRW requires that governments conducting special permit whaling programmes inform the Commission of their plans and regularly report scientific findings to them. All member governments are therefore made aware when special permits are issued, and the Scientific Committee plays an advisory role, scrutinising special permit proposals and findings, and making recommendations.

No governments are currently conducting special permit whaling.

2018

AREA, NATION	FIN	SPERM	HUMPBK	SEI	BRYDE'S	MINKE	GRAY	BOWHEAD	TOTAL
Member nations									
Aboriginal subsistence whaling									
W. Greenland, Denmark	7	0	6	0	0	116	0	0	129
E. Greenland, Denmark	0	0	0	0	0	2	0	0	2
Chukotka, Russia	0	0	0	0	0	0	107	0	107
Alaska, USA	0	0	0	0	0	0	1*	68	69
Illegal catches									
Korea	0	0	0	0	0	2	0	0	2
Special permit whaling									
Japan, coastal	0	0	0	0	0	128	0	0	128
NW Pacific, pelagic, Japan	0	0	0	135	0	43	0	0	178
Antarctic, pelagic, Japan	0	0	0	0	0	334	0	0	334
Whaling under objection									
NE Atlantic, Norway	0	0	0	0	0	454	0	0	454
Whaling under reservation									
W. Iceland, coastal	146**	0	0	0	0	0	0	0	146
Iceland	0	0	0	0	0	6	0	0	6
Non member nations reporting to IWC									
Non-commercial catches									
NE Canada	0	0	0	0	0	0	0	3	3
Unconfirmed reports									
Indonesia	0	15***	0	0	0	0	0	0	15***

**Unauthorized take*

***Two listed as fin whales were fin/blue hybrids.*

****Unofficial information*

2019

AREA, NATION	FIN	SPERM	HUMPBK	SEI	BRYDE'S	MINKE	GRAY	BOWHEAD	TOTAL
Member nations									
Aboriginal subsistence whaling									
W. Greenland, Denmark	8	0	4	0	0	160	0	0	172
E. Greenland, Denmark	0	0	0	0	0	11	0	0	11
Chukotka, Russia	0	0	0	0	0	0	137	1	138
W.Indies, St.Vincent & Grenadines	0	0	3	0	0	0	0	0	3
Alaska, USA	0	0	0	0	0	0	0	36	36
Illegal catches									
Korea	0	0	0	0	0	6	0	0	6
Special permit whaling									
Japan, coastal	0	0	0	0	0	79	0	0	79
Whaling under objection									
NE Atlantic, Norway	0	0	0	0	0	429	0	0	429
Non member nations reporting to IWC									
Commercial whaling									
Japan, coastal	0	0	0	0	0	33	0	0	33
NW Pacific, pelagic, Japan	0	0	0	25	187	11	0	0	223
Non-commercial catches									
NE Canada	0	0	0	0	0	0	0	4	4
Unconfirmed reports									
Indonesia	0	(18)*	0	0	0	0	0	0	(18)*

Notes: No catches by Iceland

** No information. 2016-8 average used.*

2020

AREA, NATION	FIN	SPERM	HUMPBK	SEI	BRYDE'S	MINKE	GRAY	BOWHEAD	TOTAL
Member nations									
Aboriginal subsistence whaling									
W. Greenland, Denmark	3	0	4	0	0	162	0	0	169
E. Greenland, Denmark	0	0	0	0	0	20	0	0	20
Chukotka, Russia	0	0	0	0	0	0	136	0	136
Alaska, USA	0	0	0	0	0	0	0	69	69
Illegal catches									
Korea	0	0	0	0	0	2	0	0	2
Whaling under objection									
NE Atlantic, Norway	0	0	0	0	0	503	0	0	503
Non member nations reporting to IWC									
Commercial whaling									
Japan, coastal	0	0	0	0	0	95	0	0	95
NW Pacific. Pelagic, Japan	0	0	0	25	187	0	0	0	212
Non-commercial catches									
NE Canada	0	0	0	0	0	0	0	1	1
Unconfirmed reports									
Indonesia	0	(18)*	0	0	0	0	0	0	(18)*

Notes: No catches by Iceland.
No catches by St Vincent & the Grenadines.

** No information. 2016-8 average used.*

WHALING
Catches in 2020 - 2021

2021

AREA, NATION	FIN	SPERM	HUMPBK	SEI	BRYDE'S	MINKE	GRAY	BOWHEAD	TOTAL
Member nations									
Aboriginal subsistence whaling									
W. Greenland, Denmark	2	0	5	0	0	177*	0	0	184
E. Greenland, Denmark	0	0	0	0	0	21	0	0	21
Chukotka, Russia	0	0	0	0	0	0	127	0	127
W.Indies, St.Vincent & Grenadines	0	0	1	0	0	0	0	0	1
Alaska, USA	0	0	0	0	0	0	0	70	70
Illegal catches									
Korea	0	0	0	0	0	12	0	0	12
Whaling under objection									
NE Atlantic, Norway	0	0	0	0	0	577	0	0	577
Whaling under reservation									
Iceland	0	0	0	0	0	1	0	0	1
Non member nations reporting to IWC									
Commercial whaling									
Japan, coastal	0	0	0	0	0	91	0	0	91
NW Pacific, pelagic, Japan	0	0	0	25	187	0	0	0	212
Non-commercial catches									
NE Canada	0	0	0	0	0	0	0	2	2
Unconfirmed reports									
Indonesia	0	(18)**	0	0	0	0	0	0	(18)**

**Inc. lost: 10 Mi*

***No information. 2016-8 average used.*

Research conducted with support from the Small Cetaceans Voluntary Fund, Malaysia.

FINANCE >

The financial statements for 2018, 19, 20 and 21 are reproduced below. The portion of 2022 relevant to this intersessional period will be included in the 2022 accounts, published on the IWC website at the beginning of 2023.

The IWC budget is always a key agenda item but, at its next meeting in October 2022, this will be particularly important as the Commission will need to decide how to achieve a balanced budget and end the practice of deficit budgets seen in recent years.

During this intersessional period, an intensive and consultative programme of budgetary reform has been undertaken and will be proposed to the Commission at its meeting in October 2022.

CORE FUNDING

The IWC's core funding comes from member government contributions. The core funds are allocated across three budgets:

- the Secretariat
- meetings of the Commission and the Scientific Committee
- Scientific Research

A Budgetary Sub-Committee (BSC) makes a recommendation on the distribution of funds and the Scientific Committee devise a workplan based on the amount allocated for Scientific Research. The spending proposals of both groups must be agreed by the Commission.

During this intersessional period, the BSC has engaged in an intensive and consultative programme to develop proposals for budgetary reform, aiming to prevent future deficit budgets and bring IWC's financial management in-line with international best practice. These proposals will be presented to the Commission at its meeting in 2022.

VOLUNTARY FUNDS

In recent years, the Commission has been able to increase efforts in particular areas of work thanks to a growing number of voluntary contributions from governments and non-governmental organisations. Some voluntary contributions are made in support of long-term workstreams and some are made to finance or co-finance a specific short-term project. In response to a request from the Commission, a formal fundraising strategy and accompanying workplan is also being developed and will be launched shortly. There are currently four formal voluntary funds.

Small Cetaceans Voluntary Fund

The Small Cetaceans Voluntary Fund (see above under *Science*) was established in response to threats facing a growing number of dolphin and porpoise species around the world, and in recognition of the IWC's expertise and potential to coordinate global responses.

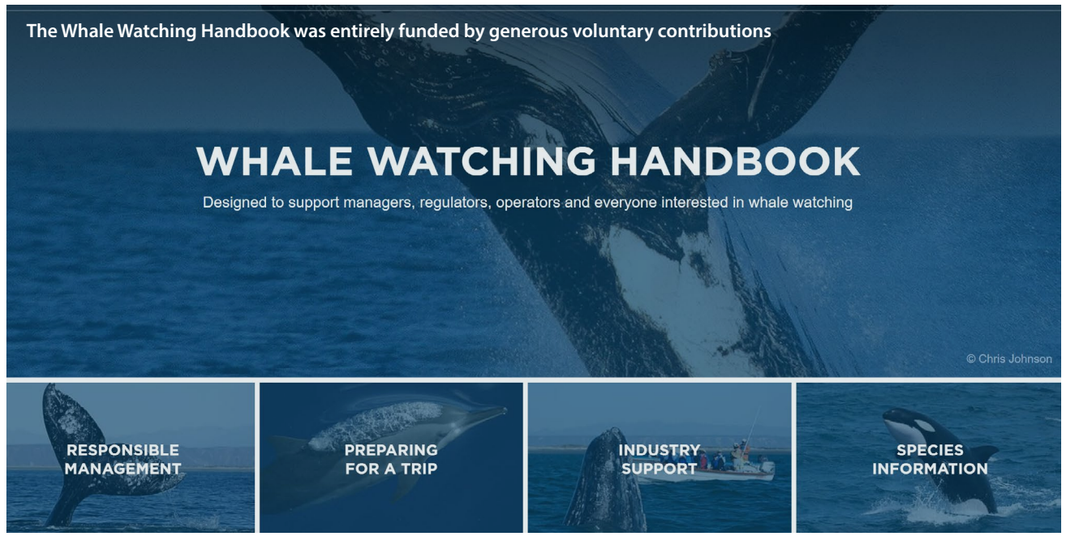
The fund supports research and capacity building, and has received contributions from governments and non-governmental organisations. Their continued support enables the IWC to issue periodic calls for new project funding applications. Some £650,000 has been made available since 2009. Twenty three projects have received funding in this period, and the energy and creativity invested in these projects by their proponents has shown how much can be achieved with relatively small sums of money.

IWC-Southern Ocean Research Partnership (IWC-SORP)

(Also see above under *Science*). IWC-SORP was established in 2009 as an integrated, collaborative consortium for cetacean research in the Southern Ocean. The partnership currently includes thirteen countries and new members are welcomed. Since the programme began, it has attracted a total of £1.1 M and participating scientists have used these funds to develop and apply powerful research methods including acoustics, satellite tagging and tracking, tissue sampling and genetics, as well as sophisticated analytical techniques. In this intersessional period, IWC-SORP received contributions of over £17,000.

Aboriginal Subsistence Whaling Fund

The Aboriginal Subsistence Whaling Fund was established in 2012 in order to assist subsistence communities in achieving compliance with IWC measures such as data collection and reporting processes, hunter safety, and weapons improvement programmes which minimise the time to death of hunted animals. Approximately £200,000 has been donated to this fund which is also used to support workshops developing proposals to improve Commission processes for handling Aboriginal Subsistence Whaling. These new processes were adopted by the Commission in 2018 (see above: *Whaling*).



Voluntary Conservation Fund

In 2014, a Voluntary Conservation Fund was established to support work on topics identified as high priorities in the Conservation Committee Strategic Plan. These include bycatch, sustainable whale watching, ship strikes, marine debris, ocean noise and climate change.

Potential projects are assessed by a steering group according to an agreed set of objectives with the overall aim of achieving healthy, well managed and recovered cetacean populations worldwide. During this intersessional period the fund received £515,000 with £324,000 focused on tackling bycatch, the single biggest threat to cetaceans today.

Voluntary Assistance Fund

Established in 2016, the purpose of the Voluntary Assistance Fund is to strengthen the capacity of governments of limited means to participate in IWC work. Since its introduction, £135,000 has been allocated for this purpose, supporting attendees at meetings of the Commission, Bureau and Scientific Committee.

Work continues to increase participation and engagement. One consequence of the Covid pandemic is the switch from in-person to virtual meetings which improved accessibility and enabled more people to attend events, attracting many newcomers to the IWC community. The IWC will be examining how some of the remote working methods necessitated by the pandemic might be incorporated into future practices to maximise the benefits of virtual participation.

INCOME & EXPENDITURE ACCOUNT 2018-19

INCOME	Period Ending 31 Dec 2019	Period Ending 31 Dec 2018
INCOME FROM CONTINUING OPERATIONS	**£**	**£**
Contributions from Member Governments	1,616,256	1,619,899
Interest on Overdue Financial Contributions	3,922	4,903
Voluntary Contributions	176,578	195,154
Observer Registration Fees	0	48,836
Staff Assessment	159,488	170,129
Interest Receivable	7,269	6,158
Miscellaneous Income	0	13,806
TOTAL INCOME	**1,963,513**	**2,058,885**

EXPENDITURE	Period Ending 31 Dec 2019	Period Ending 31 Dec 2018
CORE EXPENDITURE	**£**	**£**
Secretariat	(1,242,983)	(1,205,085)
Publications	(7,292)	(3,993)
Scientific Committee Meeting	(138,309)	(133,710)
Commission Meeting	(129,569)	(298,037)
Bureau Meeting	(16,943)	(1,450)
Research Expenditure	(231,557)	(317,481)
CORE EXPENDITURE SUB-TOTAL	**(1,766,655)**	**(1,959,756)**
FUND EXPENDITURE	**£**	**£**
Aboriginal Subsistence Whaling Fund	74	(76,925)
Conservation Fund	(71,831)	(85,021)
Gray Whale Tagging Fund	29	23
Other Work Fund	(57,062)	(122,699)
Red House Redevelopment Fund	188	152
Small Cetaceans Fund	(44,227)	(54,358)
SORP Fund	(356,452)	(40,029)
Sponsored Publications Fund	170	133
Voluntary Assistance Fund	(14,710)	(18,003)
FUND EXPENDITURE SUB-TOTAL	**(543,821)**	**(396,727)**

OTHER EXPENDITURE	£	£
Depreciation	(20,419)	(19,991)
Bad Debt Provision	(12,084)	(30,956)
OTHER EXPENDITURE SUB-TOTAL	**(32,503)**	**(50,947)**
TOTAL EXPENDITURE	**(2,342,979)**	**(2,407,431)**
SURPLUS / (DEFICIT) FOR THE YEAR BEFORE FUND MOVEMENTS	**(379,466)**	**(348,547)**

NET TRANSFERS (TO) / FROM FUNDS	£	£
Aboriginal Subsistence Whaling Fund	(7,926)	(64,541)
Conservation Fund	(32,957)	(8,937)
Gray Whale Tagging Fund	(29)	(23)
Meeting Fund	(7,791)	143,727
Other Work Fund	29,889	94,967
Red House Redevelopment Fund	14,783	1,414
Research Fund	(6,159)	176
Small Cetaceans Fund	44,227	11,626
Southern Ocean Research Partnership Fund	339,097	40,029
Sponsored Publications Fund	(170)	(133)
Voluntary Assistance Fund	6,501	1,159
NET SURPLUS / (DEFICIT) FOR THE YEAR	**0**	**0**

There are no recognised gains or losses for the current financial period and the preceding financial period, other than as stated in the Income and Expenditure statement.

FINANCE
Income & Expenditure 18-19

BALANCE SHEET 2018-19

BALANCE SHEET AS AT 31 DECEMBER 2019	2019	2018
LONG-TERM ASSETS	**£**	**£**
Land & Buildings	994,469	1,009,158
IT & Equipment	10,527	3,979
	1,004,996	**1,013,138**
SHORT-TERM ASSETS	**£**	**£**
Cash at Bank and In-Hand	1,000	1,000
Cash on Short-Term Deposit	2,320,401	2,787,432
	2,321,401	**2,788,432**
Outstanding Contributions from Member Governments	532,221	367,927
Less Provision for Doubtful Debts	(277,880)	(265,796)
	254,341	**102,131**
Other Debtors and Prepayments	134,410	84,755
	134,410	**84,755**
SHORT-TERM CREDITORS	**£**	**£**
Contracting Government Receipts in Advance and Other Creditors	(249,558)	(273,351)
	(249,558)	**(273,351)**
NET ASSETS	**3,465,589**	**3,715,105**

FINANCING	2019	2018
NON-EARMARKED FUNDS	**£**	**£**
General Fund	(1,954,490)	(1,954,490)
TOTAL NON-EARMARKED FUNDS	**(1,954,490)**	**(1,954,490)**
EARMARKED FUNDS	**£**	**£**
Aboriginal Subsistence Whaling Fund	(26,210)	(18,284)
Conservation Fund	(358,753)	(325,796)
Gray Whale Tagging Fund	(7,281)	(7,252)
Meeting Fund	(232,505)	(94,764)
Other Work Fund	(160,256)	(190,146)
Red House Redevelopment Fund	(32,044)	(46,827)
Research Fund	(239,748)	(233,589)
Small Cetaceans Fund	(59,498)	(103,726)
Southern Ocean Research Partnership Fund	(326,507)	(665,604)
Sponsored Publications Fund	(42,364)	(42,194)
Voluntary Assistance Fund	(25,932)	(32,433)
Total Earmarked Funds	**(1,511,098)**	**(1,760,615)**
NET FINANCING	**(3,465,589)**	**(3,715,105)**

FINANCE
Income & Expenditure 18-19

INCOME & EXPENDITURE ACCOUNT 2020-21

INCOME	Period Ending 31 Dec 2021	Period Ending 31 Dec 2020
INCOME FROM CONTINUING OPERATIONS	**£**	**£**
Contributions from Member Governments	1,617,312	1,609,731
Interest on Overdue Financial Contributions	7,897	3,651
Voluntary Contributions	161,376	356,423
Observer Registration Fees	0	0
Staff Assessment	148,327	156,797
Interest Receivable	(548)	5,912
Miscellaneous Income	1,275	0
TOTAL INCOME	**1,935,639**	**2,132,514**

EXPENDITURE	Period Ending 31 Dec 2021	Period Ending 31 Dec 2020
CORE EXPENDITURE	**£**	**£**
Secretariat	(1,312,081)	(1,219,944)
Publications	(1,893)	(1,207)
Scientific Committee Meeting	(8,693)	(55,569)
Commission Meeting	(9,444)	(2,017)
Bureau Meeting	(831)	(917)
Research Expenditure	(99,504)	(95,457)
CORE EXPENDITURE SUB-TOTAL	**(1,432,446)**	**(1,375,111)**
FUND EXPENDITURE	**£**	**£**
Aboriginal Subsistence Whaling Fund	(18,423)	(144,483)
Conservation Fund	(26,220)	(77,341)
Gray Whale Tagging Fund	0	(7,281)
Other Work Fund	(4,907)	(4,343)
Red House Redevelopment Fund	0	103
Small Cetaceans Fund	(940)	9,441
SORP Fund	(108,042)	(14,737)
Sponsored Publications Fund	0	136
Voluntary Assistance Fund	(48)	73
FUND EXPENDITURE SUB-TOTAL	**(158,581)**	**(238,432)**

OTHER EXPENDITURE	£	£
Depreciation	(20,404)	(22,746)
Bad Debt Provision	(153,104)	(104,283)
OTHER EXPENDITURE SUB-TOTAL	**(173,509)**	**(127,029)**
TOTAL EXPENDITURE	**(1,764,536)**	**(1,740,572)**
SURPLUS / (DEFICIT) FOR THE YEAR BEFORE FUND MOVEMENTS	**171,103**	**391,942**
NET TRANSFERS (TO) / FROM FUNDS	**£**	**£**
Aboriginal Subsistence Whaling Fund	(6,778)	(28,941)
Conservation Fund	(96,026)	(34,546)
Gray Whale Tagging Fund	0	7,281
Meeting Fund	(38,600)	(187,613)
Other Work Fund	4,907	(7,567)
Red House Redevelopment Fund	0	32,044
Research Fund	(126,896)	(136,620)
Small Cetaceans Fund	(15,801)	(35,105)
Southern Ocean Research Partnership Fund	108,042	14,737
Sponsored Publications Fund	0	(136)
Voluntary Assistance Fund	48	(27,345)
NET SURPLUS / (DEFICIT) FOR THE YEAR	**(0)**	**(11,867)**

There are no recognised gains or losses for the current financial period and the preceding financial period, other than as stated in the Income and Expenditure statement.

FINANCE
Income & Expenditure 20-21

FINANCE
Income & Expenditure 20-21

BALANCE SHEET 2020-21

BALANCE SHEET AS AT 31 DECEMBER 2019	2021	2020
LONG-TERM ASSETS	**£**	**£**
Land & Buildings	965,090	979,780
IT & Equipment	1,622	7,337
	966,713	**987,117**
SHORT-TERM ASSETS	**£**	**£**
Cash at Bank and In-Hand	1,000	1,000
Cash on Short-Term Deposit	2,977,487	2,610,721
	2,978,487	**2,611,721**
Outstanding Contributions from Member Governments	786,515	715,464
Less Provision for Doubtful Debts	(535,268)	(382,163)
	251,248	**333,301**
Other Debtors and Prepayments	135,757	159,956
	135,757	**159,956**
SHORT-TERM CREDITORS	**£**	**£**
Contracting Government Receipts in Advance and Other Creditors	(303,570)	(234,564)
	(303,570)	**(234,564)**
NET ASSETS	**4,028,634**	**3,857,532**

FINANCING	2021	2020
NON-EARMARKED FUNDS	**£**	**£**
General Fund	(1,942,624)	(1,942,624)
TOTAL NON-EARMARKED FUNDS	**(1,942,624)**	**(1,942,624)**
EARMARKED FUNDS	**£**	**£**
Aboriginal Subsistence Whaling Fund	(61,929)	(55,151)
Conservation Fund	(489,325)	(393,299)
Gray Whale Tagging Fund	0	0
Meeting Fund	(458,719)	(420,118)
Other Work Fund	(162,915)	(167,823)
Red House Redevelopment Fund	0	0
Research Fund	(503,263)	(376,367)
Small Cetaceans Fund	(110,404)	(94,603)
Southern Ocean Research Partnership Fund	(203,727)	(311,769)
Sponsored Publications Fund	(42,500)	(42,500)
Voluntary Assistance Fund	(53,229)	(53,277)
Total Earmarked Funds	**(2,086,010)**	**(1,914,908)**
NET FINANCING	**(4,028,634)**	**(3,857,532)**

Media survey the Plenary at an IWC meeting. Credit: IWC

GOVERNANCE & ADMINISTRATION >

The IWC's 88 member governments are responsible for agreeing and managing the diverse work of the organisation.

The legal framework of the IWC is the International Convention for the Regulation of Whaling, first signed by fifteen founding member governments in 1946. The Convention is made up of eleven Articles which set out its aims and jurisdiction, and establish the IWC as the organisation which will implement the Convention.

The Convention is accompanied by a Schedule which sets out the specific measures that the IWC has decided are necessary to deliver the aims of the Convention: to regulate whaling and conserve whale stocks. Unlike the Convention, which stands as it was drawn up in 1946, the Schedule is regularly amended by the IWC. Changes to the Schedule are made by consensus if all countries are able to agree. If not, proposed changes are put to a vote, with a three-quarters majority required to pass an amendment.
The Commission is also able to adopt Resolutions which can be passed by consensus or by vote. Unlike Schedule Amendments, Resolutions require a simple majority. They are not legally binding although they become public statements of the IWC. (See *Useful Links* below to read the Resolutions).

Any voting usually takes place at meetings of the Commission but postal votes can also be held intersessionally if required. The voting rights of each member government are linked to payment of their core contributions and any government in arrears risks losing their vote. (See also *Governance Reform* boxed text below).

GOVERNANCE CONT'D

In order to meet the Convention's overall aims of regulating whaling and conserving whales, the Commission manages the diverse programme of work outlined in this report, which today includes scientific research, management, conservation, global outreach and collaboration, and training and education.

2018 Commission meeting, Brazil. Credit: IWC

The organisational structure of the IWC has also evolved over the past seventy five years and work is now divided between six committees, and in turn between many more standing and ad hoc groups whose members come from the 88 member countries and observer organisations. (See below under *Commission Structure*).

Covid-19 notwithstanding, the Commission holds biennial meetings, usually hosted by one of the member governments. These comprise a series of committee meetings and a plenary meeting.

The large and diverse IWC work programme is drawn together by the committees who report to the whole Commission at plenary sessions. This is where decisions are taken and IWC policy is set, via Schedule Amendments, Resolutions, and acceptance of the recommendations made in the reports of each committee.

The Commission is supported by a Bureau of seven Commissioners who oversee progress during the intersessional period, respond to administrative requirements and prepare for the next biennial meeting.

The IWC is also supported by a Secretariat of twenty five full and part-time staff. The Secretariat provides a range of services and capabilities including financial management, facilitation of the work programmes established by the many committees and groups, organisation of meetings and workshops, and management of statistical data, IT services, publications and communications.

GOVERNANCE & ADMINISTRATION
Introduction

Governance Reform

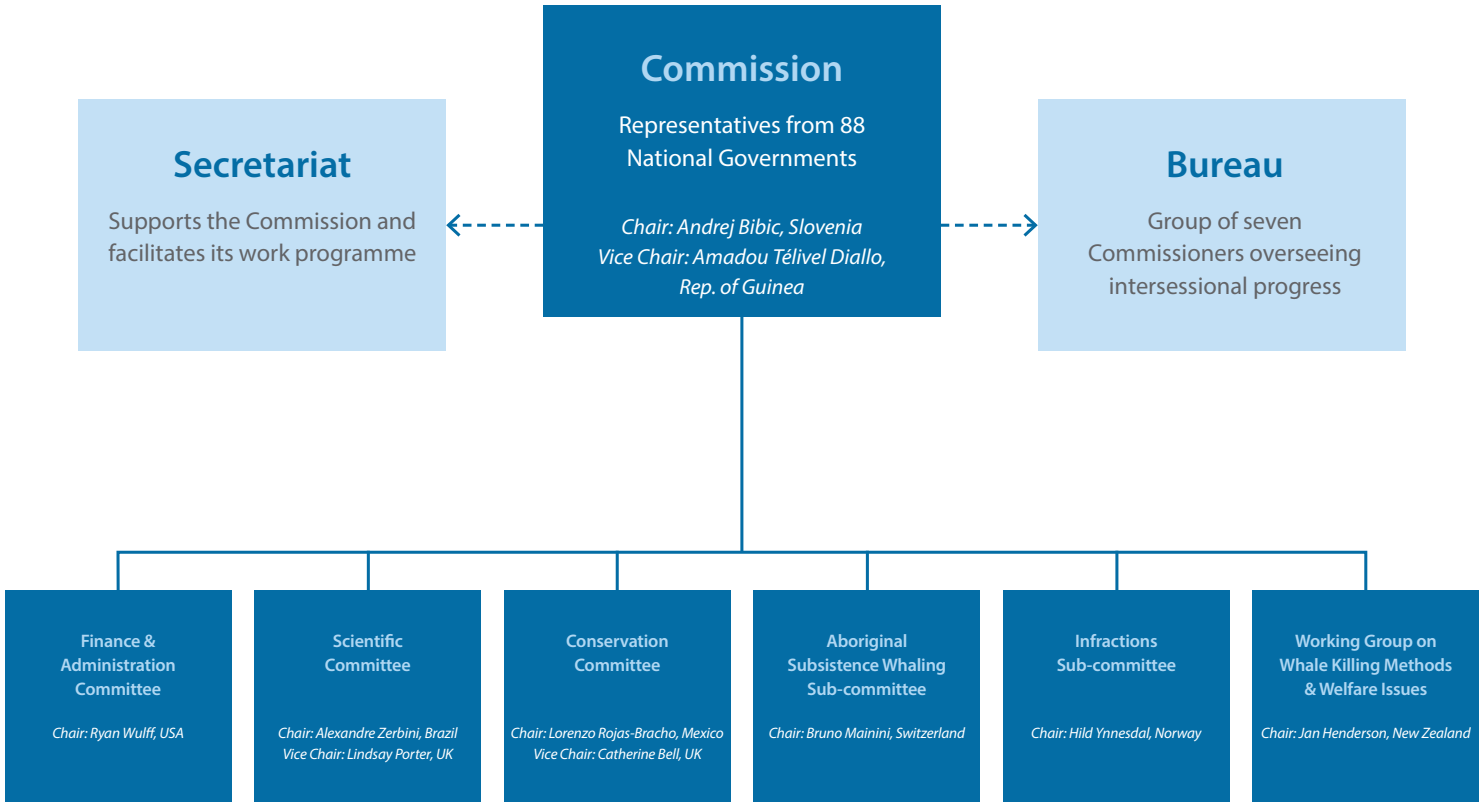
In 2016, the Commission began a programme of governance review and reform. An independent report was commissioned and formed the basis of a Resolution at the 2018 meeting which instigated a plan to implement governance reform. This work was undertaken by the Working Group on Operational Effectiveness (WG-OE) who have sought the widest possible engagement on proposals which will be presented at the Commission meeting in 2022.

Governance and Covid-19

The Covid pandemic created unprecedented financial pressures, exacerbated in developing countries. This has impacted on IWC payment schedules, arrears and voting status, and the WG-OE has also been tasked with developing proposals to help governments handle this unprecedented situation. The Commission agreed that this issue would be addressed at the earliest available opportunity, the beginning of its next meeting in October 2022, and no votes would be held until these discussions had been held.

IWC Meeting, Slovenia. Credit IWC

ORGANISATIONAL STRUCTURE



MEMBER GOVERNMENTS

A
Antigua & Barbuda
Argentina
Australia
Austria

B
Belgium
Belize
Benin
Brazil
Bulgaria

C
Cambodia
Cameroon
Chile
People's Republic of China
Colombia
Republic of Congo
Costa Rica
Côte d'Ivoire
Republic of Croatia
Cyprus
Czech Republic

D
Denmark
Dominica
Dominican Republic

E
Ecuador
Eritrea
Estonia

F
Finland
France

G
Gabon
The Gambia
Germany
Republic of Ghana
Grenada
Guinea-Bissau
Republic of Guinea

H
Hungary

I
Iceland
India
Ireland
Israel
Italy

K
Kenya
Kiribati
Republic of Korea

L
Laos
Lithuania
Luxembourg

M
Mali
Republic of the Marshall Islands
Mauritania
Mexico
Monaco
Mongolia
Morocco

N
Nauru
Netherlands
New Zealand
Nicaragua
Norway

O
Oman

P
Republic of Palau
Panama
Peru
Poland
Portugal

R
Romania
Russian Federation

S
San Marino
São Tomé and Príncipe
St Kitts and Nevis
St Lucia
St Vincent & The Grenadines
Senegal
Slovak Republic
Slovenia
Solomon Islands
South Africa
Spain
Suriname
Sweden
Switzerland

T
Tanzania
Togo
Tuvalu

U
UK
Uruguay
USA

Useful links

IWC website
Report of the Commission Meeting, 2018
Resolutions adopted at the 2018 Commission Meeting
Reports of the Scientific Committee: 2019, 2020, 2021, 2022
Journal of Cetacean Research and Management
Database of Recommendations

APPENDIX
References

REFERENCES: STATUS OF STOCKS, PP 12-15

1. Thomas, P. O., Reeves, R. R. & Brownell Jr., R. L. Status of the world's baleen whales. *Mar. Mammal Sci.* **32**, 682–734 (2016).
2. Kraus, S. D., Hamilton, P. K., Kenney, R. D., Knowlton, A. R. & Slay, C. K. Reproductive parameters of the North Atlantic right whale. *J Cetacean Res Manage* 231–236 (2020) doi:10.47536/jcrm.vi.285.
3. Rey-Iglesia, A., Martínez-Cedeira, J., López, A., Fernández, R. & Campos, P. F. The genetic history of whaling in the Cantabrian Sea during the 13th–18th centuries: Were North Atlantic right whales (Eubalaena glacialis) the main target species? *J. Archaeol. Sci. Rep.* **18**, 393–398 (2018).
4. Reeves, R. R., Smith, T. D. & Josephson, E. A. Near-annihilation of a species: right whaling in the North Atlantic. in *S.D. Kraus and R.M. Rolland (eds.), The Urban Whale: North Atlantic Right Whales at the Crossroads.* 39–74 (Harvard University Press, 2007).
5. Notarbartolo di Sciara, G., Politi, E., Bayed, A., Beaubrun, P.-C. & Knowlton, A. A winter cetacean survey off southern Morocco, with a special emphasis on right whales. *Rep. Int. Whal. Comm.* **48**, 547–550 (1998).
6. NMFS [National Marine Fisheries Service]. *NORTH ATLANTIC RIGHT WHALE (Eubalaena glacialis): Western Atlantic Stock*. 11–30 https://media.fisheries.noaa.gov/2021-07/f2020_AtlGmexSARs_RightWhale.pdf?null (2021).
7. Pace III, R. M. *Revisions and further evaluations of the right whale abundance model: improvements for hypothesis testing*. (2021).
8. Knowlton *et al.* The effect of entanglement severity on health in Northen Atlantic Right whales (Eubalaena glacialis). (2017).
9. Knowlton, A. R. & Kraus, S. D. Mortality and serious injury of northern right whales (Eubalaena glacialis) in the western North Atlantic Ocean. *J Cetacean Res Manage* 193–208 (2001) doi:10.47536/jcrm.vi.288.
10. Sills Jennifer, Taylor Stephanie, & Walker Tony R. North Atlantic right whales in danger. *Science* **358**, 730–731 (2017).
11. Hakamada, T. & Matsuoka, K. *The number of blue, fin, humpback, and North Pacific right whales in the western North Pacific in the JARPNII Offshore survey area.* (2016).
12. Matsuoka, K., Taylor, J., Yoshimua, I., Crance, J. & Kasai, H. *Cruise report of the 2017 IWC-Pacific Ocean Whale and Ecosystem Research (IWC-POWER). Unpubl. doc. submitted to Int. Whal. Comm. Scientific Committee (SC/67b/ASI/12).* 46 Available from International Whaling Commission, Cambridge, UK, at https://iwc.int/power . (2017).
13. Matsuoka, K., Taylor, J., Yoshimua, I., Crance, J. & Kasai, H. *Cruise report of the 2018 IWC-Pacific Ocean Whale and Ecosystem Research (IWC-POWER). Unpubl. doc. submitted to Int. Whal. Comm. Scientific Committee (SC/68a/ASI/04).* Available from International Whaling Commission, Cambridge, UK, at https://iwc.int/power . (2018).
14. Murase, H., Gilpatric, J. W., Yoshimura, I. & Eguchi, H. *Cruise report of the 2021 IWC-Pacific Ocean Whale and Ecosystem Research (IWC-POWER)*. 34 (2022).
15. Muto, M. M. *et al.* Alaska marine mammal stock assessments, 2020. NORTH PACIFIC RIGHT WHALE (Eubalaena japonica): Eastern North Pacific Stock. 254–263 (2021).
16. IWC. Report of the Workshop on the Comprehensive Assessment of Right Whales: A Worldwide Comparison. *J Cetacean Res Manage* 1–35 (2020) doi:10.47536/jcrm.vi.270.
17. Romero, M. A. *et al.* Historical reconstruction of the population dynamics of southern right whales in the southwestern Atlantic Ocean. *Sci. Rep.* **12**, 3324 (2022).
18. International Whaling Commission. Report of the IWC workshop on the assessment of Southern Right whales. *J Cetacean Res Manag Supp* 439–462 (2013).
19. Cooke, J. Report of the IWC Workshop on the Assessment of Southern Right Whales. Annex D. Southwest Atlantic right whales: interim updated population assessment from photo-id collected at Península Valdés, Argentina. *J Cetacean Res Manage Suppl* 462 (2013).
20. Brandão, Butterworth, D. S., Müller, A. & Best, P. B. *Application of a photo-identification based assessment model to southern right whales in South African waters*. (2012).
21. Carroll, E. L. *et al. Updated abundance and estimate of rate of increase for the New Zealand southern right whale*. https://iwc.int/private/downloads/pMqoWes-9FeGsySJ10-pcKg/S11-RW20.pdf.
22. Renault-Braga, E. P., Groch, K. R. & Simões-Lopes, P. C. *Numerical population estimates update for Southern Right Whales in Brazil*. Available from www.iwc.int (2021).
23. Vermeulen, E., Wilkinson, C. & Van den Berg, G. Report of the southern right whale aerial surveys - 2019. 27pp (2020).
24. Vermeulen, E., Wilkinson, C., van den Berg, G. & Paarman, S. Report of the southern right whale aerial surveys 2020. 25pp (2021).
25. Pike, D. G. *et al.* Estimates of the abundance of cetaceans in the Central North Atlantic from the T-NASS Icelandic and Faroese ship surveys conducted in 2007. *NAMMCO Sci. Publ.* **11**, (2019).
26. Hansen, R. G. *et al.* Abundance of Whales in West and East Greenland in Summer 2015. *NAMMCO Sci. Publ.* **11**, (2018).
27. Ramp, C., Sears, R. & St Lambert, Q. *Distribution, densities, and annual occurrence of individual blue whales (Balaenoptera musculus) in the Gulf of St. Lawrence, Canada from 1980-2008*. (Fisheries and Oceans Canada, Science, 2013).
28. NOAA. *BLUE WHALE (Balaenoptera musculus musculus): Western North Atlantic Stock*. (2019).
29. Sears, R. *et al.* Comparison of northwest Atlantic (NWA) and northeast Atlantic (NEA) blue whale (Balaenoptera musculus) photo-identification catalogues. in *21st Biennial Conference on the Biology of Marine Mammals* 13–18 (2015).
30. Ramp, C., Bérubé, M., Hagen, W. & Sears, R. Survival of adult blue whales Balaenoptera musculus in the Gulf of St. Lawrence, Canada. *Mar. Ecol. Prog. Ser.* **319**, 287–295 (2006).
31. Calambokidis, J. & Barlow, J. Updated abundance estimates for blue and humpback whales along the U.S. West Coast using data through 2018. (2020) doi:10.25923/zrth-8n96.
32. Monnahan, C. Population Trends of the Eastern North Pacific Blue Whale. (2014).
33. Monnahan, C. C., Branch, T. A. & Punt, A. E. Do ship strikes threaten the recovery of endangered eastern North Pacific blue whales? *Mar. Mammal Sci.* **31**, 279–297 (2015).
34. Branch, T. A., Matsuoka, K. & Miyashita, T. EVIDENCE FOR INCREASES IN ANTARCTIC BLUE WHALES BASED ON BAYESIAN MODELLING. *Mar. Mammal Sci.* **20**, 726–754 (2004).
35. Matsuoka, K. & Hakamada, T. Estimates of abundance and abundance trend of the blue, fin, and southern right whales in the Antarctic areas IIIE-VIW, south of 60° S, based on JARPA and JARPAII sighting data (1989/90 – 2009/09). *Pap. SCF14J05 Present. Sci. Comm. Int. Whal. Comm.* (2016).
36. Matsuoka, K., Hakamada, T., Kiwada, H., Murase, H. & Nishiwaki, S. Distributions and standardized abundance estimates for humpback, fin and blue whales in the Antarctic Areas IIIE, IV, V and VIW (35oE -145oW), south of 60oS. *IWC Pap. SCD06J7 Present. IWC Workshop JARPA Rev.* 33 (2006).
37. Branch, T. A., Mikhalev, Y. A. & Kato, H. Separating pygmy and Antarctic blue whales using long-forgotten ovarian data. *Mar. Mammal Sci.* **25**, 833–854 (2009).
38. Branch, T., Allison, C., Mikhalev, Y., Tormosov, D. & Brownell Jr, R. Historical catch series for Antarctic and pygmy blue whales. *Rep. SC60SH9 Sci. Comm. Int. Whal. Commision Available Req. Secr. Int. Whal. Comm. Red House* **135**, (2008).
39. Aguilar, A. & García-Vernet, R. Fin Whale: Balaenoptera physalus. in *Encyclopedia of Marine Mammals (Third Edition)* (eds. Würsig, B., Thewissen, J. G. M. & Kovacs, K. M.) 368–371 (Academic Press, 2018). doi:10.1016/B978-0-12-804327-1.00128-X.
40. Leonard, D. & Øien, N. Estimated Abundances of Cetacean Species in the Northeast Atlantic from Norwegian Shipboard Surveys Conducted in 2014–2018. *NAMMCO Sci. Publ.* **11**, (2020).
41. Hammond, P. *et al. Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys*. https://www.ascobans.org/en/document/estimates-cetacean-abundance-european-atlantic-waters-summer-2016-scans-iii-aerial-and (2017).
42. Schleimer, A. *et al.* Decline in abundance and apparent survival rates of fin whales (Balaenoptera physalus) in the northern Gulf of St. Lawrence. *Ecol. Evol.* **9**, 4231–4244 (2019).
43. Tort Castro, B., Prieto González, R., O'Callaghan, S. A., Dominguez Rein-Loring, P. & Degollada Bastos, E. Ship Strike Risk for Fin Whales (Balaenoptera physalus) Off the Garraf coast, Northwest Mediterranean Sea. *Front. Mar. Sci.* **9**, (2022).
44. Panigada, S. *et al.* Mediterranean fin whales at risk from fatal ship strikes. *Mar. Pollut. Bull.* **52**, 1287–1298 (2006).
45. Vaes, T. & Druon, J.-N. Mapping of potential risk of ship strike with fin whales in the Western Mediterranean Sea. *Rep. JRC Eur. Comm.* (2013).
46. Schoeman, R. P., Patterson-Abrolat, C. & Plön, S. A global review of vessel collisions with marine animals. *Front. Mar. Sci.* **7**, 292 (2020).

47. Winkler, C., Panigada, S., Murphy, S. & Ritter, F. Global Numbers of Ship Strikes: An Assessment of Collisions between Vessels and Cetaceans Using Available Data in the IWC Ship Strike Database. *Rep. Int. Whal. Comm.* **IWC/68B/SC HIM09**, 33p (2020).
48. Rone, B. K., Zerbini, A. N., Douglas, A. B., Weller, D. W. & Clapham, P. J. Abundance and distribution of cetaceans in the Gulf of Alaska. *Mar. Biol.* **164**, 23 (2016).
49. Friday, N. A., Zerbini, A. N., Waite, J. M., Moore, S. E. & Clapham, P. J. Cetacean distribution and abundance in relation to oceanographic domains on the eastern Bering Sea shelf, June and July of 2002, 2008, and 2010. *Underst. Ecosyst. Process. East. Bering Sea II* **94**, 244–256 (2013).
50. Committee on the status of Endangered Wildlife in Canada (COSEWIC). *COSEWIC Assessment and Status Report on the Fin Whale (Balaenoptera physalus), Atlantic population and Pacific population, in Canada 2019*. xv + 72 pp https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/fin-whale-atlantic-pacific-2019.html (2019).
51. Nadeem, K., Moore, J. E., Zhang, Y. & Chipman, H. Integrating population dynamics models and distance sampling data: a spatial hierarchical state-space approach. *Ecology* **97**, 1735–1745 (2016).
52. Herr, H. *et al.* Return of large fin whale feeding aggregations to historical whaling grounds in the Southern Ocean. *Sci. Rep.* **12**, 9458 (2022).
53. Rice, D. W. Sperm whale Physeter macrocephalus Linnaeus, 1758. *Handb. Mar. Mamm.* **4**, 177–233 (1989).
54. Whitehead, H. Estimates of the current global population size and historical trajectory for sperm whales. *Mar. Ecol. Prog. Ser.* **242**, 295–304 (2002).
55. Stewart, J. D. & Weller, D. W. Abundance of eastern North Pacific gray whales 2019/2020. *US Dep. Commer. NOAA Tech. Memo. NMFS-SWFSC-639* (2021).
56. Cooke, J. G. Population assessment update for Sakhalin gray whales. *IUCN West. GRAY WHALE ADVSORY PANEL* **WGWAP-21/13 (updated)**, 10p (2020).
57. Cooke, J. G. *et al.* Population assessment update for Sakhalin gray whales, with reference to stock identity. *Rep Int Whal Commn SC67a A* **17**, (2017).
58. Mead, J. G. & Mitchell, E. D. Atlantic gray whales. *Gray Whale Eschrichtius Robustus* 33–53 (1984).
59. Scheinin, A. P. *et al.* Gray whale (Eschrichtius robustus) in the Mediterranean Sea: anomalous event or early sign of climate-driven distribution change? *Mar. Biodivers. Rec.* **4**, e28 (2011).
60. Elwen, S. & Gridley, T. Gray whale (Eschrichtius robustus) sighting in Namibia (SE Atlantic) - first record for Southern Hemisphere. in vol. Paper SC/65a/BRG30 (Scientific Committee of the International Whaling Commission, 2013).
61. Constantine, R., Iwata, T., Nieukirk, S. L. & Penry, G. S. Future Directions in Research on Bryde's Whales. *Front. Mar. Sci.* **5**, (2018).
62. Kato, H. & Perrin, W. F. Bryde's whale: Balaenoptera edeni. in *Encyclopedia of marine mammals* 143–145 (Elsevier, 2018).
63. Cooke, J. G. & Brownell Jr, R. L. *Balaenoptera edeni. The IUCN Red List of Threatened Species 2018: e.T2476A50349178*. https://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T2476A50349178.en (2018).
64. Hakamada, T., Takahashi, M., Matsuoka, K. & Miyashita, T. *Abundance estimate for western North Pacific Brydes whale by sub-areas based on IWC-POWER and JARPNII sighting surveys.* 18 (2017).
65. Hakamada, T., Matsuoka, K. & Miyashita, T. Updated g(0) estimate for western North Pacific Bryde's whales and its application to previous abundance estimates. *SC/67b/ASI/15rev2* 10 (2018).
66. Cooke, J. G. *Balaenoptera borealis. The IUCN Red List of Threatened Species 2018: e.T2475A130482064*. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T2475A130482064.en (2018).
67. Pike, D. G. *et al.* Estimates of the Abundance of Cetaceans in the Central North Atlantic from the T-NASS Icelandic and Faroese Ship Surveys Conducted in 2007. *NAMMCO Sci. Publ.* **11**, (2020).
68. Heide-Jørgensen, M. P., Simon, M. & LAIDRE, K. Estimates of large whale abundance in Greenland waters from a ship-based survey in 2005. *J. Cetacean Res. Manag.* **9**, 95–104 (2008).
69. Committee on the status of Endangered Wildlife in Canada (COSEWIC). *COSEWIC Assessment and Status Report on the Sei Whale (Balaenoptera borealis), Atlantic population, in Canada 2019*. xv +48 pp https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/sei-whale-2019.html (2019).
70. Hakamada, T. & Matsuoka, K. Abundance estimate for sei whales in the North Pacific based on sighting data obtained during IWC-POWER surveys in 2010-2012. *IWC SC Pap.* **SC/66a/IA12**, (2015).
71. Barlow, J. *Cetacean abundance in the California current estimated from ship-based line-transect surveys in 1991-2014*. 63 (2016).

72. Acevedo, J. *et al.* Occurrence of Sei Whales (Balaenoptera borealis) in the Magellan Strait from 2004-2015, Chile. *Aquatic Mammals* vol. 43 63–72 (2017).
73. Frans, V. F. & Augé, A. A. Use of local ecological knowledge to investigate endangered baleen whale recovery in the Falkland Islands. *Biol. Conserv.* **202**, 127–137 (2016).
74. Español-Jiménez, S., Bahamonde, P. A., Chiang, G. & Häussermann, V. Discovering sounds in Patagonia: characterizing sei whale (*Balaenoptera borealis*) downsweeps in the south-eastern Pacific Ocean. *Ocean Sci.* **15**, 75–82 (2019).
75. Weir, C. R., Taylor, M., Jelbes, P. A. Q., Stanworth, A. & Hammond, P. S. Distribution and abundance of sei whales off the west coast of the Falkland Islands. *Mar. Mammal Sci.* **37**, 919–933 (2021).
76. Horwood, J. W. *Biology and exploitation of the minke whale*. (CRC Press, 1989).
77. International Whaling Commission. Annex G: Report of the Sub-Committee on In-Depth Assessments Journal of Cetacean Research and Management (Supplement). *J. Cetacean Res. Manag. Suppl.* 195–213 (2013).
78. Risch, D., Norris, T., Curnock, M. & Friedlaender, A. Common and Antarctic Minke Whales: Conservation Status and Future Research Directions. *Front. Mar. Sci.* **6**, (2019).
79. Solvang, H. K., Skaug, H. & Oien, N. I. Abundance estimates of common minke whales in the Northeast Atlantic based on survey data collected over the period 2014-2019. *IWC* **SC/68C/ASI/04**, (2021).
80. Pike, D. G., Gunnlaugsson, T., Víkingsson, G. & Mikkelsen, B. *Estimates of the abundance of minke whales (Balaenoptera acutorostrata) from the T-NASS Icelandic and Faroese ship surveys conducted in 2007*. (2010).
81. Pike, D. G., Gunnlaugsson, T. & Vikingson, G. A. *Icelandic aerial survey 2009: Survey report and a preliminary abundance estimate for minke whales.* 35 file://192.168.1.60/Statistics/Abundance-Tabs&Refs/NA-Mi/PikeEtAl-2011-SC18-AESP15.pdf (2011).
82. BØthun, G., Skaug, H. & Øien, N. Abundance of minke whales in the Northeast Atlantic based on survey data collected over the period 2002-2007. (2009).
83. National Marine Fisheries Service (NMFS). *Guidelines for preparing stock assessment reports pursuant to the 1994 amendments to the Marine Mammal Protection Act*. 23 https://www.fisheries.noaa.gov/national/marine-mammal-protection/guidelines-assessing-marine-mammalstocks. (2016).
84. Park, K.-J. *et al. Abundance Estimation of Common Minke Whales in the Yellow Sea using the Korean Sighting Data in 2011*. 4 file://192.168.1.60/Statistics/Abundance-Tabs&Refs/NP-Mi/ParkEtAl-2012-SC64-NPM7.pdf (2012).
85. An, Y.-R., Park, K.-J., Choi, S.-G., Kim, H.-W. & Moon, D.-Y. *ABUNDANCE ESTIMATION OF WESTERN NORTH PACIFIC MINKE WHALES USING THE KOREAN SIGHTING SURVEY IN 2010*. 4 file://192.168.1.60/Statistics/Abundance-Tabs&Refs/NP-Mi/AnEtAl-2011-SC63-RMP28.pdf (2011).
86. Miyashita, T., Okamura, H. & Kitakado, T. *Abundance of J-stock common minke whales in the Sea of Japan using the Japanese sighting data with g(0)=1*. (2009).
87. Miyashita, T. & Okamura, H. *Abundance estimates of common minke whales using the Japanese dedicated sighting survey data for RMP Implementation and CLA – Sea of Japan and Sea of Okhotsk*. 34 \\192.168.1.60\Statistics\Abundance-Tabs&Refs\NP-Mi\Miyashita&Okamura-2011-SC63-RMP11.doc (2011).
88. Hakamada, T., Katsumata, T., Takahashi, M. & Matsuoka, K. *Common minke whale abundance estimates based on dedicated sighting surveys during 2013-2018*. 9 file://192.168.1.60/Statistics/Abundance-Tabs&Refs/NP-Mi/HakamadaEtAl-2019-SC68A_ASI_14_rev1.pdf (2019).
89. Allison, C. IWC summary catch database Version 7.1. (2020).
90. Baker, C. S., Lento, G. M., Cipriano, F. & Palumbi, S. R. Predicted decline of protected whales based on molecular genetic monitoring of Japanese and Korean markets. *Proc. Biol. Sci.* **267**, 1191–1199 (2000).
91. Kim, Z. G., An, Y.-R., Sohn, H. & Baik, C. I. Characteristics of minke whale (Balaenoptera acutorostrata) by-catch in Korean waters. *J Korean Fish Soc* **6**, 173–182 (2004).
92. Song, K.-J., Kim, Z. G., Zhang, C. I. & Kim, Y. H. Fishing gears involved in entanglements of minke whales (Balaenoptera acutorostrata) in the East Sea of Korea. *Mar. Mammal Sci.* **26**, 282–295 (2010).
93. Song, K.-J. Current stock situation and measures for the management and conservation of minke whales (Balaenoptera acutorostrata) in Korean waters. *Ocean Coast. Manag.* **119**, 164–168 (2016).
94. Knowlton, A. R. *et al.* Effects of fishing rope strength on the severity of large whale entanglements. *Conserv. Biol.* **30**, 318–328 (2016).
95. NMFS [National Marine Fisheries Service]. *MINKE WHALE (Balaenoptera acutorostrata scammoni): California/Oregon/Washington Stock*. 203–206 https://media.fisheries.noaa.gov/dam-migration/po2016_miw-cow_(1)_-_508_final.pdf (2016).

96. Zerbini, A. N., Waite, J. M., Laake, J. L. & Wade, P. R. Abundance, trends and distribution of baleen whales off Western Alaska and the central Aleutian Islands. *Deep Sea Res. Part Oceanogr. Res. Pap.* **53**, 1772–1790 (2006).
97. NMFS [National Marine Fisheries Service]. *MINKE WHALE (Balaenoptera acutorostrata scammoni): Hawaii Stock*. 352–354 https://media.fisheries.noaa.gov/2021-08/2020-Pacific-SARS-minke.pdf (2021).
98. Muto, M. M. *et al.* MINKE WHALE (Balaenoptera acutorostrata): Alaska Stock In Alaska Marine Mammal Stock Assessments, 2018. 239–241 (2019) doi:10.25923/15rp-p193.
99. Clapham, P. J. Humpback Whale: Megaptera novaeangliae. in *Encyclopedia of Marine Mammals (Third Edition)* (eds. Würsig, B., Thewissen, J. G. M. & Kovacs, K. M.) 489–492 (Academic Press, 2018). doi:10.1016/B978-0-12-804327-1.00154-0.
100. Leonard, D. & Øien, N. Estimated Abundances of Cetacean Species in the Northeast Atlantic from Two Multiyear Surveys Conducted by Norwegian Vessels between 2002–2013. *NAMMCO Sci. Publ.* **11**, (2020).
101. Lawson, J. & Gosselin, J.-F. *Estimates of cetacean abundance from the 2016 NAISS aerial surveys of eastern Canadian waters, with a comparison to estimates from the 2007 TNASS*. (2018).
102. Heide-Jørgensen, M. & Laidre, K. Surfacing time, availability bias and abundance of humpback whales in West Greenland. *J. Cetacean Res. Manag.* **15**, 1–8 (2015).
103. Heide-Jørgensen, M. *et al.* Rate of increase and current abundance of humpback whales in West Greenland. *J. Cetacean Res. Manag.* **12**, 1–14 (2012).
104. Barlow, J. *et al.* Humpback whale abundance in the North Pacific estimated by photographic capture-recapture with bias correction from simulation studies. *Mar. Mammal Sci.* **27**, 793–818 (2011).
105. Muto, M. M. *et al.* HUMPBACK WHALE (Megaptera novaeangliae): Western North Pacific Stock. 254–263 (2021).
106. Calambokidis, J. *et al.* SPLASH: Structure of populations, levels of abundance and status of humpback whales in the North Pacific. *Unpubl. Rep. Submitt. Cascadia Res. Collect. USDOC Seattle WA Contract AB133F-03-RP-0078 Available Author* (2008).
107. Wade, P. R. Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas. 32pp (2021).
108. Zerbini, A. N. *et al.* Assessing the recovery of an Antarctic predator from historical exploitation. *R. Soc. Open Sci.* **6**, 190368.
109. Branch, T. A. Humpback whale abundance south of 60°S from three complete circumpolar sets of surveys. *J Cetacean Res Manage* 53–69 (2011) doi:10.47536/jcrm.vi.305.
110. Pallin, L. J. *et al.* High pregnancy rates in humpback whales (Megaptera novaeangliae) around the Western Antarctic Peninsula, evidence of a rapidly growing population. *R. Soc. Open Sci.* **5**, 180017.
111. Salgado Kent, C., Jenner, K., Jenner, M., Bouchet, P. & Rexstad, E. Southern Hemisphere Breeding Stock 'D' Humpback Whale Population Estimates from North West Cape, Western Australia. *J. Cetacean Res. Manag.* **12**, 29–38 (2012).
112. H. Forestell, P., D. Kaufman, G. & Chaloupka, M. Long term trends in abundance of humpback whales in Hervey Bay, Australia. *J Cetacean Res Manage* 237–241 (2011) doi:10.47536/jcrm.vi.321.
113. Noad, M. J., Kniest, E. & Dunlop, R. A. Boom to bust? Implications for the continued rapid growth of the eastern Australian humpback whale population despite recovery. *Popul. Ecol.* **61**, 198–209 (2019).
114. Noad, M., Paton, D. & Cato, D. Absolute and relative abundance of Australian east coast humpback whales Megaptera novaeangliae. (2006).
115. Johnston, S. J., Zerbini, A. N. & Butterworth, D. S. A Bayesian approach to assess the status of Southern Hemipshere humpback whales (Megaptera novaeangliae) with an application to Breeding Stock G. *J Cetacean Res Manage* 309–317 (2011) doi:10.47536/jcrm.vi.302.
116. Ward, E., Zerbini, A. N., Kinas, P. G., Engel, M. H. & Andriolo, A. Estimates of population growth rates of humpback whales (Megaptera novaeangliae) in the wintering grounds off the coast of Brazil (Breeding Stock A). *J Cetacean Res Manage* 145–149 (2011) doi:10.47536/jcrm.vi3.323.
117. International Whaling Commission. Report of the Scientific Committee. Annex H. Report of the Sub-Committee on Other Southern Hemisphere Whale Stocks. *J. Cetacean Res. Manag. Suppl.* **17**, 250–282 (2016).
118. Collins, T. *et al.* Estimates of abundance for humpback whales in Gabon between 2001-2006 using photographic and genotypic data. *SC/62/SH11* (2010).
119. Bortolotto GA, Danilewicz D, Hammond PS, Thomas L, & Zerbini AN. Whale distribution in a breeding area: spatial models of habitat use and abundance of western South Atlantic humpback whales. *Mar. Ecol. Prog. Ser.* **585**, 213–227 (2017).
120. Barendse, J. *et al.* Transit station or destination? Attendance patterns, movements and abundance estimate of humpback whales off west South Africa from photographic and genotypic matching. *Afr. J. Mar. Sci.* **33**, 353–373 (2012).
121. Cerchio, S. *et al.* Updated estimates of abundance for humpback whale breeding stock C3 off Madagascar, 2000-2006. *SC/61/SH7* (2009).
122. Garrigue, C., Albertson & Jackson, J. A. An anomalous increase in the New Caledonia humpback whales breeding sub-stock E2. *SC/64/SH06* (2012).
123. Constantine R *et al.* Abundance of humpback whales in Oceania using photo-identification and microsatellite genotyping. *Mar. Ecol. Prog. Ser.* **453**, 249–261 (2012).
124. Monnahan, C. C. *et al.* Population trends for humpback whales (Megaptera novaeangliae) foraging in the Francisco Coloane Coastal-Marine Protected Area, Magellan Strait, Chile. *Mar. Mammal Sci.* **35**, 1212–1231 (2019).
125. Minton, G. *et al.* Seasonal distribution, abundance, habitat use and population identity of humpback whales in Oman. *J Cetacean Res Manage* 185–198 (2011) doi:10.47536/jcrm.vi3.329.
126. George, J. C., Druckenmiller, M. L., Laidre, K. L., Suydam, R. & Person, B. Bowhead whale body condition and links to summer sea ice and upwelling in the Beaufort Sea. *Synth. Arct. Res. SOAR* **136**, 250–262 (2015).
127. Givens, G. H. *et al.* Horvitz–Thompson whale abundance estimation adjusting for uncertain recapture, temporal availability variation, and intermittent effort. *Environmetrics* vol. 27 134–46 (2016).
128. Givens, G. H. *et al.* Correcting the 2019 survey abundance of Bering-Chukchi-Beaufort Seas bowhead whales for disturbance from powered skiffs. 18pp (2021).
129. Doniol-Valcroze, T. *et al. Abundance estimate of the Eastern Canada-West Greenland bowhead whale population based on the 2013 High Arctic Cetacean Survey*. (Canadian Science Advisory Secretariat (CSAS), 2015).
130. Doniol-Valcroze, T. *et al.* Distribution and Abundance of the Eastern Canada – West Greenland Bowhead Whale Population Based on the 2013 High Arctic Cetacean Survey. *NAMMCO Sci. Publ.* **11**, (2020).
131. Givens, G. H. & Heide-Jørgensen, M. P. Chapter 6 - Abundance. in *The Bowhead Whale* (eds. George, J. C. & Thewissen, J. G. M.) 77–86 (Academic Press, 2021). doi:10.1016/B978-0-12-818969-6.00006-6.
132. Cooke, J. G. *et al.* Updated estimates of population and trend for Okhotsk Sea bowhead whales. 7 (2017).
133. Vacquié-Garcia J *et al.* Late summer distribution and abundance of ice-associated whales in the Norwegian High Arctic. *Endanger. Species Res.* **32**, 59–70 (2017).

APPENDIX
References

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