

Report of the Scientific Committee (SC69A)

Bled, Slovenia

24 April - 6 May 2023

1. INTRODUCTORY ITEMS

The 2023 meeting of the Scientific Committee (henceforth 'Committee' or 'SC') was held 24 April to 6 May 2023 in Bled, Slovenia. This was the first in-person Committee meeting since 2019 (SC68A) due to the global coronavirus pandemic (COVID-19). The Chair (Zerbini) and vice-Chair (Porter) of the SC worked with the sub-group Convenors and the Secretariat to plan the SC meeting and two pre-meetings.

1.1 Chair's welcome and opening remarks

The Chair welcomed participants to the meeting and thanked delegates for their willingness to meet virtually for the past three years to ensure the SC continued to provide scientific advice to the Commission. The Chair also thanked the Secretariat for its work in preparing for this meeting. He expressed his gratitude to the vice-Chair, all Convenors and co-Convenors, including those of the intersessional correspondence groups, for their *pro bono* assistance in preparation for this meeting, which was very much appreciated.

The Executive Secretary, Lent, thanked the Committee Chair and vice-Chair as well as the Convenors, rapporteurs and all participants for their efforts to advance the work of the SC over the challenging pandemic years. Lent took the opportunity to introduce members of the Secretariat staff.

The list of meeting participants is given as Annex A. This year 254 participants and 31 member countries were represented.

1.2 Remembrances

The Committee remembered colleagues who have passed away since SC68D.

1.2.1 Kenneth Balcomb

Kenneth Balcomb died on 15 December 2022 at the age of 82. Ken grew up in Albuquerque, New Mexico, before moving to California in 1951, where he graduated with a degree in Zoology from the University of California in 1963. He worked as a field biologist for government agencies and served in the US Navy where he achieved the rank of lieutenant. Ken's killer whale work continues through the Centre for Whale Research in Friday Harbour, Washington, which he founded in 1976. The surveys which Ken began alongside Michael Bigg helped pioneer a new technique for killer whale photo-ID which remains a standard methodology. While Ken was not a member of the SC, his ground-breaking work, along with key Canadian researchers, formed the basis for much of the small cetacean discussions that have taken place since the 1980s. Ken was a fierce advocate for southern resident killer whales and was involved with protecting cetaceans from marine noise, including military sonar. His systematic collection of data during an atypical mass stranding of Cuvier's beaked whales in the Bahamas during 2000 helped direct the subsequent scientific and policy focus towards the impact of military sonar on cetaceans.

1.2.2 Bill Perrin

Bill Perrin passed away in July 2022 at the age of 83. He spent 45 years as a research biologist for the National Marine Fisheries Service (NMFS) in San Diego. As a member of the SC, Bill was particularly active in developing the work of the standing sub-committee on small cetaceans, which he chaired for two terms (1979-84, 1987-90). He organised two special meetings of the SC in La Jolla and edited two state-of-the-art volumes (see Perrin *et al.*, 1984; 1994). Bill was particularly interested in the Bryde's whale complex because of specimens he collected in the Philippines with his wife, Louella. He frequently contributed to the SC's work on genetics, scientific permits and assessment of commercial hunting in various parts of the western North Pacific.

Bill was also an astute listener. He brought disputing parties together by tactfully suggesting acceptable text, which he was able to craft by listening to the real problems and finding creative compromise. He provided informal advice to many SC colleagues, often acting as a conciliator to help resolve disagreements. He was equally trusted by all parties and his opinion highly respected.

1.2.3 Gísli Víkingsson

Gísli passed away while on holiday with his family in Italy in July 2022 at the age of 65. Gísli was the Head of Cetacean Research at the Marine and Freshwater Research Institute of Iceland, a pioneer of the biology and ecology of large whales in Icelandic waters and beyond. Gísli held a degree in behavioural ecology from the University of Copenhagen, Denmark, where he studied the behaviour of geese, and a doctorate in marine biology from the University of Tromsø, Norway, where he studied the effects of climate change on large whales in the North Atlantic.

Gísli began whale research in Iceland in 1986 at the Marine Research Institute and continued until his death. His research was expansive, including reproduction, growth, feeding and consumption, distribution, movements and abundance, bycatch, pollution and climate change. Gísli was an important contributor to the SC, known for his warmth, calm and polite persona. Thanks to his wonderful sense of humour, Gísli was one of the entertainers of the Committee, never hesitating to charm with a concert whenever he encountered a piano or accordion. He even appeared on several Icelandic post-punk albums, some of which have reached cult status.

1.2.4 Mike Donoghue

Michael Donoghue was born in 1949 and died in November 2022 after a major stroke. Mike worked for many years as a fisherman in the Hauraki Gulf of New Zealand. After earning a Bachelor's degree in Zoology and a Master's degree in Oceanography from the University of Southampton, Mike joined the New Zealand Department of Conservation in 1987 where he led the development of marine mammal policy. His many duties involved the management of whale strandings and bycatch mitigation efforts, notably the endangered Māui and Hector's dolphins. Mike also led successful efforts to establish marine mammal sanctuaries in the Banks Peninsula and sub-Antarctic Auckland Islands.

For over 20 years, Mike provided scientific advice to New Zealand's Commissioners. During this time, he attended 22 Annual Meetings of the Commission and also led the New Zealand delegation to SC meetings for several years. He effectively promoted New Zealand's strong anti-whaling policy while aiming to improve governance of the Convention and maintain dialogue with pro-whaling nations.

Mike was a tireless and effective advocate for the ocean. In addition to his other professional initiatives, Mike was a founding member of the South Pacific Whale Research Consortium. The Consortium promotes non-lethal research across the South Pacific and has been responsible for establishing numerous whale sanctuaries in the region. Mike's extensive knowledge of the island nations in this region was key to his success and his contribution cannot be overstated.

1.2.5 Bernard Lynch

Bernard Lynch worked for the Secretariat for 25 years until his retirement in 2011. He was responsible for Secretariat logistics and arranging IWC meetings, which he ran with military precision given his earlier life in the British Army Parachute Regiment. He was a very proud Scotsman, regularly seen at IWC functions in his traditional kilt and sporran. He loved historical trivia and was an entertaining raconteur and bon viveur.

1.2.6 Daphne Ransom

Daphne Ransom passed away peacefully in December 2022. She worked for the Secretariat from its very beginning in 1976, until her retirement in 2005. Growing up in Histon, she was familiar with the Red House a long time before its use as the Office of the IWC, back when it was the administrative offices and canteen for Chivers' Jam. Her duties at the Secretariat mainly fell under the finance department, but she worked closely with all staff and was renowned for her discretion and attention to detail. Not a penny went missing under Daphne's watchful eye.

The Committee paused in silence and respect for these colleagues.

1.3 Appointment of rapporteurs

Members of the Secretariat, led by Staniland, were appointed as rapporteurs for Plenary Items to be assisted by various members of the SC as appropriate. Sub-committee Convenors appointed rapporteurs for their meetings (see Item 1.5).

1.4 Meeting procedures and schedules

Participants were given access to a comprehensive set of documents which detailed the structure and organisation of the SC and its meetings. The Chair outlined the meeting arrangements, comprising eight sub-committee days with the capacity to run five fixed time slots across three simultaneous sessions each day. In addition, there were four days dedicated to Plenary sessions; one at the start and three at the end of the meeting. A timetable was regularly updated on the virtual document centre (SharePoint).

1.5 Establishment of sub-committees and Working Groups (WGs)

Table 1 lists the 16 sub-groups of the Committee, including the relevant Convenor and co-Convenors. The Chair expressed gratitude for the commitment of these individuals, without who the Committee could not advance its work.

2. ADOPTION OF THE AGENDA

The adopted agenda is given as Annex B.

3. REVIEW OF AVAILABLE DATA, DOCUMENTS AND REPORTS

3.1 Documents submitted

A list of documents is given as Annex C.

Table 1
Sub-groups and Convenors for 2023.

| Sub-committee/Working Group name | Convenor | Co-Convenor |
|---|-----------|--------------------|
| <i>Ad hoc</i> Working group on photo-ID (PH) ¹ | Olson | |
| Standing Working Group on abundance estimates, stock status and international cruises (ASI) | Givens | New |
| <i>Ad hoc</i> Working Group on sanctuaries (SAN) | Parsons | Rojas-Bracho |
| <i>Ad hoc</i> Working Group on databases and related issues (GDR) | Double | |
| Sub-committee on Implementation Simulation Trials (IST) | Donovan | Wilberg |
| Sub-committee on Aboriginal Subsistence Whaling (ASW) | Walløe | Nelson |
| Working Group on stock definition and DNA testing (SD-DNA) | Lang | Tiedemann |
| Sub-committee on In-depth Assessments (IA) | Palka | |
| Sub-committee on the other Northern Hemisphere whale stocks (NH) | Cholewiak | Robbins |
| Sub-committee on the other Southern Hemisphere whale stocks (SH) | Bell | Herr |
| Sub-committee on Conservation Management Plans (CMP) | Brownell | Weller |
| Sub-committee on non-deliberate human-induced mortality of cetaceans (HIM) | Leaper | Minton |
| Sub-committee on environmental concerns (E) | DeMaster | Genov |
| Standing Working Group on ecosystem modelling (EM) | Kitakado | Ferguson and Kelly |
| Sub-committee on small cetaceans (SM) | Porter | Trujillo |
| Sub-committee on whale watching (WW) | Suydam | Urban-Rámirez |

¹PH did not hold any dedicated sessions during SC69A. PH agenda items were dealt with by other sub-groups.

3.2 National Progress Reports on research

The Commission requires all member nations to provide Progress Reports to the Committee. The National Progress Reports (NPRs) have their origin in Article VIII paragraph 3 of the Convention and Scientific Committee Rule of Procedure E.1.

As agreed at the 2012 Annual Meeting, NPRs should be submitted electronically through the [IWC Progress Reports data portal](#)¹. The Secretariat is working to improve the online process to facilitate the submission of data. Countries were reminded on 22 March 2023 (IWC.ALL.446) of the critical importance of providing NPRs and any data relevant to the work of the Commission. The Secretariat reported that it had received 15 NPRs (16% of Contracting Governments) prior to the SC meeting (Argentina, Australia, Brazil, Colombia Germany, Iceland, Mexico, Netherlands, New Zealand, Panama, Peru, South Africa, Spain, UK and USA). On 8 April 2023, the Secretariat sent a survey to Commissioners and Heads of Delegation to investigate the reasons for the low reporting rate and to collect feedback on how to better facilitate data submission. By the end of SC69A, nine survey responses had been received. The survey will remain open until 4 June 2023. The Secretariat welcomes any suggestions or feedback from all countries.

3.3 Data collection, storage and manipulation

3.3.1 Catch data and other statistical material

Table 2 lists data received by the Secretariat since the previous SC meeting (SC68D). A summary of large whale catches from the 2022 season can be found in SC/69A/O/04.

3.3.2 Progress of data coding projects and computing tasks

The Table of Assessed Abundance Estimates has been updated since SC68D. Following Commission approval of the 2023 SC report, the 2023 assessments will be added. Computing programmes for the assessment of Southern Hemisphere (SH) humpback whales were received. Work has focused on updating the control programme for the North Pacific common minke whale trials (see Item 8.1.3).

3.4 Guidance for the format of recommendations and discussion of Recommendations Database

The Secretariat provided an update on the Database of Recommendations (DoR) and noted it contains almost 3,000 recommendations, with approximately 1,200 from the SC. The remainder derive from the previous two Commission meetings, including its other Committees, Resolutions and a further 16 SC and Conservation Committee (CC) workshops. Resolutions from 2000-11 are in quarantine awaiting final checks.

Sub-committees were asked to review their recommendations and consult with the Secretariat to compile lists of recommendations for closure. Three options were agreed to determine whether a recommendation should be closed:

- (1) the recommendation has been superseded;
- (2) the recommendation's action has been completed; or
- (3) the recommendation is to 'draw attention' which means there is no required action beyond the Commission's endorsement of the report.

¹<https://portal.iwc.int/login>.

Delegates were invited to consult the Secretariat about updating and/or drafting recommendations and/or the database as a whole.

3.5 Review of Commission Resolutions from 2022

At IWC68 the Commission adopted by consensus 2022-1 Resolution on Marine Plastic Pollution. The SC has been requested 'to develop an approach to be considered by the IWC that can assess the current knowledge of the impact of marine plastic pollution on cetaceans and thus could provide a global risk assessment that identifies "hotspots" of cetacean exposure to plastic debris'. In addition, the Committee, the IWC CC and WG on Whale Killing Methods and Welfare Issues were requested to 'consider engaging in, as appropriate, pilot projects of other organisations or entities on marking of gear used in fishing activities that lead to cetacean entanglement'.

The Committee received a presentation by researchers at Exeter University to address issues related to marine plastic pollution and marine megafauna. The Committee's sub-groups were asked to consider how their work might contribute to addressing this Resolution (see relevant annexes). A full costed plan will be developed at SC69B ready for consideration at IWC69.

4. COOPERATION WITH OTHER ORGANISATIONS

4.1 Summary of Secretariat cooperation with other organisations

Reports of observers representing the Committee at the meetings of other international organisations are provided in SC/69A/O/02.

The Commission, the SC and CC have each adopted numerous recommendations to strengthen engagement with other organisations. The Secretariat, in collaboration with members of the SC, CC and Standing Working Groups (SWGs), has been working to fulfil this mandate whilst also exploring additional engagement opportunities. As the COVID-19 pandemic subsides, the Secretariat, CC and SC have been able to engage more fully with other IGOs as in-person meetings have resumed. Staff time and travel funds continue to restrict the Secretariat, particularly given the cuts agreed at IWC68. This increases the need to establish priorities for engagement and arrange representation by other means, such as virtual participation (which remains feasible for some IGOs) and engaging members of the IWC community - particularly those

Table 2
List of data and programmes received by the Secretariat since SC68B.

| Date received | From | IWC ref | Description |
|------------------------|---|----------------|--|
| CATCHES | | | |
| Large whales | | | |
| <i>Members</i> | | | |
| 26/03/23 | Russia: D. Litovka | E152 Cat2022 | Individual data from Russia aboriginal hunt 2022. |
| 31/03/23 | INF2022-Korea | E155-INF-IWC69 | Infractions report from Korea 2022. |
| 11/04/23 | Iceland: Guðjón Már Sigurðsson | E152 Cat2022 | Individual records of fin whales caught by Iceland in 2022. |
| 12/04/23 | Norway: N. Øien | E152 Cat2022 | Individual minke records from the Norwegian 2022 commercial catch. |
| 13/04/23 | USA: Catch data | E152 Cat2022 | Individual records from USA Alaska aboriginal bowhead hunt 2022 (see SC/69A/ASW/02). |
| 13/04/23 | St. Vincent and The Grenadines: J. Cruickshank-Howard | E152 Cat2022 | Individual records from the St. Vincent and The Grenadines aboriginal hunt 2022-23. |
| 18/04/23 | Greenland: M. Dorph | E152 Cat2022 | Individual records from the Greenland Aboriginal hunt in 2022. |
| <i>Non-members</i> | | | |
| 31/03/23 | Japan: M. Kadota | E152 Cat2022 | Individual records for commercial catches by Japan in the North Pacific in 2022. |
| 18/04/23 | Canada: R. Apro | E152 Cat2022 | Details of the Canadian bowhead harvest for the 2022 season. |
| Historical data | | | |
| 29/09/22 | Conor Ryan | E149 | Scottish landings: location data. |
| 17/04/23 | T. Branch, J. McClure | E157 | Species identification; Sei/Bryde's whale data off Australia. |
| Small cetaceans | | | |
| 13/02/23 | NAMMCO - Secretariat | E156 | NAMMCO - DB updated Feb 23. Summarises catches per country. |
| 14/04/23 | USA: J.J. Citta | E152 Cat2022 | Summary of beluga catches in Alaska 2018-22 from the Alaska Beluga Whale Committees. |
| SIGHTINGS | | | |
| 30/03/23 | Japan: K. Matsuoka | E154 | 2022 POWER sightings cruise data. |
| PROGRAMMES | | | |
| 30/03/23 | S. Holloway | | Assessment of humpback whales Breeding Stocks C and G. |
| 31/01/23 | A. Ross-Gillespie | | Assessment of humpback whales Breeding Stock B. |

who already have delegations at relevant meetings. The Secretariat regularly updates both Contracting Governments and observers on relevant activities in other IGOs, including requests for assistance ahead of IWC engagement, whether by the Secretariat or member country representatives.

The Chair expressed his appreciation on behalf of the Committee for the work of the observers when representing the SC at other fora and reporting back to the group. He requested SC members who are aware of, or participate in, any other relevant IGOs or additional meetings to provide reports to the Committee.

The Chair welcomed Salvador, Executive Secretary of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), who emphasised the longstanding collaboration between the IWC and ACCOBAMS. ACCOBAMS's work focuses on key threats, such as underwater noise, bycatch, ship strikes and pollution. Its SC includes experts from the IWC (Donovan is the SC-designated lead), Convention of Migratory Species (CMS), International Union for Conservation of Nature (IUCN) and the Mediterranean Science Commission (CIESM). The IWC General Principles for Whale Watching have been welcomed and shared by ACCOBAMS to inform and update its guidelines for commercial whale watching in the ACCOBAMS area.

5. GENERAL ASSESSMENT AND MODELLING ISSUES

Issues related to the 'Status of Stocks Initiative' are now dealt with by ASI (see Annex D). Issues related to r_{max} for small cetaceans are dealt with by HIM (see Annex J) and were also addressed at the pre-meeting on Hector's and Māui dolphin modelling (SC/69A/REP/04). The Committee **agrees** to keep Hector's and Māui dolphins on the agenda for SC69B in case new issues arise.

6. AWMP AND RMP IMPLEMENTATION-RELATED MATTERS

The primary tasks of the IST sub-committee this year were to: (1) undertake the Implementation Review (IR) for North Atlantic fin whales (of relevance to both the Aboriginal Whaling Management Procedure, AWMP and the Revised Management Procedure, RMP); (2) ensure the Committee is able to provide advice on ASW hunts to the Commission in 2024; and (3) consider the implications of the Commission's decision to adopt biennial meetings after 2024 (see Annex L).

6.1 Implementation Review of North Atlantic fin whales

The primary objectives of an AWMP and an RMP IR are to:

- (1) review new information (including data relevant to stock structure, biological data and abundance) to ascertain whether the present situation is as expected (i.e., within the space tested during the development of a Strike Limit Algorithm (SLA), previous RMP or IR) and to determine whether new simulation trials are required to ensure the Commission's conservation objectives are met; and
- (2) review information required for the SLA or Catch Limit Algorithm (CLA) (i.e., catch data) and new abundance estimates when available (note that new abundance estimates may be received outside an IR at an Annual Meeting).²

The current IR is relevant to West Greenland (AWMP) and Iceland (RMP) (IWC, 2022a, item 6.3, p.18). Information on stock structure, abundance and removals was reported and discussed (Annex L, items 3.1-3.3), including operating models/control programme updating.

Attention: SC, ASW, Commission

*After reviewing available information, the Committee **agrees** there is no need for additional simulation trials and therefore the Implementation Review (IR) for North Atlantic fin whales has been completed. The next IR (potentially 2029) will take advantage of work done by the group established under SD-DNA (Annex O) to focus in particular on stock structure issues.*

6.2 Plan for provision of AWS advice to the Commission in 2024

6.2.1 Consideration of gray whale hunts in the light of new information

The models developed and fitted during the Gray Whale Rangewide Review formed the most recent basis for evaluating whether the Gray Whale SLA and Makah Management Plan could achieve the Commission's conservation and management objectives for ASW. These operating models include multiple areas in the North Pacific along with several alternative stock structure hypotheses. Elevated strandings along the eastern North Pacific (ENP) migration route (termed an Unusual Mortality Event (UME) under US guidelines) and abundance declines since the completion of the Rangewide Review in 2018 (see Annex D) are indicative of a second mortality event starting in 2019 that may be coming to an end (SC/69A/IST/01). Discussion focused on consideration of whether - and if so, when - the set of scenarios used to evaluate the performance of both the Gray Whale SLA and Makah Management Plan need to be revised to take account of new information on expected magnitude and frequency of these events.

²More information on RMP Implementations and Implementation Reviews can be found in IWC (2012b) and for the AWMP in IWC (2019b).

Several sub-groups within the Committee considered new biological information for ENP gray whales. The ASW sub-committee discussed the UME and its potential causes and the major reduction in abundance (see Annex E). The SD-DNA WG discussed new information on stock structure (Bierlich *et al.*, 2023), but made no suggestions for changes to the present range of stock structure hypotheses (see Annex O, item 2.5). The ASI WG reviewed and endorsed the 2022 abundance estimate for ENP gray whales and the revised time-series of estimates of abundance for 1998-2020 for the Pacific Coast Feeding Group (PCFG) (see Annex D, item 2.5). New abundance estimates are expected for at least 2022/23 for the ENP and 2021/22 for the PCFG. It is hoped that abundance estimates can also be provided in the coming year for 2023/24 for the ENP and 2023 for the PCFG.

To provide insight into the implications of the UME and recent abundance estimates, SC/69A/IST/01 developed new operating models which included a mortality event during 2019-22 (continuing into 2023) for the Northern Feeding Group (NFG) and new abundance data. Trials were conducted for major stock structure hypotheses with exploration of sensitivity to changes in assumptions related to the frequency of episodic events and allowance for an additional mortality event in the PCFG. These operating models were used to conduct projections under the Gray Whale SLA and Makah Management Plan using these new scenarios related to possible future mortality events.

6.2.2 Conclusions, recommendations and workplan

This new information on abundance and stock structure does not suggest that the trials developed for ENP gray whales are outside the tested parameter space in these aspects. However, the recent UME for the ENP is outside the tested space, in terms of frequency, size and duration, to that incorporated into the episodic events scenarios examined during the Gray Whale Rangewide Review and previous IRs. The scenarios examined in SC/69A/IST/01, while not the full set of trials examined during the last IR, captured more frequent, longer and more severe episodic events. The projections reported in SC/69A/IST/01 suggest the Gray Whale SLA and Makah Management Plan are robust to a wider set of scenarios than that considered during the evaluation of the Makah Management Plan.

Attention: SC, ASW, CG-USA

*After considerable discussion as to the timing of the next IR for ENP gray whales, including whether a special IR is warranted (see IWC, 2019b, Annex E, item 4.1.2, for definitions and guidelines relating to special IR), the Committee **recommends**:*

- (1) *intersessional work under a steering group is undertaken to extend the approach used in SC/69A/IST/01 to further investigate robustness to allow conclusions to be reached in 2024 with respect to 'episodic events' and provision of Committee management advice;*
- (2) *while planning has already begun, the best time to hold the next IR is in 2026 when two more abundance estimates will be available - plans for that IR, including budget requirements, will be finalised at SC69B;*
- (3) *every effort is made to provide new ENP and PCFG abundance estimates for review by the Committee at SC69B; and*
- (4) *the USA should continue the annual gray whale counts and produce abundance estimates for the Committee to review as soon as possible.*

6.2.3 Other hunts

The Committee examined its ability to provide advice on the other hunts where SLAs are used and **agrees** it will be able to provide the advice required by the Commission in 2024 (see Table 3). An aerial survey will take place in West Greenland in Summer 2024 with the expectation that an abundance estimate for North Atlantic fin whales will be ready for submission to the Committee in 2025. The implications of this for biennial meetings is discussed under Item 6.4.

6.3 Progress on previous recommendations

The Committee reviewed the recommendations within the IWC DoR and provided advice to the Secretariat on outcomes and closure. All previous recommendations will be closed.

6.4 Long-term workplan

6.4.1 Implications of biennial meetings

The Commission imposes requirements on: (1) governments and hunter organisations seeking ASW quotas; (2) how and when the Committee provides advice on ASW catch limits. These requirements were developed when the Committee held annual meetings. Last year, the Committee informed the Commission of the challenges caused by a move to biennial meetings (IWC, 2022a, Item 6.5).

At IWC68, the Commission agreed that SC meetings would occur in 2023, 2024 and at least biennially thereafter. In light of this change, the Commission directed the Committee to prioritise ASW-related topics to ensure the SC can continue to provide advice in years when strike limits are reviewed (IWC, 2022b, Item 13.1). The IST sub-committee spent considerable time discussing the implications of the Commission's decision (see Annex L, item 6 for more details). These discussions and conclusions are summarised below:

Table 3

Summary of availability of information to provide advice to the Commission in 2024 and beyond showing potential timings of IRs under different resource scenarios and assumptions about the time required. Note: the years in columns 3 and 4 represent the earliest time that an IR would begin. Results of IRs would be endorsed by the full Committee only during even years once the Committee moves to biennial meetings.

| Species/stock | Implementation (and subsequent IRs) completed | Next planned IR (w/ four meetings per biennium ¹) | Next planned IR w/ only biennial SC (one meeting per biennium ²) | Year of last approved abundance estimate | Removals data up to date |
|--|---|---|--|---|--------------------------|
| West Greenland humpback whales (AWMP) | 2014 | 2024 (+10) | 2024 (+10) | 2015 | Yes |
| Eastern North Pacific gray whales (AWMP) | 2004 (2010, 2013, 2020) | Plan 2024, start 2025, complete ~2026 (+6) | Plan 2024, start 2026, complete ~2028 (+8) | 2022 | Yes |
| BCB bowhead whales (AWMP) | 2000 (2007, 2012, 2018) | 2026 (+8) | 2028 (+10) | 2019 | Yes |
| West Greenland bowhead whales (AWMP) | 2015 (2022) | 2027 (+5) | 2030 (+8) | 2022 | Yes |
| Common minke whales off Greenland (AWMP) | 2019, 2022 | 2028 (+6) | 2032 (+10) | 2015 (subareas CG and WG) | Yes |
| North Atlantic common minke whales (RMP) | 1993 (2003, 2008, 2017, 2022) | 2028 (+6) | 2034 (+12) | Subareas E+CM for period 2014-2019; subarea ES 2019 | Yes |
| North Atlantic fin whales (AWMP, RMP) | 2009 (2016, 2023) | 2029 (+6) | 2036 (+13) | 2015 (subareas EG, EI/F, N, WG, WI) | Yes |

¹Four meetings per biennium=first year with one in-person SC meeting and one in-person intersessional meeting and second year with two in-person intersessional meetings (this is the current situation for the IST sub-committee that allows the completion of ca. one IR per year). Numbers in brackets in each cell represent how many years since the last Implementation.

²This column reflects only one in-person meeting (i.e., one in-person SC meeting) during the biennium and no intersessional meetings.

- (1) *Abundance estimates are required at least every 10 years.* A successful abundance survey is not considered to have 'occurred' until the resulting abundance estimate is endorsed by the Committee. Following endorsement, the 10-year time window is deemed to have begun in the year when the survey was conducted. The Aboriginal Whaling Scheme (AWS) includes a 'grace period' provision designed to allow for factors related to *inter alia* field conditions, rather than the timing of SC meetings. For example, an abundance estimate for several West Greenland stocks will be ready for Committee approval in 2025 (the survey is 2024). Without a mechanism to obtain endorsement in 2025, these hunts will formally invoke the 'grace period,' implying a technical violation beyond the control of the AWS country.
- (2) *IRs are 'normally' required every five to six years by the AWS.*³ IRs do not have to (and normally will not) coincide with catch limit renewal years. For practical reasons, the Committee tries to work on only one IR at a time. Each IR normally requires one to two SC meetings (usually with intersessional workshops). Complex IRs may take much longer (e.g., three SC meetings and two workshops). While this was a reasonable timeframe with annual Committee meetings, a move to biennial meetings will substantially extend the time required to conduct IRs (see Table 3). Any request for a Special IR will likely interfere with the timing of other IRs.
- (3) *What comprises a full Committee meeting/provision of advice?* The formal provision of advice to the Commission must come from the SC. If meetings are biennial, this could preclude timely provision of important advice (e.g., the provision of a required abundance estimate, such as the West Greenland example above) or endorsement of advice through an IR.

6.4.2 Situation post-2024

Timely and reliable advice to the Commission on ASW hunts has two main components: (1) regular IRs (normally every five to six years); and (2) agreed abundance estimates every 10 years. As noted above, the number of SC meetings and workshops is variable and often unpredictable. Table 3 summarises the information available to provide advice to the Commission in 2024 and beyond, showing potential timings of IRs under different resource scenarios and assumptions about the time required.

To maintain the regular schedule of IRs (in the context of biennial meetings, consideration might be given to modifying the AWS text to 'normally six to eight years'), the Committee **stresses** provision must be made to allow for intersessional workshops, which may require experts from SD-DNA, ASI and IST, especially to cope with (hopefully rare) situations for which new simulation trials are likely required. This has resource implications, both for finances and personnel, which the Commission must face if it intends to fulfil its expressed commitment to fully support the provision of Committee advice for management of aboriginal subsistence whaling.

³The AWS allows for Special Implementation Reviews under exceptional circumstances, e.g., 'if information be presented to suggest there is a possibility that the Commission's conservation objectives may not be met' (IWC, 2019b, p.181).

Attention: SC, Commission

While the Committee must justify requests for intersessional workshops related to IRs and the provision of ASW advice, the Committee **recommends** that the Commission should develop an approach which ensures necessary ASW work can be funded in a prompt manner if the situation arises under a biennial scheme. One approach is to 'ring-fence' funds within the SC budget (c.f., 'AWMP Developers' Fund' created and approved by the Commission during SLA development) to be available under agreed circumstances. There would need to be an intersessional system for these funds to be accessed (e.g., a Steering Group).

The Committee has frequently pointed out the difficulties it faces with the lack of alignment between approval of the budget by the Commission (usually in the Northern Hemisphere Autumn), the Commission's financial year (starting 1 January) and the timing of SC meetings (usually the Northern Hemisphere Spring). In worst-case scenarios, this means the Committee must squeeze any work it funds into the short period between 1 January and roughly 20 April, which may exacerbate the problems of maintaining a proper schedule of IRs. An approach as outlined above would address this problem.

Depending on ASW timing requirements and Committee biennial meetings, consideration should also be given to a mechanism for exceptional Committee consideration and approval of intersessional work (related to both IRs and necessary supporting science as provided by SD-DNA and ASI/Abundance Steering Group (ASG) in years when the Committee does not meet. For example, by 'electronic post' as used in the recent virtual meetings and most the recent Committee report, for which the IST sections were the result of a separate in-person meeting and agreement was reached between the Heads of Delegation via an electronic procedure.

Attention: SC, C, S

The Committee **expresses concern** over the move to biennial meetings and the inability of the Committee to provide thorough and timely advice on ASW hunts, unless an effective and flexible mechanism is developed. It notes that this issue is also of relevance to other aspects of Committee work. The Committee **recommends** that the Secretariat, the Commission's F&A Committee and ASW Sub-Committee work intersessionally to develop a fair and effective mechanism to address these issues at the Commission's 2024 meeting.

7. STOCKS SUBJECT TO ABORIGINAL SUBSISTENCE WHALING

7.1 New information and progress on recommendations

7.1.1 Eastern Canada/West Greenland bowhead whales

The Canadian government provided information on the subsistence hunt of Eastern Canada-West Greenland (EC-WG) bowhead whales within the Nunavut Settlement Area (NSA) and the Nunavik Marine Region (NMR) where three of a possible seven whales were reported taken in 2022. The Committee **thanks** Canada for providing this information and **welcomes** Canadian participants at future meetings.

For 2022, the Committee received a fully corrected abundance estimate of 888 (CV 0.46) bowhead whales for West Greenland where one bowhead whale was taken (no samples obtained). 50 biopsies were obtained from bowhead whales in Disko Bay.

The Committee notes that an annual review of management advice was not required and **agrees** that the information provided does not require an early IR.

7.1.2 Bering-Chukchi-Beaufort Seas bowhead whales

The Committee received information that no bowhead whales were taken from Russian waters during 2022. The 2022 summary of the Alaskan native subsistence harvest reported 68 bowhead whales struck, of which 53 were landed (27 males and 26 females, including two pregnant and six presumed mature). In 2022, the numbers of whales struck and landed were both higher than averages for the previous 10 years, while the efficiency (number landed/number struck) of the hunt (78%) was consistent with the average for the past 10 years. As usual, the hunting efficiency during spring (68%) was lower than autumn (93%) due to logistical difficulties associated with sea-ice and water conditions. Fifteen whales were struck and lost in 2022; four due to equipment malfunction, six swam into or under the ice, four sank and one for an unknown reason.

Carcass data and probable causes of death for Bering-Chukchi-Beaufort (BCB) sea bowhead whales collected in 2019 during aerial surveys in the eastern Chukchi (EC) and western Beaufort (WB) seas were presented to the Committee. No carcasses were associated with aboriginal subsistence hunting. The number of documented carcasses in 2019 was higher than in annual reports for 2009-18 and most were categorised as probable killer whale predation. These results are valuable for evaluating future trends in mortality, concurrent with rapid oceanographic changes and increases in anthropogenic activities.

The winter sea-ice extent in the Bering Sea was thought to be largely decoupled from Arctic declines until 2017-19. During these years, the traditional winter range of BCB bowhead whales was mostly devoid of sea-ice. Bowhead whales were tagged during 2009-19 (27 prior to ice declines and seven after ice declines). Data shows that the winter range of tagged bowhead whales shifted north with the retreating ice edge, with significant overwintering north of Bering Strait. Overwintering in the Chukchi Sea is expected to become more common as winter sea-ice declines in the Bering Sea.

The Committee **welcomes** the new information on bowhead whales and notes that an annual review of management advice is not required. The Committee **agrees** that the new information provided does not require an early IR. The next AWMP IR of the Alaskan and Chukotka bowhead whale hunt is scheduled to commence in 2026. The IR was initially planned for 2025 but has been moved to 2026 due to the situation with gray whales (see Item 7.1.3).

7.1.3 North Pacific gray whales

Information on the 2022 subsistence hunt of gray whales in Russia was presented to the Committee, noting that the Association of Indigenous Peoples of Chukotka distributed the Russian part of the block quota among 16 local communities involved in whaling. A total of 124 tries (strikes) for gray whales were used and 119 whales were landed. Sex was identified in 123 of these strikes, with two so-called 'stinky' gray whales among those landed.

Mean body length of gray whales taken was 10.6m with mean body weight 13.6 tons (compared with 10.4m and 13.4 tons in 2021). No lactating or pregnant females were taken. Around 20 of the landed whales had various injuries and traumas, mainly caused by killer whale interactions.

Gray whales constitute an important part of the diet of the Chukotka native population. To investigate the problem of some whales having a bad smell and taste, various tissues of normal and stinky whales collected in 2020-21 were analysed using headspace solid phase micro-extraction with gas chromatography and mass spectrometry (Polyakova *et al.*, 2023). The most probable cause of the unpleasant smell is 2,6-dibromophenol which has a strong odour matching the odour of stinky whales. Quantitative results demonstrated levels were up to 500 times higher in stinky whale tissues than other gray whales. The source of 2,6-dibromophenol is likely polychaetes, producing 2,6- dibromophenol and colonising near shore waters where whales feed.

The Committee received updated abundance estimates for gray whales from the PCFG, a small group of ENP gray whales recognised by the SC as demonstrating strong seasonal fidelity to the Pacific Northwest. As of 2020, the PCFG abundance is estimated to be 212 individuals (SE=17.9).

Information was presented to the Committee on the rate of anthropogenic and killer whale scarring on live PCFG gray whales observed in northwest Washington between 2014-20. Observed rates were compared to scarring of Sakhalin Island gray whales due to anthropogenic sources (Bradford *et al.*, 2009) and killer whale interactions (Weller *et al.*, 2018). The finding of no significant differences in scarring from anthropogenic sources between PCFG and Sakhalin Island whales suggests that whales in the two regions likely have similar mortality rates from non-hunting anthropogenic sources. Information on killer whale and gray whale interactions in eastern Chukchi Sea between 2009-19 showed that, out of a total of 56 gray whale carcasses, the majority (41) had injuries consistent with probable killer whale predation.

The Committee received six reports of UMEs occurring in the years 2019-22 for ENP gray whales.⁴ Such events are characterised by a high number of strandings, declining body condition, low calf counts and a lower abundance estimate compared with years before the event. A similar high mortality event has been documented for ENP gray whales for the years 1999-2000.

One report (Eguchi *et al.*, 2022a) updated the series of abundance estimates obtained from visual survey data collected off central California which began in 1967. The 2022 estimate (16,650 whales, 95% CI 15,170-18,335) is approximately 40% lower than the 2016 estimate, indicating a severe decline in abundance.

Studies of body condition in the wintering lagoons of Baja, Mexico, have documented a significant decline since 2018. Observations in Laguna San Ignacio and the Bahía Magdalena complex were characterised by declining body condition, low calf counts and higher mortality rates. See SC/69A/CMP/21.

Eguchi *et al.* (2022b) provided estimates on ENP gray whale calf production from 1994-2022. The estimate of total calf production in 2022 was 217 - the lowest estimate since the survey began. Reproductive rates of ENP gray whales have been very low for the past four years, with calf production estimates in 2019 and 2021 being some of the lowest in the time series. Two previous periods of low calf production each lasted for three to four years (1999-2001 and 2007-10). Two of these three periods coincided with UMEs (1999-2000 and 2019-22) with corresponding declines in abundance.

An updated assessment of all known reports of gray whale non-hunting, human-caused injuries and mortalities (NHHCIM) during 1924-2021 showed the primary sources of NHHCIM are entanglements and ship strikes (see SC/69A/IST/02). During 2017-21, there was an average of 14.3 NHHCIM per year - substantially more than 9.9 NHHCIM per year between 2012-16.

⁴The literal meaning is given to Unusual Mortality Event (UME), not as defined by the National Oceanic and Atmospheric Administration (NOAA) Fisheries: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-unusual-mortality-events>.

From 17 December 2018 to 5 April 2023, a total of 638 ENP gray whales stranded along the Pacific coast of North America across three countries (Canada, USA and Mexico). 216 whales were reported in 2019, 172 in 2020, 115 in 2021, 105 in 2022 and 30 before 5 April 2023; see SC/69A/E/08. On the US West Coast, the 122 stranded whales reported in 2019, 79 in 2020, 55 in 2021, and 47 in 2022, exceeded the annual mean stranding rate of 29 ± 10 whales between 2001-18. Strandings occurred along the entire range of the ENP gray whale, with most whales recorded in US waters in spring and early summer when gray whales are near the end of their seasonal fast.

The Committee received information about at least 33 gray whale strandings from Mexico between January and April 2023 and documented at least 33 gray whales stranded along the Pacific coast of Baja California, Mexico. The number of strandings in 2023 was similar to stranding numbers before the UME started in 2019. The primary age class of stranded whales was calves, as is usually the case in non-UME years. See SC/69A/CMP/17.

The Committee noted the information on unusual mortality occurring in the years 2019-22. While the cause of this UME has not been determined, it is noted that it is only 20 years since a similar event occurred. This leads to the question whether the population of ENP gray whales has reached the limit of what the Arctic feeding ground can support. The Committee plans to begin an IR of gray whales in 2025 because of this new information on strandings.

Attention: SC, ASW, IST, CG

With respect to matters related to hunts of North Pacific gray whales, the Committee:

- (1) **reiterates** previous advice that biological data, genetic samples and photographic data from Russia continue to be collected from live and landed whales and analysed to provide information on stock structure and biology; and
- (2) **recommends** collaborative sharing and integration of data from all range states (e.g., photo-ID catalogues, genetic samples) to inform conservation and management actions.

7.1.4 Common minke whale stocks off East Greenland

17 common minke whales (seven male and 10 female) were landed in 2022. Samples were taken from four of these.

7.1.5 Common minke whale stocks off West Greenland

In 2022, 149 minke whales were struck in West Greenland (66 samples were obtained), from which 139 (36 male and 103 female) were landed and 10 lost. The Committee **agrees** that an annual review of management advice is not required and notes that the minke whale SLA is appropriate to provide management advice to the Commission on both West and East Greenland common minke whale hunts.

7.1.6 Fin whales off West Greenland

Four fin whales (one male, three female) were landed in 2022 and samples obtained from all. None was struck and lost. The Committee **agrees** this new information does not require calling for an early IR.

7.1.7 Humpback whales off West Greenland

In 2022, one female humpback whale was landed (samples obtained) and one bycaught. None was struck and lost. The Committee notes that an annual review of management advice is not required and **agrees** this new information does not require an early IR.

7.1.8 Humpback whales off St. Vincent and The Grenadines

In the 2022 subsistence hunt of humpback whales off St. Vincent and The Grenadines, no humpback whales were taken. One was struck and lost in the waters surrounding Bequia. The Committee notes that an annual review of management advice is not required and **agrees** this new information does not require any change to existing management advice.

7.2 Workplan

In 2024, the Committee will review new biological and catch information on species and stocks subject to aboriginal subsistence whaling, provide advice for all the aboriginal hunts and continue to monitor and evaluate gray whale mortality events.

8. WHALE STOCKS NOT SUBJECT TO DIRECTED TAKES BY CONTRACTING GOVERNMENTS

8.1 Comprehensive or In-depth Assessments

In 2018, the Committee agreed an updated process for undertaking both Comprehensive Assessments (i.e., the first time an assessment is completed for a species/region) and In-depth Assessments (i.e., subsequent assessments for a species/region). This process is fully described in Donovan (2018; see also IWC, 2020, p.17). The conclusions of these assessments can also be added to the developing IWC Status of Stocks webpage (Item 11.4).

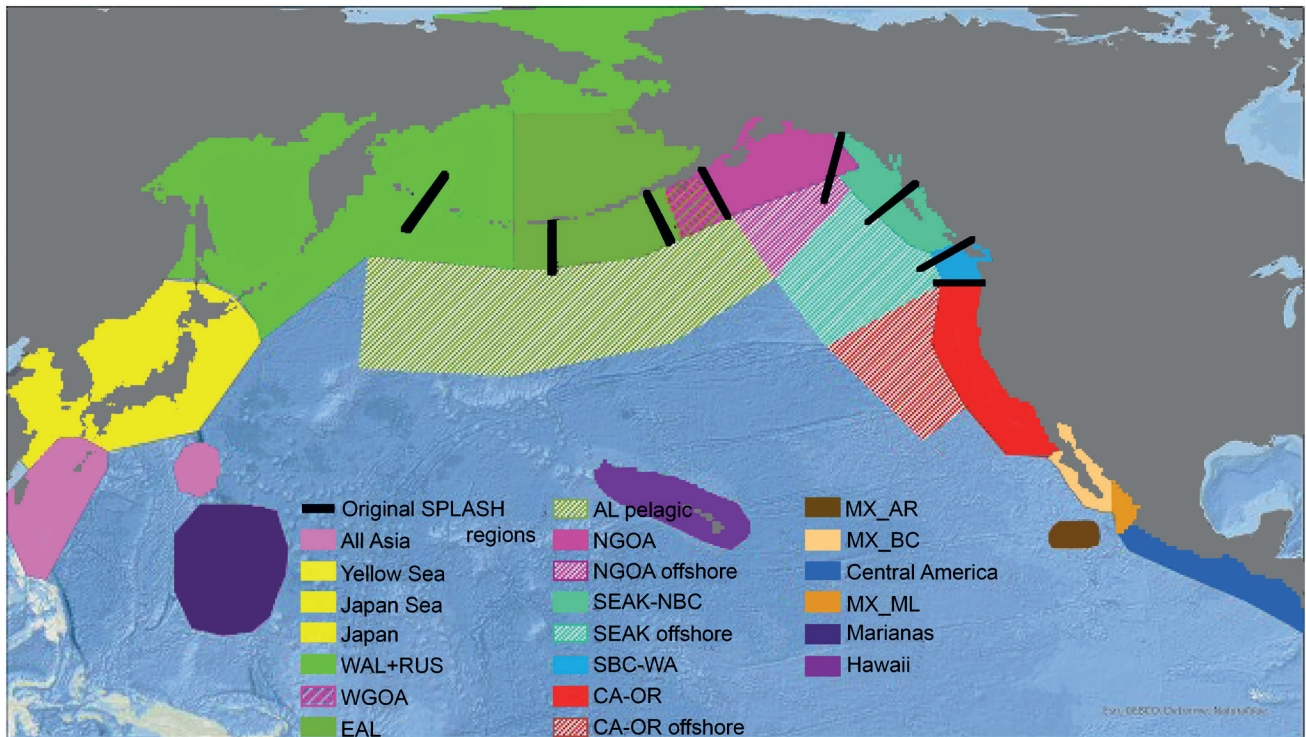


Fig. 1. Regions and region boundaries agreed on 20 April 2021 for North Pacific humpback whales, regarding multiple breeding and feeding areas in the North Pacific. Dark lines represent the boundaries from the original SPLASH project (as shown in Calambokidis *et al.*, 2008).

8.1.1 Comprehensive Assessment of North Pacific humpback whales

The Comprehensive Assessment of North Pacific humpback whales began in 2016, followed by an intersessional workshop held in 2017 (IWC, 2018c). Since then, analyses of abundance and genetic data have been undertaken, the commercial catch series has been updated and an automated photo-ID matching algorithm (Cheeseman *et al.*, 2022) has been used to facilitate a large-scale worldwide photo-ID matching exercise to incorporate substantial new data from many regions across the North Pacific, including some which have been previously under-represented.

An age-aggregated operating model is being used with data from multiple breeding and feeding areas in the North Pacific (Fig. 1). Potential and actual input data include commercial catches, other removals (e.g., bycatch, ship strikes and strandings), indices of absolute and relative abundance based on photo-ID or line transect data and estimates of mixing rates based on photo-ID and genetic data.

This year new results derive from movement (Martinez-Loustalot *et al.*, 2023) and genetics data (Martinez-Loustalot *et al.*, 2020) were used to refine the boundaries of breeding areas off Mexico and Central America. Taking into account the ASI sub-committee's review of these papers (Item 10.1.2), the Committee **recommends** two hypotheses for stock structure in the breeding areas should be considered: (1) there are four breeding populations (Asia, Hawai'i, Mexico and Central America); and (2) there are five breeding populations (Asia, Hawai'i, offshore Mexico, mainland Mexico and Central America).

Last year, the Committee recommended two hypotheses for stock structure in the feeding areas, which are variants on different combinations of adjacent areas in the western Gulf of Alaska (IWC, 2023a, Item 8.1.1, p.26).

The Committee **welcomes** the update on the following IWC-funded project, 'Analysis of satellite tag data for incorporation into the stock assessment process: an application with North Pacific humpback whales.' This project uses data from 256 satellite tags deployed across several breeding and feeding grounds in the North Pacific spanning 1995-2019. The completion of this project is expected in a few months. The Committee **recommends** the analyses are finalised to ensure these results can be used as an independent dataset to validate the assessment model.

Preliminary abundance estimates of the entire North Pacific, Hawaiian and Mexican breeding stocks, were presented, along with new estimates of a low base case and high time series of removals from the eastern Pacific (Alaska to California). The Committee **welcomes** these new time series and **recommends** they are finalised, reviewed and used in the assessment.

Results from the assessment model that incorporated recommendations made last year were presented (IWC, 2023a, Item 8.1.1, p.26). Initial results indicated poor fit in several areas. Adjusting the starting year from 1656 to 1985 improved the fit somewhat. The Committee notes that, for some of the recent time-series of abundance, the assessment model

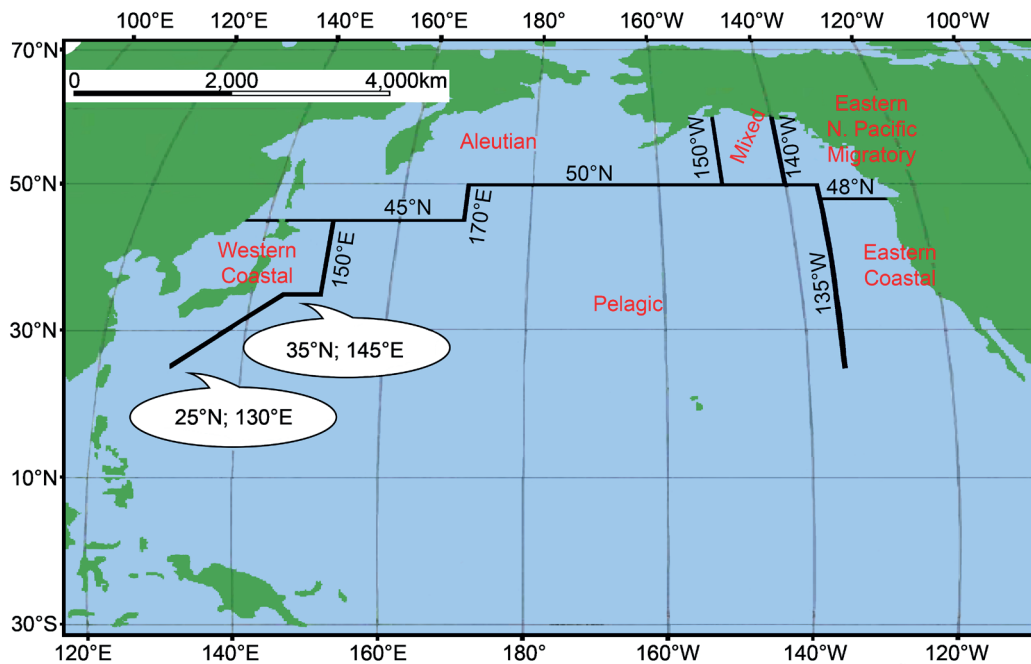


Fig. 2. The six sub-areas used in the Comprehensive Assessment for North Pacific sei whales.

failed to fit at a time coinciding with a substantial environment perturbation; the northeast Pacific marine heatwave (Suryan *et al.*, 2021). The Committee **recommends** an additional time series of environmental factors, such as sea surface temperature, should be incorporated into the assessment model to improve fit.

The Committee **welcomes** the progress made to assemble the input data and refine the assessment model. Annex K provides a detailed workplan to obtain a well-fitting assessment model for at least one of the stock structure hypotheses in time for SC69B. This will require virtual and in-person intersessional meetings.

Attention: SC

The Committee **reiterates** the need to conduct the Comprehensive Assessment of North Pacific humpback whales. The Committee:

- (1) **establishes** a Steering Group to oversee the intersessional work and endorses its workplan; and
- (2) **recommends** virtual and in-person intersessional meetings to further the assessment and present the results at SC69B.

8.1.2 Comprehensive Assessment of North Pacific sei whales

The Comprehensive Assessment of North Pacific sei whales attempts to integrate information from: (1) historical commercial catches; (2) estimates of recent absolute abundance from IWC-POWER and other surveys; (3) indices of relative abundance derived from other surveys and scouting vessels extending back to 1965; and (4) data from Discovery marks and recoveries. A multi-area age-structured population model has been developed to integrate these data into a common likelihood framework. Two working population structure hypotheses have been developed: (1) a single stock distributed throughout the North Pacific; and (2) five stocks centred on five designated sub-areas, but with some overlap between summering grounds (Fig. 2). There is no consensus on their relative plausibility.

In 2021, the Committee failed to find a population model which consistently integrated all available information, due to fundamental conflicts in the data (IWC, 2021a, Item 8.1.2, p.24). In particular, the recent abundance for the Pelagic sub-area suggested a population much less depleted than the relative abundance and mark-recapture data indicates. The point estimate of abundance for the Pelagic sub-area (approx. 30,000 whales) exceeded the inferred pre-exploitation size of the population. The Committee recommended an intersessional WG develop a document to summarise all available information, alongside a summary of attempts to fit a population model. Following discussions in the ASI sub-committee (Annex D), it was noted that estimates in Hakamada *et al.* (2009) and (2016) were suitable for use in the assessment.

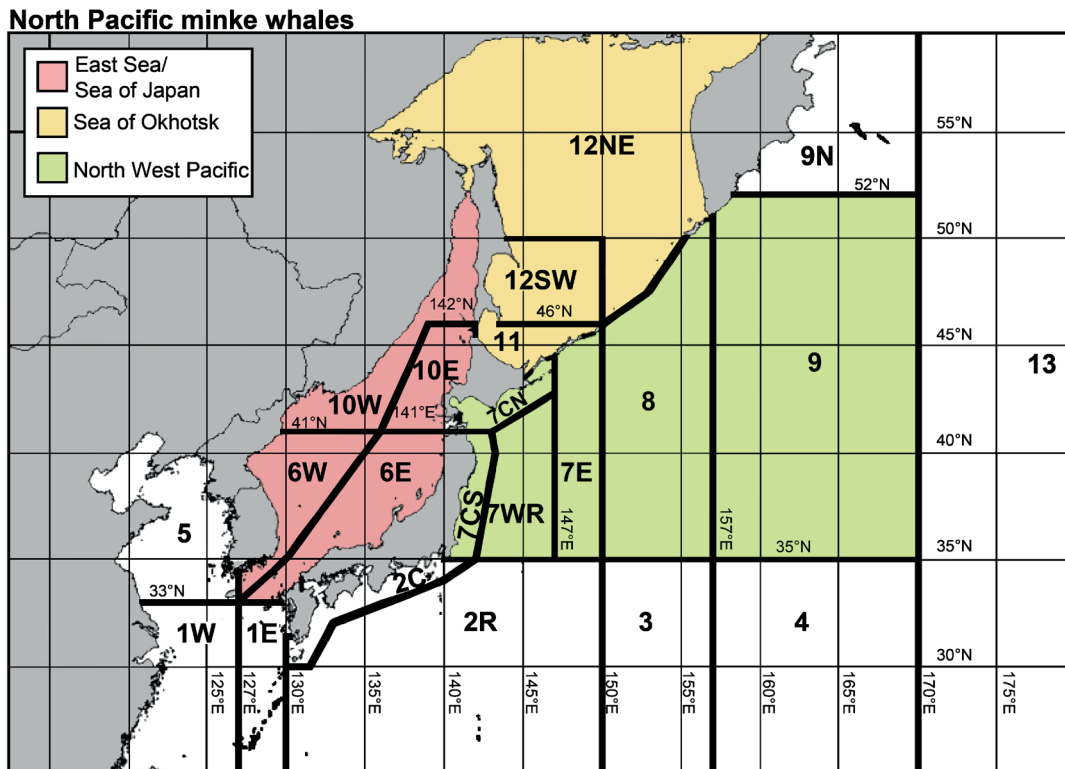


Fig. 3. The 22 sub-areas used in the In-Depth Assessment for WNP common minke whales.

Attention: SC

The Committee **reiterates** the need to complete the Comprehensive Assessment of North Pacific sei whales as soon as possible. The Committee **recommends** a summary document is developed in time for review prior to and during SC69B.

8.1.3 Progress on In-depth Assessment of western North Pacific common minke whales

The In-depth Assessment of western North Pacific (WNP) common minke whales is based on three stock hypotheses (see Fig. 3 for sub-area definitions and Fig. 4 for genetics samples that led to the development of stock hypothesis E):

- (1) there is a single J-stock that occurs to the west of Japan (Sea of Japan/East Sea and Yellow Sea) and the Pacific coast of Japan (sub-areas 2C, 7CS, 7CN, 11 and 12SW), and a single O-stock in sub-areas to the east and north of Japan (2C, 2R, 3, 4, 7CS, 7CN, 7WR, 7E, 8, 9, 9N, 10E, 11, 12SW, 12NE and 13) (referred to as hypothesis A);
- (2) as for hypothesis (A), except there is a third stock (Y) residing in the Yellow Sea (sub-areas 1W, 5 and 6W) which overlaps with J-stock in the southern part of sub-area 6W (referred to as hypothesis B); and
- (3) there are four stocks, referred to as Y, J, P, and O, two of which (Y and J) occur in the Sea of Japan/East Sea, three of which (J, P and O) are found to the east of Japan. Stock P is a coastal stock (referred to as hypothesis E).

The operating models for WNP common minke whales were originally developed as part of an RMP IR. After Japan left the IWC, it was agreed the work should continue as an In-depth Assessment with a focus on the effects of bycatch, particularly on the J-stock, whilst recognising Japan's domestic whaling (IWC, 2021a, Item 8.1.2, p.22).

SC/69A/IA/01 presented the results of conditioning for hypotheses A and B (for the 1% and 4% cases). The Committee **agrees** the conditioning was satisfactory for the base-case trials for stock hypotheses A and B (see Annex K, Appendix 2, for trial specifications). J-stock was estimated to be much more depleted than O-stock, especially when $MSYR_{1+}=1\%$. A large proportion of the historical commercial catch was taken from areas west of Japan where most animals are J-stock.

With respect to the complex stock hypothesis E trials, the Committee **agrees** most of the fits to abundance and mixing proportion data were adequate, except in sub-areas 7WR and 11. Suggestions were made to improve fit (see Annex K, item 8.1.2). The Committee also **agrees** on a modified set of sensitivity runs (see Annex K).

In conclusion, the Committee **thinks** the considerable intersessional work of Allison, de Moor and Katara, and **agrees** that conditioning of the trials for stock hypotheses A and B is complete. To complete the In-Depth Assessment next year, the Committee **recommends** re-establishing the ISG to condition stock hypothesis E and run the sensitivity tests

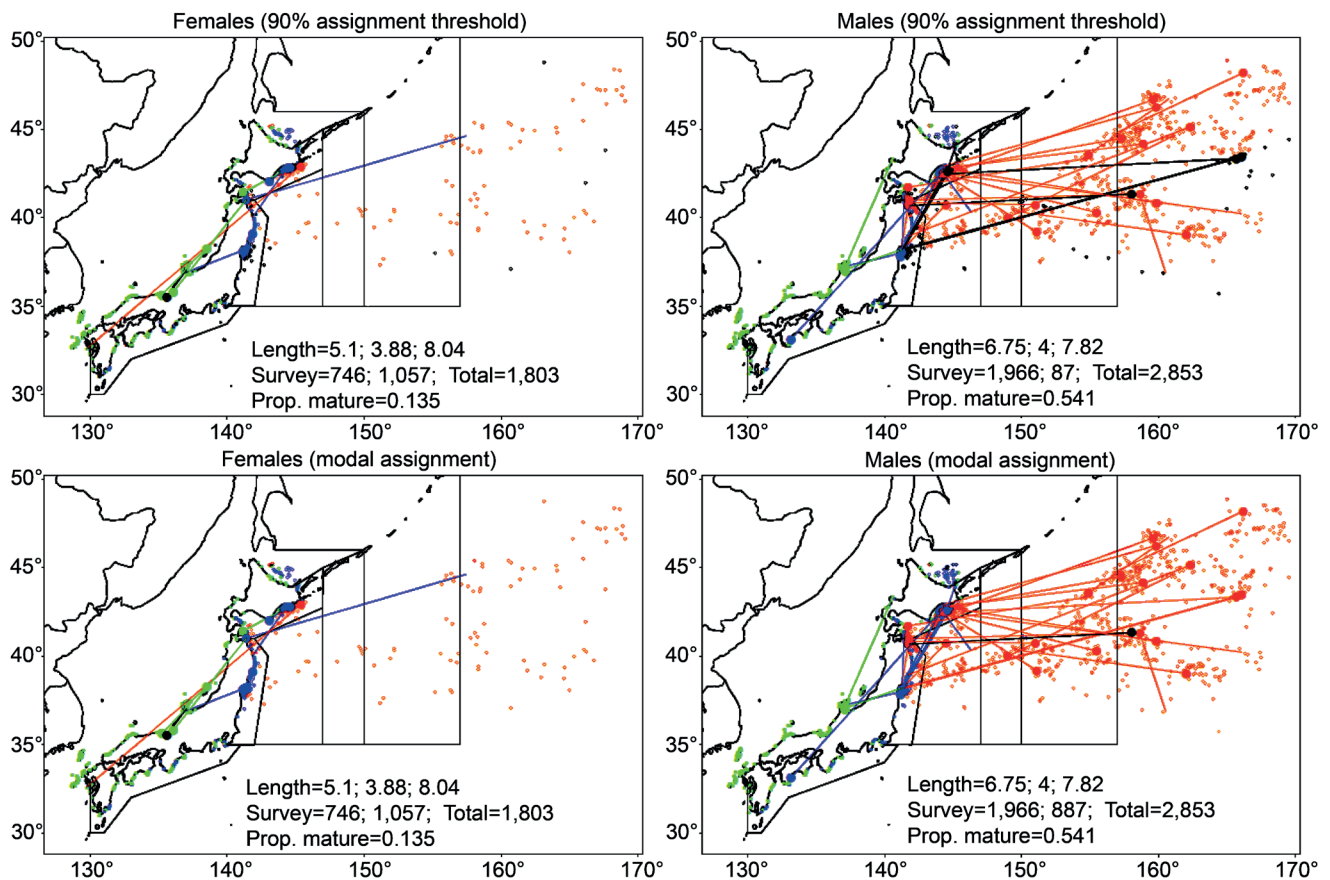


Fig. 4. Locations of the three putative clusters of western North Pacific minke whales, identified by Geneland software ('green', 'orange', 'purple') and unassigned animals ('black'). Results are shown by sex. Upper panels show when a 90% threshold is applied as the basis for assignment. Lower panels show when the cluster is assigned based on the most likely assignment. The lines connect parent-offspring pairs with the colour assigned based on the parent.

for all three stock hypotheses. This work is computationally intensive and requires adequate computing support for the Secretariat.⁵ The Committee **agrees** this should be given high priority and **recommends** available funds for this project are allocated to support travel so that Katara, de Moor, Allison and others as necessary can meet in-person to address technical matters. Regular virtual meetings to examine results and propose changes to trial specifications should occur to ensure the completion of conditioning before SC69B and hence completion of the In-depth Assessment.

Attention: SC, S

The Committee **reiterates** the need to conduct an In-depth Assessment of WNP common minke whales with a focus on bycatch levels and the status of J-stock(s). It also:

- (1) **recommends** re-establishing the Intersessional Steering Group to condition stock hypothesis E and run sensitivity tests for all three stock hypotheses;
- (2) **recommends** the final trials are based on the revised specifications in Annex K, Appendix 2;
- (3) **recommends** that funds allocated two years ago for an intersessional workshop are used to support technical meetings between Katara, de Moor and Allison (Wilberg, Punt and others as needed); and
- (4) **recommends** that computing work to run the trials is given high priority and the Secretariat provided with good computing support.

8.2 Potential new assessments: progress on previous recommendations and prioritised workplan

8.2.1 Non-Antarctic blue whales in the Southern Hemisphere (including NIO populations)

The Committee is preparing for an In-depth Assessment of non-Antarctic Southern Hemisphere blue whales. Due to pandemic-related delays, completion of the pre-assessment phase will occur in 2025 so that the In-depth Assessment can be initiated in 2026.

⁵The work was supported by computations performed using facilities provided by the University of Cape Town's ICTS High-Performance Computing team: <http://hpc.uct.ac.za/>.

In the Southern Hemisphere and Indian Ocean, non-Antarctic blue whales are primarily distinguished by song-type and occur in the northwest Indian Ocean (NWIO, Oman), central Indian Ocean (CIO, Sri Lanka), southwest Indian Ocean (SWIO, Madagascar to Kerguelen), southeast Indian Ocean (SEIO, Australia to Indonesia), southwest Pacific Ocean (SWPO, New Zealand) and southeast Pacific Ocean (SEPO, Chile to Peru) (Annex P, fig. 1). In 2023, the Committee received new information regarding distribution, population structure and photo-ID matching of non-Antarctic blue whales (details in Annex P, item 3).

8.2.1.1 DISTRIBUTION

The Committee **welcomes** a report of a blue whale sighted off the coast of Ecuador in January 2023 (SC/69A/SH/12) - only the second sighted in recent years, despite Ecuadorean whaling records including blue whales. One biopsy sample and images for photo-ID were collected to help define population identity. No match was found for this individual in the Southern Chilean Blue Whale Photo-Catalogue. The Committee was also informed that SEPO blue whales are usually seen in January off the coast of southern Chile, but fewer were sighted in 2023, perhaps because of the strong La Niña in 2022.

Attention: SC, R

*To determine if the blue whale sighting in Ecuador belongs to the NEPO or SEPO population, the Committee **recommends**:*

- (1) matching the photo-ID to catalogues for the Costa Rica Dome, Galapagos and eastern North Pacific;*
- (2) Lang conducts genetic analysis of the biopsy sample; and*
- (3) Branch compares length frequencies of blue whales caught in Ecuador to those in Chile and the NEPO.*

In 2021, the Committee partially funded surveys to gather information on blue whales in the poorly studied low latitudes of the southwest Indian Ocean. During 2022, coastal surveys off north-western Madagascar sighted one blue whale. SWIO and Antarctic blue whale song were detected on acoustic recorders and the Committee invites updates for SC69B.

The Committee also received results from acoustic recorders deployed in 2022 in deep continental slope waters off Ras al Hasik, Dhofar, in southern Oman (SC/69A/CMP/12rev1) where blue, Bryde's and humpback whales have been sighted. Acoustic detections of SWIO, NWIO and CIO song, as well as two novel vocalisations currently unattributed to species, have challenged the current hypothesis that NWIO and CIO song represent two different acoustic populations of blue whales. Either this hypothesis is correct and the ranges of the two acoustic populations overlap in southern Oman, with the novel vocalisation attributable to Bryde's whales, or all blue whales off Oman might belong to the CIO acoustic population, and NWIO song may be attributable to Bryde's whales not blue whales.

Attention: SC, R

*In order to link the recorded song types to species and populations of Bryde's and blue whales, the Committee **recommends**:*

- (1) linking each song type to an individual calling whale, with a priority being boat-based surveys off southern Oman with concurrent acoustic monitoring; and*
- (2) Branch conducts a sensitivity analysis for catch separation conducted in paper SC/69A/SH/09, assuming that NWIO song type corresponds to a Bryde's whale call.*

8.2.1.2 POPULATION STRUCTURE

A good understanding of population structure and connectivity is necessary to conduct population assessments. The Committee therefore welcomed information on the collection and efforts to match photo-IDs from 20 individual blue whales sampled on the Madagascar Plateau and off northeast Madagascar (SWIO) (SC/69A/SH/01). There were no matches within or across years between these two regions. The images were uploaded to the Southern Hemisphere Blue Whale Catalogue (SHBWC) and the Committee **encourages** a broader comparison of these photo-IDs with those from other regions in the Indian Ocean.

The Committee received a report (SC/69A/SH/09) on efforts to separate historical catches among blue whale populations in the 'pygmy grouping' (NWIO, CIO, SWIO, SEIO, SWPO) in the Indian Ocean, Indonesia, and around Australia and New Zealand. Following collation and modelling, estimated catches were highest from the SWIO ($n=6,723$) and SEIO ($n=2,651$) populations and lowest from the SWPO ($n=561$) population. The Committee notes that the highest levels of uncertainty in catch allocations relate both to SWIO, NWIO and CIO populations in the region between Madagascar, Oman and the Seychelles, and SWIO, CIO and SEIO populations in the central southern Indian Ocean (30-52°S and 70-95°E).

Noting the uncertainty in catch allocations, that considerable data gaps exist in the spatial coverage of acoustic data and few photo-ID data are available from the SWIO, including the waters adjacent to Madagascar, the Committee **recommends** further efforts to collect more data to inform population structure, residency and connectivity between regions and movement patterns.

Attention: SC, R

To further prepare for the In-depth Assessment of non-Antarctic Southern Hemisphere blue whales, the Committee **recommends**:

- (1) *dedicated long-term acoustic sampling effort between 5°N and 10°S in the Indian Ocean, particularly off Kenya and the Seychelles (SWIO/NWIO/CIO); in the Banda and Molucca Seas (SEIO); in the central southern Indian Ocean (SWIO/CIO/SEIO); and*
- (2) *development of satellite-tagging studies to be conducted off Oman (NWIO/CIO), Madagascar (SWIO), Sri Lanka (CIO), and in the central southern Indian Ocean (SWIO/CIO/SEIO) in the biennial period, to determine migratory destinations for these whales and links to each blue whale population.*

The Committee also recommends intersessional analysis of five biopsy samples collected off the coast of Oman to help understand distribution and population structure of blue whales in the region.

Attention: SC, R

The Committee **recommends** that the blue whale biopsy samples from Oman are shared with the Southwest Fisheries Science Centre, USA, for genetic analysis within the intersessional period.

8.2.1.3 ABUNDANCE

No new information received in 2023.

8.2.1.4 PROGRESS TOWARDS AN IN-DEPTH ASSESSMENT

In preparation for the In-depth Assessment of non-Antarctic Southern Hemisphere blue whales, the Committee has supported ongoing work in compiling the Southern Hemisphere Blue Whale Catalogue (SHBWC) in order to identify re-sightings to use in mark-recapture analysis of abundance. The SHBWC currently comprises a total of 2,697 individual blue whale photo-IDs that include regions off Antarctica, Chile, Peru, Ecuador-Galapagos, the Eastern Tropical Pacific (ETP), Australia, Timor-Leste, New Zealand, southern Africa, Madagascar and Sri Lanka (SC/69A/SH/11rev1). Since SC68A, 488 new photo-IDs have been included, from Chile, Ecuador, Australia, Timor-Leste, the Costa Rica Dome and Madagascar - a 22% increase in the Catalogue's overall size. Comparisons focused on new entries from Chile, with 82 additional matches found. Quality control of datasets from Australia, New Zealand and Chile has also been completed. Data are now being prepared for regional blue whale assessments. The Committee **commends** Galletti and other contributors on the large amount of work conducted and notes that the SHBWC is a long-term initiative financially supported through the SC research budget to deliver regional photo-ID datasets which can be used to estimate blue whale abundance using mark-recapture methods.

In 2022, the Commission approved funding for mark-recapture analysis of the SWPO (New Zealand) data to estimate abundance. The southwest Pacific blue whale catalogue holders agreed to combine their data for use in a new multi-mark model. An intersessional review revealed there are insufficient recaptures in this dataset for reliable abundance estimates. As a result, effort was redirected towards completion of the SEPO mark-recapture dataset. Catalogue contributors from this region have agreed to share their data for the purpose of providing a common combined mark-recapture model.

In 2022, the Committee agreed that, in order to proceed with a timely In-depth Assessment of the SEPO, SEIO and SWPO blue whale populations, only photo-ID data collected up to 2018 would be used. The Committee also agreed that the revised plan to first proceed with abundance estimates of non-Antarctic Southern Hemisphere blue whale populations involves focusing on the SEPO population (Chilean data) before estimating abundance for the SWPO (New Zealand) and SEIO (Australia) populations.

Attention: SC, R

In order to complete pre-assessments of Southern Hemisphere non-Antarctic and southeast Pacific blue whales, the Committee **recommends** that development of the Southern Hemisphere Blue Whale Catalogue should continue, with priority given to finalisation of photo-ID matching and quality control within the southeast Indian datasets up to 2018.

The Committee:

- (1) **encourages** intersessional mark-recapture analysis of the SEPO, SWPO and SEIO blue whale datasets for endorsement of abundance estimates at SC69B; and
- (2) **encourages** submission of new photo-IDs from the Central Indian Ocean, southwest Indian Ocean and northwest Indian Ocean areas to the SHBWC, to support future mark-recapture analyses of regional abundance.

8.2.2 Antarctic blue whales

The Committee has been working towards a new In-depth assessment of Antarctic blue whales as it has been 15 years since the most recent assessments (Branch *et al.*, 2004; Branch, 2008). The last assessment (Branch, 2008) concluded that,

in 1997, despite population levels increasing, Antarctic blue whales were only at 0.9% of their pre-exploitation level (95% Probability Interval 0.7-1.0%). In 2019, the Committee developed a four-year timeframe for a new Antarctic blue whale assessment (IWC, 2019c, Annex H). The In-depth assessment will begin next year.

8.2.2.1 POPULATION STRUCTURE

A good understanding of population structure and connectivity is necessary to conduct population assessments. Whether the population structure of Antarctic blue whales consists of one or multiple populations remains unresolved. Breeding grounds have not been identified, but are assumed to be in lower latitudes, with Antarctic blue whale song heard throughout the Southern Hemisphere during winter months. Antarctic blue whales produce a single song-type, lending support to the hypothesis of a single population.

The Committee received an update on collective efforts to compare characteristics of Antarctic blue whale song calls from mid- and low-latitude regions to identify signs of population structure. A further update is invited for SC69B.

The Committee was also informed of an acoustic method for estimating the density of blue whale calls based on data recorded at the southern Kerguelen Plateau in 2014. The call densities correspond with historic (non-acoustic) knowledge of Antarctic blue whale seasonal distribution and migrations. In particular, the peak in call density in autumn provides evidence for increased calling activity at the start of the breeding period for Antarctic blue whales. The Committee notes the importance of this information for future assessments of relative abundance. Related work by the IWC-SORP Acoustic Trends WG continues to focus on estimating the density of whale calls, the relative trends in call density over multiple years and the relationship between call density and local abundance of animals which could be used to refine stock assessment estimates as to the rate of increase in Antarctic blue whales.

The Committee **welcomes** information about data from the first satellite tags deployed on two Antarctic blue whales in the east Antarctic sector of the Southern Ocean (Andrews-Goff *et al.*, 2022). The data span a 110° longitudinal range and provide valuable insights into the movements of Antarctic blue whales on their Antarctic feeding grounds, including movement rates (distances travelled and speeds) and movement behaviours (distinguishing transit behaviour from area-restricted search behaviour). The Committee **encourages** efforts to deploy more satellite tags on Antarctic blue whales, especially near the end of feeding season (March onwards) to track migration pathways out of the Antarctic in their breeding season.

Rand *et al.* (in press) used Discovery mark-recovery data to assess population structure for Antarctic blue whales. Estimated inter-year movement rates among the three ocean basins in the Southern Ocean (Atlantic, Indian and Pacific) were high, suggesting little evidence for population structure arising from basin-specific migratory fidelity of Antarctic blue whales. These Discovery mark data did not include any direct movement between the Atlantic and Pacific basins, which suggests there may be barriers to movement on a finer spatial scale.

The Committee received further evidence of a single population of Antarctic blue whales in the form of new genetic results based on the most comprehensive data yet compiled for blue whales (275 samples; Attard *et al.*, in press). Previous genetic studies have found some evidence for genetic differentiation within Antarctic blue whales (Sremba *et al.*, 2012; Attard *et al.*, 2016). This study found no differentiation.

Attention: SC-NH, SH, SD-DNA, R

*The Committee **welcomes** the valuable new genetic results from 275 blue whale samples (Attard *et al.*, in press). Recognising its importance for understanding the stock structure of blue whales in the Northern Hemisphere, Indian Ocean and Antarctic, the Committee **recommends** these results are jointly considered by the NH, SH and SD-DNA sub-committees at SC69B.*

The Committee **agrees** that Discovery mark-recapture and genetics data strongly support limited population structuring across Antarctic blue whale feeding grounds and **endorses** assessments that assume a single circumpolar population of Antarctic blue whales in the absence of information challenging this hypothesis.

8.2.2.2 ABUNDANCE

The Committee **welcomes** the results of the 2022-23 JASS-A dedicated sighting survey programme (SC/69A/ASI/13), conducted in the western part of Area VI East (145°W-130°W; south of 60°S), which has not been surveyed for over 20 years. 20 schools (31 individuals) of Antarctic blue whales were observed, 26 individuals were photographed, and eight individual biopsy samples were collected. Data obtained will be analysed to provide abundance estimates and support stock structure studies at the Institute of Cetacean Research, Japan. The Committee **thanks** the authors and **encourages** them to present an update to SC69B.

In 2023, the Committee received updated information on evaluations of two abundance estimates reviewed by the ASI SWG. One estimate (Olson *et al.*, 2023) was assessed as Category 3 (Table 4). The other (Hamabe *et al.*, 2023) was deemed 'P', a preliminary estimate, not suitable for use at the time of review but which may provide an acceptable estimate once finalised.

Table 4
ASI categories agreed for Antarctic blue whales.

| Population | Location | Method | Time series | Abundance | ASI category ¹ | Reference |
|------------|-------------|----------------|-------------|-------------------------------|---------------------------|----------------------------|
| Antarctic | Circumpolar | Mark-recapture | 2004-19 | 2,050 (95% CI 1,135-3,704) | 3 | Olson <i>et al.</i> (2023) |

¹Abundance estimates are categorised based on intended use (see Annex D, Appendix 3 for more details).

8.2.2.3 WORKPLAN

The Committee **agrees** to the workplan provided in Annex P. Intersessional Correspondence Groups (ICGs) can be found in Annex V.

8.2.3 Southern Hemisphere right whales not the subject of CMPs

The Committee agreed in 2016 to commence gathering pre-assessment information to progress towards a regional In-depth Assessment of southern right whales (IWC, 2016a, Item 10.8.1.5, p.39). In 2023, the Committee was provided with updates on regional population trends, habitat use, foraging ecology, health and offshore distributions, which will inform the In-depth Assessment across its range in the Southern Hemisphere.

8.2.3.1 SOUTH AFRICA

The Committee **welcomes** the results of the 2022 survey of southern right whales flown along the coast of South Africa, part of a long-term monitoring programme since 1979 (SC/69A/SH/10) and satellite tagging efforts (Vermeulen *et al.*, in press). The Committee **notes** these data continue the trend of extreme fluctuations in the coastal prevalence of cow-calf pairs along the South African coast since 2015, likely due to increased calving intervals.

The Committee **reiterates** its concern over the declining trend in body condition of South African right whales since the 1990s. Historical and recent photogrammetry shows a 23% reduction in the body condition of lactating female southern right whales of the South African breeding population over the past two decades (Vermeulen *et al.*, 2023). This reduction may have contributed to the decreased reproductive rate seen in the population.

The Committee **recommends** similar comparisons are conducted for the calving grounds off Australia, Argentina, Brazil and New Zealand in order to establish if this is a species-wide trend or specific to South Africa. The Committee also **reiterates** its support for a global standardised IWC-endorsed health assessment protocol to assist a synoptic assessment of southern right whale health across Southern Hemisphere wintering grounds (details in Annex P, item 8.2.3.1). Such a global approach to health assessment is also of comparative value to health assessment of endangered North Atlantic and North Pacific right whales (see Annex M).

8.2.3.2 SOUTH AND SOUTHWEST AUSTRALIA

The Committee received satellite telemetry data for southern right whales migrating from their winter breeding grounds off Western Australia into the Southern Ocean to feed during the warmer months (SC/69A/SH/02). Potential Western Australia southern right whale foraging areas were the Subtropical Front, the Kerguelen Islands, the Crozet Islands and Antarctica. Preliminary analyses indicate spatial and temporal overlap with right whales from the Aotearoa New Zealand and the South African breeding populations. South African southern right whales also forage around the Crozet Islands, suggesting greater overlap than previously expected across southern right whale populations, despite genetic differences.

The Committee received findings from long-term annual southern right whale population monitoring in South Australia on relative abundance, distribution, occupancy and life histories using count and photo-ID data (1991-2022) (O'Shannessy *et al.*, 2023; SC/69A/SH/32). These studies suggest that inter-seasonal movement across the core use area in Australia is likely and confirmed that Australian wintering grounds are important for reproductive females and unaccompanied adults (Annex P, item 8.2.3.2).

The Committee **recognises** the importance of long-term monitoring and **welcomes** new information on inter-seasonal occupancy and habitat use.

8.2.3.3 SOUTHEAST AUSTRALIA

The Committee received no updates in 2023 but invites new information on the southeast Australia population of southern right whales at SC69B.

8.2.3.4 NEW ZEALAND

The ASI SWG assessed the abundance estimate presented by Jackson *et al.* (2016) and recommended that the New Zealand southern right whale abundances based on New Zealand-only catches with a high historical catch rate are classified as Category 1A, acceptable for use in In-depth Assessments or for providing management advice (Annex D, item 2.1.2). The Committee recognised the benefits of integrating data on whaling impact and pre-exploitation abundance into conservation efforts and population assessments, despite the challenges of reconstructing historical catches and population boundaries.

The Committee **encouraged** the continuation of research in New Zealand to understand population parameters relevant for the regional population assessment.

8.2.3.5 SOUTHWEST ATLANTIC

The Southwest Atlantic southern right whale population is subject to a Conservation Management Plan (CMP). Discussions are presented under Item 9.1.2 and in Annex F.

8.2.3.6 CROSS-POPULATION COMPARISONS

In 2022, two southern right whale review workshops were recommended for funding. The first will take place near the end of 2023 and will facilitate the review of available catch data and historical knowledge (IWC, 2023a, Items 8.2.3.6 and 8.4.3). A subsequent workshop in late 2024 will focus on population structure and catch allocation hypotheses to inform the In-depth Assessment of southern right whales.

The Committee **reiterates** the need for continuation of long-term monitoring programmes and cross-population comparisons to progress regional population assessments of southern right whales.

Attention: SC, R, NH, E

*To progress regional population assessments of southern right whales, the Committee **reiterates** (SC1965, SC2087 and SC21102):*

- (1) *the importance of continuing long-term monitoring programmes to understand right whale population trends and dynamics;*
- (2) ***recommends** that monitoring continue in each SH wintering ground; and*
- (3) ***recommends** the continued development of a global standardised IWC-endorsed health assessment protocol to assist synoptic assessment of southern right whale health across calving grounds.*

8.2.3.7 OFFSHORE AREAS

The Committee welcomed a proof-of-concept study conducted to explore the viability of automated acoustic detection of upcall vocalisations produced by southern right whales on their high-latitude Antarctic feeding grounds (SC/69A/SH/05). This will inform a future broad-scale passive acoustic study of spatial and temporal patterns in acoustic detections and thereafter In-depth Assessments.

Attention: SC, R

*The Committee **recommends** further assessment of broad-scale passive acoustic studies to detect spatial and temporal patterns in southern right whale acoustics south of 40°S in order to progress with the investigation of offshore foraging grounds through the ICG.*

The Committee received a report describing long-term stability in the circumpolar foraging range of southern right whales between the eras of whaling and rapid climate change (Derville *et al.*, 2023). The Committee **commends** this highly collaborative multi-national work and notes that understanding the foraging ecology of southern right whales will be important for the In-depth Assessment.

The Committee **encourages** genetic and stable isotope analyses of southern right whales, using historical material (e.g., pre-20th Century) to measure connectivity and foraging patterns before and during the whaling period. This will help inform stock structure hypotheses and catch allocations in population assessments.

8.2.3.8 PROGRESS TOWARDS POPULATION ASSESSMENT

To test hypotheses for the relationships between reproductive success and environmental variables, a common demographic model was applied to the populations in each region across the main wintering grounds: Southwest Atlantic (Argentina/Brazil); Southeast Atlantic (South Africa); Australia; and New Zealand. The common model has been trialled and tested using South African southern right whale data and is running successfully using partial Australian data (SC/69A/SH/03; IWC-SORP Project 30).

The Committee **reiterates** that species assessments and demographic models rely on long-term life histories from photo-ID data and therefore **strongly encourages** consolidation of regional photo-ID datasets for these assessments alongside collation of acoustic data.

Attention: SC, R

*The Committee **encourages** the continued collation of data on southern right whale offshore sightings and acoustic detections to investigate stock structure and assess how environmental conditions influence population dynamics in the identified foraging grounds.*

Table 5
ASI categories agreed for southern right whales.

| Population | Location | Method | Time series | Abundance | ASI category ¹ | Reference |
|--------------------|--------------------|------------------|-------------|----------------------------|---------------------------|------------------------------|
| Southwest Atlantic | Southwest Atlantic | Population model | 1999 | 3,652 (95% CI 2,884-4,448) | 1A | Romero <i>et al.</i> (2022) |
| Southwest Atlantic | Southwest Atlantic | Population model | 2009 | 4,217 (95% CI 3,749-4,755) | 1A | Romero <i>et al.</i> (2022) |
| Southwest Atlantic | Southwest Atlantic | Population model | 2019 | 4,633 (95% CI 3,849-5,681) | 1A | Romero <i>et al.</i> (2022) |
| South Africa | South Africa | Population model | 1990 | 1,226 (SE 52) | 1A | Brandão <i>et al.</i> (2023) |
| | | | 2000 | 2,332 (SE 77) | 1A | Brandão <i>et al.</i> (2023) |
| | | | 2010 | 4,401 (SE 151) | 1A | Brandão <i>et al.</i> (2023) |
| | | | 2020 | 6,470 (SE 285) | 1A | Brandão <i>et al.</i> (2023) |
| Southwest Pacific | New Zealand | Population model | 2009 | 2,762 (95% CI 2,100-3,671) | 1A | Jackson <i>et al.</i> (2016) |
| | New Zealand | Population model | 2020 | 4,742 (95% CI 3,853-6,013) | 1A | Jackson <i>et al.</i> (2016) |

¹Abundance estimates are categorised based on intended use following the procedure described in Annex D, Appendix 3.

Attention: SC, R

To progress the In-depth regional population assessments of southern right whales, the Committee **recommends** application of the finalised common modelling framework to all available regional long-term datasets (South Africa, Argentina/Brazil, New Zealand and South Australia) to assess population parameters on a hemisphere-wide scale.

The ASI SWG conducted an intersessional review of three population models, from which abundance estimates for southern right whales were derived. Agreed abundance categories for each estimate are given in Table 5 (see Annex D for discussion).

8.2.4 North Pacific blue whales

Blue whales in the North Pacific are generally considered to comprise two populations: (1) the ENP population; (2) the central and western North Pacific (CWNP) population. In 2016, the Committee assessed the ENP population as ‘almost recovered’ (IWC, 2016a, p.35). The Committee has since been evaluating available data to assess the CWNP population. Abundance estimates based on the POWER cruises and Japanese surveys in the WNP are therefore the highest priority to ensure the Committee can initiate an assessment of the CWNP population. Further discussion of North Pacific blue whales and available data for an In-depth Assessment can be found in Annex M (item 2.1).

Attention: SC

The Committee continues to assess blue whales in the North Pacific, especially in the central and western areas. The Committee **reiterates** previous recommendation (SC1969) that an abundance estimate for CWNP blue whales using data from IWC-POWER and JARPN/JARPN II surveys is critical for an assessment and looks forward to receiving this information at SC69B.

8.2.5 North Atlantic sei whales

This species continues to be at the pre-assessment stage as movements, distribution, abundance and stock structure are not well understood. Abundance estimates for sei whales in parts of the western North Atlantic are discussed in Annex D, item 2.1.8.

8.2.6 North Atlantic right whales

The USA provided an update regarding North Atlantic right whale population status and management initiatives (Annex M, item 2.3) (see also SC/69A/NH/01 and SC/69A/NH/06). This population continues to decline, with a median total abundance estimated at 340 individuals (95% CI 333-347) at the end of 2021. The sex ratio is becoming increasingly male-biased, with only 143 (95% CI 137-149) females estimated to remain in 2021. A total of 37 deaths were documented between 2016-20, of which 11 were attributed to entanglement and 11 to vessel strikes. However, the observed count was only one-third of the estimated deaths in that period (136, 95% CI 121-195). Since the start of 2021, four deaths have been detected in US waters.

The UME declared in 2017 is ongoing and totals 98 individuals (36 deaths, 33 serious injuries and 29 morbidities) as of March 2023. The USA also released the ‘North Atlantic Right Whale Road to Recovery’ (2022) which outlines a holistic approach to halt the current population decline. In 2021, the US Atlantic Large Whale Take Reduction Plan was amended to require additional gear modifications, time-area closures and gear marking in lobster and Jonah crab trap/pot fisheries, which represent approximately 99% of vertical buoy lines in all fisheries addressed by the plan. Despite additional measures

being planned, the US Congress mandated in 2022 that the 2021 regulations were sufficient to ensure that Lobster and Jonah Crab fisheries will be in full compliance with US law until 2028. Thus, any additional regulations for these fisheries will not come into effect before 2029. NOAA Fisheries continues to work on the development of innovative fishing technologies (often called ‘ropeless’ or ‘on-demand’ fishing) to eliminate persistent buoy lines.

NOAA has proposed to modify the spatio-temporal boundaries of current speed restrictions in Seasonal Management Areas (SMAs), expand current speed restrictions to include smaller vessels (10.7-19.8m in length), create a mandatory Dynamic Speed Zone framework and update the safety deviation provision of the speed rule. Public comments on the proposal are currently being reviewed with final action expected later in 2023. Finally, there is extensive collaboration between the USA and Canada to improve the transboundary understanding of North Atlantic right whale distribution.

Attention: SC, G

The Committee **strongly reiterates** serious concern over the status of North Atlantic right whales and the urgent need for both the USA and Canada to eliminate human-caused North Atlantic right whale mortality (SC20162, SC21145 and SC22113).

The Committee **recognises** that ship strikes and entanglement in fishing gear are the two major causes of North Atlantic right whale mortality (IWC, 2021a, Item 8.2.6, p.38) and **strongly supports** efforts to reduce these.

The Committee also:

- (1) **expresses grave concern** at the Congressionally imposed halt to further entanglement mitigation measures specific to lobster and Jonah crab trap/pot fisheries in US East Coast waters until 2029, and **strongly recommends** even further accelerated efforts to develop, test and adopt new methods of fishing that reduce potential to entangle right whales (such as ropeless technologies);
- (2) **recognises** that despite existing speed mitigation measures, small vessels can also cause mortality and serious injury of North Atlantic right whales. The Committee **acknowledges** that the US Federal Government is considering plans to apply current speed restrictions to vessels equal to and greater than 10.7m to 19.8m and **strongly recommends** the USA to adopt the proposed measures;
- (3) **recognises** that recreational boaters may be less aware of existing regulations and therefore
- (4) **recommends** outreach efforts be directed specifically toward recreational mariners;
- (5) **encourages** an update from Canada on its research and management initiatives at the next meeting; and
- (6) **encourages** updates from the USA on its management efforts and outcomes, including the results of population viability analyses and updates from a planned satellite-tagging workshop.

8.2.7 North Atlantic humpback whales

A Comprehensive Assessment of North Atlantic humpback whales was completed in 2002 (IWC, 2002, Item 10.5, p.44). Although this Assessment greatly increased knowledge about North Atlantic humpback whales, the results failed to completely capture observed population trends relative to predicted carrying capacity (Punt *et al.*, 2006). In 2018, the Committee agreed that it was timely to consider a rangewide In-depth Assessment (IWC, 2019c, Annex E) and has since been collecting and evaluating available data. The Committee received results from two ocean-scale studies of North Atlantic population structure based on genetic and photo-ID data (Annex O, item 2.2).

Most of the available data about North Atlantic breeding grounds still comes from the Greater Antilles of the Caribbean. The Committee received two papers addressing data gaps from other regions. SC/69A/NH/03 reviewed both published and gray literature for records of humpback whales in the southern Gulf of Mexico, southern Caribbean, southeastern Caribbean, Central America and the Guianas. A total of 228 records were compiled for the years 1913-2023, with most records concentrated in the southern and southeastern Caribbean. Two peaks in monthly presence of humpback whales in the study area indicate the likely presence of whales from both the Northern Hemisphere (winter-spring) and Southern Hemisphere (summer-autumn) at opposite times of year. SC/69A/NH/07/rev1 reported on the results of a passive acoustic monitoring study conducted off Dakar, Senegal, from June 2021 to January 2023. Humpback whale song was not detected during the single boreal winter period but was detected during two austral winter periods. The results reinforce previous reports of Southern Hemisphere humpback whales occurring in the North Atlantic off West Africa and Cape Verde Islands. The results of both papers suggest the movement of individuals from the Southern Hemisphere into known or potential Northern Hemisphere breeding areas. The Committee **emphasises** the great value of tissue samples (from biopsies, sloughed skin or carcasses) for genetic analyses and fluke photographs to better understand humpback whales in under-sampled areas of the North Atlantic.

Abundance estimates of humpback whales in parts of the western North Atlantic are available from NOAA line-transect surveys (Annex D, item 2.1.8). The Committee **agrees** an ICG under Robbins should continue to compile and evaluate information for the assessment. Additional details and discussion about North Atlantic humpback whales can be found in Annex M (item 2.4).

Attention: C, CG, SC, R

The Committee continues to collect and evaluate information relevant to an In-depth Assessment of North Atlantic humpback whales. It particularly **reiterates** previous recommendations (SC1973, SC21148, SC22120, SC22121):

- (1) collection of data and information from the understudied areas in the Caribbean and eastern North Atlantic;
- (2) analysis of MONAH project data from the West Indies to estimate humpback whale abundance; and
- (3) a virtual intersessional workshop, if needed, and an in-person meeting in 2023 or 2024 to examine available information in the context of assessment.

The Committee further **recommends** the collaborative sharing with the University of Groningen of existing samples from humpback whales that stranded during the boreal winter along the coast of Senegal and Brazil for analysis.

The Committee **urges** relevant data be submitted as soon as possible to the specific repositories that are undertaking large-scale analyses of photo-ID data (North Atlantic Humpback Whale Catalogue, College of the Atlantic, USA) and genetic data (Marine Evolution and Conservation group, University of Groningen, the Netherlands).

The Committee also **encourages** the presentation of results of a synthesis of satellite-tagging data from North Atlantic feeding and breeding grounds by Kettener and colleagues at SC69B.

8.2.8 Rice's whales

The Rice's whale (*Balaenoptera ricei*; Rosel *et al.*, 2021) numbers fewer than 100 individuals and is the only year-round resident baleen whale in the Gulf of Mexico. The Committee has previously expressed serious concern about this stock (IWC, 2022a, p.53) and is monitoring ongoing research and management efforts. This year, the Committee received updates on the status of passive acoustic research and predictive density modelling. These studies confirmed that, in addition to the known core habitat, Rice's whales are also found within the central to western Gulf, particularly in water depths between 100-400m. Density models also predicted suitable habitat in the southern Gulf, but these areas have yet to be explored visually or acoustically for the occurrence of Rice's whales.

Multiple projects are planned and underway to better understand Rice's whale occurrence and distribution, including the LISTEN GoMex project. Gulf of Mexico habitat vital to the survival and recovery of the Rice's whale may be affected by aquaculture projects being considered under the scoping of Aquaculture Opportunity Areas, including entanglement and other gear interactions, habitat exclusion and modification, noise disturbance and vessel strikes. The critical habitat for Rice's whales is currently being considered (i.e., specific geographic areas that contain physical or biological features essential to conservation) under the US Endangered Species Act (Section 4). Data on Rice's whale are being used to inform site placement of potential aquaculture sites and evaluate potential impacts from windfarm development. The Open Ocean Disaster Response Plan includes efforts to enhance reporting and response capability for large whale strandings, with a focus on Rice's whales, in the Gulf of Mexico.

Additional details and discussion about Rice's whale can be found in Annex M (item 3.4).

Attention: SC

The Committee **reiterates** serious concern about Rice's whale, an isolated population in the Gulf of Mexico with an estimated abundance of around 50 animals (SC1975; SC20165; SC21150; SC22123) and recognises the substantial amount of work that has been conducted by the USA on research and management initiatives. The Committee also **reiterates** previous recommendations for the USA to use all available legal and regulatory tools to provide maximum protection for this species. It **welcomes** additional updates at SC69B.

Specifically, the Committee:

- (1) **recommends** the continuation and expansion of acoustic research efforts, including into basic differences between sexes and among behaviours, to better understand species biology and spatio-temporal variation;
- (2) **reiterates** its recommendation to resume on-water monitoring to collect the data necessary to estimate abundance and to gather other essential information about this species (SC1975);
- (3) **encourages** the continued use of citizen science and outreach as valuable tools for collecting opportunistic data on Rice's whales; and
- (4) **recommends** re-examination of two historic balaenopterid specimens from the coast of Campeche to confirm species ID.

8.2.9 Workplan

The Committee **agrees** to the workplan provided in Annex P. ICGs can be found in Annex V.

8.3 New information for other northern stocks**8.3.1 North Atlantic blue whales**

The North Atlantic blue whale remains in the pre-assessment stage until additional information becomes available. At this meeting, abundance estimates of blue whales in parts of the western North Atlantic were discussed in Annex D (item 2.1.8).

8.3.2 North Atlantic common minke whales

The North Atlantic common minke whale is currently experiencing a UME along the US eastern coast. Further details on this event are provided in Annex M (item 3.5). New abundance estimates of common minke whales in part of the western North Atlantic are available from NOAA line-transect surveys (Annex D, item 2.1.8). The Committee continues to welcome additional information as it becomes available.

8.3.3 East Greenland-Svalbard-Barents Sea (Spitsbergen) bowhead whales

No new information was available to the Committee.

8.3.4 North Pacific right whales

Two genetically distinct populations of North Pacific right whales are currently recognised (Pastene *et al.*, 2022). The eastern stock occurs in the Gulf of Alaska, Bering Sea, British Columbia, California and Hawai'i. The western stock inhabits water off and around China, Japan, Korea and Russia, including the Sea of Okhotsk. The most recent estimate of abundance for the eastern population is approximately 30 individuals (2008) (Wade *et al.*, 2010). There is no reliable population estimate for the western population, currently thought to range between 400-1,100 animals (Annex M, item 3.4). The Committee **reiterates** previous concern over the status of this endangered species throughout the North Pacific and will consider new information on anthropogenic threats with respect to potential recommendations at the next meeting.

8.3.4.1 EASTERN NORTH PACIFIC RIGHT WHALE

An update on ENP right whale sightings since 2018 was provided, including a Pacific Marine Assessment Program for Protected Species Survey in 2021 where two sightings occurred. From 2018-22 there were 11 sightings of 16 individuals, of which five were new to the photographic catalogue. Work to analyse existing acoustic data and the completion of a project examining stable isotopes of baleen plates are considered high priorities to better understand North Pacific right whale distribution, movement and foraging ecology (Annex M, item 3.4.1).

Attention: SC, CG, R

The eastern North Pacific (ENP) right whale population is considered one of the most endangered populations of a large whale in the world with an estimate of ~30 animals as of 2008. Despite the precarious status of this species and grave status of the genetically distinct ENP right whale population, resources to conduct research have been extremely limited. The Committee therefore:

- (1) **encourages** the USA and other stakeholders to prioritise support for research on ENP right whales;
- (2) **agrees** that IWC-POWER cruises provide an important platform for detecting and sampling (photographic and genetic data) North Pacific right whales and **recommends** that this work continue, as outlined in SC/69A/REP/03;
- (3) **encourages** the USA to update the population estimate of ENP right whales using photographic and/or genetic data from the additional six whales sampled during the 2017/18 POWER survey;
- (4) **encourages** the US NOAA Fisheries, Alaska Fisheries Science Center, to make every effort possible to analyse existing acoustic data;
- (5) **recommends** that any acoustic data collected in the vicinity of right whales sighted off Monterey on 5 March 2023 be analysed to better characterise their presence in the area;
- (6) **welcomes** the availability of new information on North Pacific right whales based on stable isotopes; and:
 - (a) **encourages** an update of this work at SC69B; and
 - (b) **encourages** collaborations with scientists from Japan and the Russian Federation to increase the number and demographic composition of baleen samples included in analyses.

8.3.4.2 WESTERN NORTH PACIFIC RIGHT WHALES

New information was received on WNP right whale sightings off the east coast of Kamchatka. These sightings indicate anthropogenic impacts on this population, including evidence of scars from entanglement and observations of harassment from tour boat operations. The increase in scarring near the caudal peduncle was a particular concern as this is regularly observed for North Atlantic right whales, for which entanglement in fishing gear is one of the primary documented sources of death. Sightings of WNP right whales within the limit of their historic range are increasing which may put them at increased risk of entanglement, similar to bowhead whales. An international collaboration to develop a unified photo-ID database of WNP right whales would be valuable. Recent sightings have occurred in the western Bering Sea. It is unclear to which population some of these sightings should be assigned.

Additional efforts to reduce the likelihood of entanglement, determine population size, and better understand distribution and habitat are needed to protect this population.

Attention: SC, CG, R

The western population of North Pacific right whales remains poorly understood and current abundance estimates range between 400-1,100 animals. Anthropogenic threats appear to be increasing. Therefore, the Committee:

- (1) **welcomes** new information provided by Burdin (SC/69A/NH/04rev1) and **encourages** every effort be made to match North Pacific right whale photographs between the Japanese and Russian catalogues;
- (2) **recognises** there have been several North Pacific right whale interactions with fishing gear (Tajima et al., 2018), that these whales are at increased risk of entanglement, particularly in the northern part of their range as is currently experienced by bowhead whales (George et al., 2021), and **recommends** new information on this topic;
- (3) **recommends** a review of past abundance estimates and a synthesis of new information that can be used to generate new abundance estimates of WNP right whales for submission to the ASI SWG;
- (4) **recognises** the potential opportunities and impacts associated with whale watching on this species; and therefore:
 - (a) **recommends** using citizen science to collect photographic and drone-acquired data that can be added to existing North Pacific right whale catalogues and better determine North Pacific right whale distribution, movement, health and anthropogenic impacts, including evidence of entanglements;
 - (b) **recommends** that a local Code of Ethics be developed for tour boats to reduce potential disturbance to North Pacific right whales (e.g., Kamchatka); and
 - (c) **encourages** the submission of future papers on whale watching activities to the whale watching sub-committee.

8.3.5 Unusual mortality events affecting northern stocks

Since 2016, three UMEs have been declared by the US National Marine Fisheries Service for baleen whales in the western North Atlantic Ocean along the coast of Canada and the United States. These three concurrent and ongoing events involve humpback whales (2016-present), North Atlantic right whales (2017-present) and North Atlantic common minke whales (2017-present). To date, over 431 whales are involved in these UMEs: 191 humpback, 98 North Atlantic right and 142 minke whales. Although the reasons for stranding have differed between the species, subsets of all three have shown evidence of human interaction. A subset of minke whales has also shown evidence of infectious disease, which has been identified as a *Brucella* infection. The population-level impacts of these elevated stranding rates are unclear but especially concerning for North Atlantic right whales as the most recent minimum population estimate is fewer than 350 whales. Given the large numbers of whales involved in UMEs, there are unique opportunities to collect samples that may inform stock assessment or other scientific questions. More details can be found in Annex M, item 3.5. In addition, information on UMEs related to ENP gray whales, which are not included in this agenda item, can be found in Annexes E, F and G.

Attention: S, SC, CG,

The Committee:

- (1) **welcomes** new information on Unusual Mortality Events with respect to North Hemisphere whale stocks not covered under other sub-committees, and **encourages** additional updates at the next SC meeting;
- (2) **encourages** sharing of genetic samples and other data to assist with population studies; and
- (3) **recommends** available data from UMEs are catalogued in a way that can easily be requested by the Committee.

8.4 New information for other southern stocks

8.4.1 Southern Hemisphere humpback whales (if new information from Australia provided for estimating abundance of Breeding Stock D)

The assessment of the Breeding Stocks D (West Australia), E1 (East Australia) and Oceania was completed in 2014 (IWC, 2015b, Annex H, item 3.1), but there were difficulties in obtaining a reliable estimate of absolute abundance for Breeding Stock D (IWC, 2016a, item 10.2.2, p.30).

Attention: SC, G, CG

The Committee **agrees** that obtaining a reliable estimate of absolute abundance for Breeding Stock D (west Australia) is a priority for future In-depth Assessment of humpback whales.

The Committee **reiterates** its previous recommendations (SC1976, SC20173, SC21105, SC22131) that an evaluation of survey feasibility is completed intersessionally by Kelly and presented to the Committee at SC69B with a view to implementing a new survey of this population in the future.

A new humpback whale abundance and trend estimate (Monnahan et al., 2019) from a feeding ground area in the Magellan Straits (associated with Breeding Stock G in the southeast Pacific) was reviewed intersessionally and categorised as 'Not Suitable' for acceptance in an In-depth Assessment (Annex D, item 2.1.3).

8.4.2 Southern Hemisphere fin whales

As part of an ongoing pre-assessment, the Committee reviewed information on analysis of passive acoustic data and surveys contributing towards understanding of Southern Hemisphere fin whale distribution and stock structure (Annex P, item 6.1) and is encouraged by the increase in the number of reports of large aggregations of this species in the Southern Hemisphere.

Analysis of fin whale acoustic presence in recordings from 15 locations in Eastern Antarctic, Sub-Antarctic and Australian waters (2002-19) (Aulich *et al.*, 2022) suggested two distinct sub-populations with two distinct migratory pathways: from the Indian sector of Antarctica to the west coast of Australia; from the Pacific sector of Antarctica to the east coast of Australia. Seasonality was apparent with the animals present in Antarctic waters from late austral summer to autumn (February to June) and in Australian waters from austral autumn to mid-spring (May to October) on the east and west coasts. Diel patterns in acoustic presence suggested animals are more likely to vocalise (20Hz pulse) during the night when not foraging and less likely to vocalise when foraging during the day. Sea ice concentration and sea surface temperature were found to correlate with fin whale acoustic presence at the recording sites. An overall increase in acoustic presence from 2002-20 indicated an increase in the abundance of Southern Hemisphere fin whales.

The Committee received a report of re-occurring, large feeding aggregations of fin whales (up to 150 animals) off the north coast of Elephant Island, Antarctica (Herr *et al.*, 2022a). High densities of fin whales, re-establishment of historical behaviours and the return to ancestral feeding grounds have also been recorded regionally and are signs of an increasing population.

High-resolution video imagery was used to assess skin features (injuries, scars or skin anomalies) and behaviour (Herr *et al.*, 2023). No fresh injuries or severe scars, nor anthropogenic or environmental impacts, were apparent. However, cookiecutter shark (*Isistius spp.*) bites were observed on 49.5% of individuals suggesting that fin whales feeding in Antarctic waters migrate to offshore, temperate to warm water breeding areas where these sharks reside, but where anthropogenic impacts are low. The Committee was reminded that fin whales have been acoustically detected in warmer waters, but for a comparatively shorter time than other species, e.g., Bryde's whales (Cerchio *et al.*, 2020). Early analyses indicate that all individuals observed foraging undertake right side feeding lunges only - a behaviour repeatedly observed across other surveys.

The Committee reviewed the first long-distance tracks of two fin whales equipped with satellite transmitters off the Antarctic Peninsula (Herr *et al.*, 2022b). Both migrating animals left the feeding grounds on 15 April 2021 and travelled northward into the Pacific and up along the Chilean coast, providing the first evidence of seasonal migratory routes toward over-wintering grounds. Satellite telemetry data from nine tags deployed in 2023 will be presented at SC69B.

The Committee was presented with the results of joint data analyses from the IWC-SORP fin whale theme (Viquerat *et al.*, 2022). Records from the Antarctic Peninsula and Scotia Sea were compiled across 40 years from multiple sources. A novel approach allowed quantitative information, including estimates of abundance, to be derived from a mixed dataset of mainly opportunistic, presence-only data. These estimates will be reviewed by the Committee before inclusion in an In-Depth Assessment.

The Committee received the results of the 2022-23 JASS-A dedicated sighting survey programme conducted in the western part of Area VI East (145°W-130°W; south of 60°S) - the first survey in this region for more than 20 years (SC/69A/ASI/13). A total of 59 schools (137 individuals) of fin whales were observed, 20 individual biopsy samples collected, and eight satellite tags deployed. Data obtained will be analysed to provide abundance estimates and for stock structure studies at the Institute of Cetacean Research, Japan. The Committee encourages future research and invites an update for SC69B.

Overall, the Committee **agrees** that, in the light of information received each year, intersessional work will continue to assess data availability and identify data gaps to inform future assessments.

8.4.3 Workplan

The Committee **agrees** to the workplan provided in Annex P. ICGs can be found in Annex V.

8.5 Progress on previous recommendations

Previous recommendations from 2019-22 were reviewed and updated.

8.5.1 Using satellites to study whales

The Committee received new information on the use of very high resolution (VHR) satellite imagery to survey whales and other marine mammals, in particular a report of the ICG on Satellites to Study Whales (Annex T). Satellite imagery is particularly relevant for use in remote locations and as a tool for assessing *inter alia* environmental and anthropogenic threats to health and survival of threatened species (Annex D, item 7.1; Annex T; Cubaynes *et al.*, 2022; 2023). The Committee **agrees** with all the recommendations proposed in Annex T, which cover: (1) prioritisation, standardisation and best practice guidance for the development and sharing of training data (annotating whales and environmental conditions in satellite imagery); (2) ensuring data are reproducible; (3) guidance on which information to include during annotation; (4) publication and communication with providers; and (5) the creation of more equitable opportunities to access VHR

satellite imagery. The Committee **agrees** that the use of satellites to study whales is a cross-cutting issue that should be elevated within the Committee's agenda. Further updates are invited. The Committee **thanks** the SPACEWHALE team, Clarke, Cubaynes, Jackson and Fretwell, for their efforts to bring this topic to its attention.

Attention: SC, R, S

The Committee **recommends** that the ICG work with the Secretariat to draft and send a letter to satellite image providers, requesting support in:

- (1) reducing the cost of access to satellite imagery;
- (2) developing licensing agreements to facilitate data sharing;
- (3) using unique image identifiers to enable multiple groups to access the same image;
- (4) detailing collective research questions; and
- (5) a list of candidate areas for speculative tasking over coastal and open ocean areas.

Attention: SC, R, CG

In order to create more equitable opportunities to use very high-resolution satellite images for studying whales, the Committee **recommends** that the Commission engages with countries with active space programmes to improve access to existing and new information/imagery to assist in cetacean conservation and research.

Attention: SC, R, ICG, S

To highlight and manage resources on the use of satellite data to study whales and support the related collaborative research community, the Committee **recommends**:

- (1) the Secretariat and the GDR WG publish a summary table on the IWC webpage, containing links to where annotated datasets of whales in satellite imagery are stored; and
- (2) the Secretariat support the storage of common code to be formulated as part of best practice guidance by the Satellites to Study Whales group on the IWC GitHub.

8.6 Workplan

The Committee **agrees** to the workplan provided in Annex M. ICGs can be found in Annex V.

9. STOCKS THAT ARE OR HAVE BEEN SUGGESTED TO BE THE SUBJECT OF CONSERVATION MANAGEMENT PLANS

9.1 Stocks with existing Conservation Management Plans: new information and progress with previous recommendations

The Committee notes the value of IWC Conservation Management Plans (CMPs) to foster collaboration and enhance conservation of cetaceans. Some CMPs have been proposed or are under development in conjunction with other intergovernmental organisations (e.g., ACCOBAMS and CMS).

Attention: SC, CG, CC, CMS, ACCOBAMS

The Committee highlights the value of CMPs endorsed by more than one intergovernmental body and notes the general support this concept has received from the Commission. The Committee **recommends** the Conservation Committee advises these bodies to develop an efficient mechanism for the endorsement of joint CMPs.

9.1.1 Southeastern Pacific southern right whales

The Committee received a progress update on the CMP for southeastern (SE) Pacific southern right whales (SC/69A/CMP/22). Its action points were discussed at several recent CMP-related meetings (see Annex F, item 2.1; IWC, 2022f; 2022g).

Recent findings were presented on the use of PAM to identify potential breeding areas. A summary overview was provided on: (1) emerging threats from marine salmon farming; (2) ongoing concerns relative to ship strikes; (3) the need to request support from permitting authorities in Peru and Chile for collection of biopsy samples from cow-calf pairs in both Chile-Peru and the SW Atlantic.

The Committee received a report of observations of the largest aggregation (large groups totalling 28 sightings of 44 animals) of eastern South Pacific southern right whales found off Isla de Chiloe during the 2023 austral summer (January and February) (SC/69A/CMP/19rev2).

The northernmost sighting of southern right whales from the Chile-Peru population was recorded; a cow-calf pair sighted off the coast of Ecuador (SC/69A/CMP/25). Several other cow-calf pairs were recorded between August and September 2022 off Peru and northern Chile (SC/69A/CMP/25), which highlights the importance of these areas for this small population.

Attention: SC, CC, CG-Chile, Peru

The Committee **reiterates** the importance of the CMP for the critically endangered SE Pacific right whale population. The Committee **welcomes** the progress made, congratulates the governments of Chile and Peru for undertaking the six-year review and **endorses** the adoption of an updated CMP.

The Committee **expresses concern** about the potential impacts which salmon farming may have on this population and the marine ecosystem.

The Committee **draws attention** to the need for a deck-unit to complete the passive acoustic monitoring study in Peru. The Committee **notes** the importance of sightings reported off Isla de Chiloe and the northernmost sightings reported for this population. The Committee **encourages** further monitoring and research in both areas.

The Committee **recommends**:

- (1) a statement of rationale is prepared for SC69B to facilitate permits to collect biopsy samples from cow-calf pairs;
- (2) further monitoring to document whales off Isla de Chiloe and other parts of the range in light of recent sightings; and
- (3) further monitoring to search for animals off Isla de Chiloe using Very High Resolution (VHR) optical satellite imagery to:
 - (a) check the minimum number of animals on the days/area where these whales were encountered in 2023; (b) search for whales off Isla de Chiloe in the future.

9.1.2 SW Atlantic southern right whales

The Committee **recommends** that survey-based estimates of southwest Atlantic right whale abundance in Romero *et al.* (2022) are endorsed as Category 1A (see Item 11.1, Item 9.2.3.8, and Annex D, item 2.1.2, for discussion).

The Committee notes the importance of considering southern right whale mortalities from all regions and information on the influence of climate change relevant to In-depth Assessments (e.g., SC/69A/CMP/09 and SC/69A/CMP/11). Given the mortalities of reproductive females reported in 2022, and the population level impacts described, updated modelling of population demographics is encouraged. Considering such mortality events, the Committee **encourages** collaboration across southern right whale researchers in addition to contribution of data and samples for comparative analysis (see also Annex G, item 1.2).

Attention: SC, R

The Committee **recommends** researchers consider the influence of environmental variables in future modelling procedures when assessing southern right whale population dynamics.

Attention: SC, CG, R

The Committee **recommends** researchers in Brazil, Argentina and Uruguay to compare photo-ID catalogues for matches and **reiterates** encouragement to apply a mark-recapture multi-state model to assess movement rates and region-specific survival of southern right whales in the southwest Atlantic.

The Workshop on the CMP for the Southern Right Whale Southwest Atlantic Population reviewed information and updated the actions listed in the CMP (SC/69A/REP/05). Recent findings were presented on abundance and trends, stranding/mortality events, isotopic analysis of diet and satellite telemetry to examine movements and space use. Due to emerging and cumulative threats to SW Atlantic southern right whales posed by shifting climate and oceanographic baselines and the introduction of new large-scale offshore energy operations (e.g., wind energy), the CMP actions must be adaptive both in the short- and long-term.

Attention: SC, CC, CG- Argentina, Brazil, Chile and Uruguay

The Committee **reiterates** the importance of the CMP for Southwest Atlantic southern right whales, **welcomes** the progress made since its implementation and congratulates the governments of Argentina, Brazil, Chile and Uruguay for their commitment.

The Committee recommends:

- (1) continued collaboration between range states to generate new information using a broad range of research methods (e.g., genetics, isotopes, hormones, health assessment, photo-ID, UAVs, aerial and vessel-based surveys);
- (2) Commissioners from relevant range states support the internal permit process for telemetry work and biopsy sampling of cow-calf pairs;
- (3) satellite tagging is a priority in Brazil over the next few years (especially considering future development of wind energy areas) and should continue to be a priority for the breeding grounds in Argentina;
- (4) the CMP coordinator makes a formal request to range states for industry private data (e.g., seismic, fisheries, wind energy) relevant to actions of the CMP;
- (5) recommends that updated protocols, permits, rapid response capabilities and standardised approaches to necropsies are developed and implemented across the range states; and
- (6) IWC entanglement and response training/planning for transboundary events is jointly carried out with the four range countries.

9.1.3 North Pacific gray whales

The Committee received a progress update on the CMP for North Pacific gray whales. Summaries of research efforts from Japan, Mexico, the Russian Federation and USA were reviewed. Other information of concern was provided on: (1) status of the IUCN Western Gray Whale Advisory Panel (WGWAP) repository of work products; (2) lack of information on industry-funded gray whale research in the WNP off Sakhalin Island, Russia.

Attention: CG-R, SC, G, I, CC

The Committee **notes** that an update to the CMP for western gray whales has been indefinitely delayed due to the Russian invasion of Ukraine. The Committee **reiterates** the importance of long-term monitoring and **welcomes** new information provided by Japan, Mexico, the Russian Federation and USA. It **strongly recommends** that range states continue to support this work as it is essential for conservation and management.

The Committee recommends:

- (1) every effort is made to continue the Russian Gray Whale Project in order to maintain the several-decades-long time-series upon which assessment of the population relies and to monitor the concerning decline in whale numbers using the nearshore feeding area off Sakhalin Island, Russia;
- (2) NOAA/SWFSC continue regular surveys of ENP gray whale abundance and calf production as the associated data are critical to the ASW and ASI sub-committees;
- (3) other research programmes focused on WNP gray whales (e.g., the industry funded programme initiated in 2002 off Sakhalin) report to the Committee as the IUCN WGWAP has been discontinued; and
- (4) the industry programme follows the example set by the Russian Gray Whale Project and make photo-ID catalogues and related data available via the IWC.

Attention: S

The Committee **requests** the Secretariat:

- (1) contact the Commissioner for the Russian Federation for clarification on the present status and scope of industry-funded research on WNP gray whales and report back to the Committee in the intersessional period;
- (2) liaise with the Deputy Director General of IUCN to discover whether, and if so when, they will make the materials of the WGWAP available on their web site as they had agreed at the final meeting of WGWAP and report back to the Chair of the Committee; and
- (3) if the IUCN response is negative, report back to the Committee on the possibility of hosting the WGWAP materials on the IWC website.

9.1.4 Franciscana

A workshop to finalise the review of the status of the franciscana was held in Curitiba, Brazil (4-5 June 2022; SC/69A/REP/01). Participants from three countries, including representatives of government agencies in Argentina, Uruguay and

Brazil, and non-governmental organisations, attended the workshop. Priority actions for the franciscana were reviewed and updated (Item 16.4.1; Annex Q, item 2.4). The Committee **agrees** that all outstanding priority actions of the CMP were reviewed and updated.

9.1.5 Southern American river dolphins

The purpose of this CMP is to conserve river dolphin species (*Inia geoffrensis*, *Inia boliviensis*, *Inia araguaiaensis* and *Sotalia fluviatilis*) in the Amazon, Orinoco and Tocantins/Araguaia basins. The Committee received a summary of the following workshop report: 'Analysis of Public Policies and Regulatory Framework focused on Aquatic Regions' (SC/69A/CMP/24). This included an important summary of discussions held in Bogota, Colombia (7-28 March 2023). Workshop participants included representatives from the governments of Brazil, Colombia, Ecuador and Peru.

These representatives analysed the existing policies and regulatory framework to counteract deforestation, conflicts with fisheries, mercury contamination, climate change (water stress) and loss of river connectivity due to dams. Scientific developments were presented on genetic studies, abundance surveys, bycatch and mercury contamination, pilot testing of satellite telemetry and pinger deterrents. Progress has been made on 26/32 actions proposed in the CMP.

Attention: SC, CC, CG

Despite the moratorium on fishing and trade of piracatinga in Brazil since 2015, piracatinga fishing activities are still widespread (SC/68D/SM/15). The Committee **strongly recommends** that the moratorium be renewed for five years so that the impacts of piracatinga fishing can be quantified. In the Orinoco (Venezuela, Colombia) and Ecuadorian portion of the Amazon basin, the Committee **recommends**:

- (1) coordinated control and surveillance of compliance with the moratorium in border areas between Venezuela and Colombia;
- (2) environmental education workshops to discourage the hunting and use of dolphins;
- (3) a socioeconomic analysis to understand why human populations use dolphin meat;
- (4) the inclusion of piracatinga fishing as an ongoing and expanding threat within the CMP; and
- (5) estimates of abundance and population trends are quantified to better evaluate the impacts of illegal hunting in the Orinoco Basin.

Attention: SC, CC, CG

River dolphins are among the most threatened cetacean species due to degradation and transformation of habitats. In recent years, there has been a drastic rise in the magnitude of threats, such as deforestation, loss of river connectivity due to dams, mercury contamination, overfishing and bycatch. The Committee **recommends**:

- (1) a communication and awareness campaign is developed in the area between Ecuador and Peru (Napo River) targeting local communities and border control authorities (migration police, navy and army), focusing on the importance of river dolphins and the legal implications of hunting and trafficking these endangered species;
- (2) a meeting is held between environmental authorities (central offices of the Ministries of Environment and officials of protected areas) of Ecuador and Peru to raise awareness and coordinate joint efforts to mitigate threats related to hunting and trafficking river dolphins in the border area;
- (3) continued dolphin population monitoring in the Yasuní, Napo, Aguarico and Lagartococha rivers to determine population trends; and
- (4) community agreements are formed for responsible fishing in the border zone.

9.2 Progress with identified priorities

9.2.1 Humpback whales in the northern Indian Ocean including the Arabian Sea

Significant and commendable progress has been made on the development of a CMP for Arabian Sea humpback whales (ASHWs). Despite complex issues with establishing a formal CMP, there is a clear commitment to the conservation of ASHWs from stakeholders and government agencies in Oman.

The Committee **expresses concern** about the following: (1) the small population of ASHWs (estimated at 82 individuals in 2008); (2) the decline in ASHW song detection during the breeding season from 59% of monitored hours in 2011-12 to 2% in 2021-22, coupled with only sporadic sightings of ASHWs in formerly core habitat coinciding with sea surface temperature anomalies at or above the upper threshold; (3) the weaker northwest Indian Ocean monsoon causing deoxygenation and denitrification of surface waters, leading to population decline of sardines - an important prey species; (4) the 35% regional increase in the volume of vessel traffic between 2008-18, increasing the risk of ship strikes within core habitat; and (5) that two-thirds of animals observed in the western Arabian Sea have scarring associated with fisheries interaction.

The work of the Arabian Sea Whale Network (ASWN) has proven to be a highly successful key framework to facilitate the creation a CMP, implementing tangible conservation measures and enhancing both general awareness and international collaboration rangewide. It was noted that, since March 2019, the ASWN coordinator position is unfunded and managed on a volunteer basis, creating challenges for many aspects of the ASWN. The Committee notes the importance of dedicated coordination for all aspects of the development of a CMP. Fundraising to ensure the current coordinator can continue and hand over to a range-country replacement would greatly help maintain progress towards a CMP. The Committee **commends** ASWN members on the immense amount of collaboration and scientific information produced over the past 20 years.

The Committee received a report from the ASHW Biotelemetry ICG (SC/69A/CMP/26) describing efforts to continue tagging this population to address key data gaps following previous recommendations (IWC, 2013) and adopting a rigorous tagging protocol following best practices (Andrews *et al.*, 2019) endorsed by the Committee.

Attention: SC, CC, R, CG

The Committee **expresses concern** for the ASHW population and **strongly reiterates** it should be noted as a priority candidate for a CMP. The Committee **welcomes** efforts to encourage range states listed in the IUCN Red List assessment to develop a joint CMS-IWC CMP. The Committee **requests** range states which are not members of the IWC (Kuwait and Qatar) to consider collaborating on this joint CMP.

Attention: SC, CC, I, R, CG

The Committee **strongly recommends** the following actions are implemented as a matter of urgency throughout the ASHW range:

- (1) produce a synthesis of ASHW distribution, identification of important habitats and potential threats throughout its range, which can be used to develop marine spatial management plans across the region to mitigate impacts in high-risk areas with a focus on commercial and artisanal fisheries and impacts from commercial shipping and ship strike risk assessments using multi-species and dynamic species distribution modelling approaches;
- (2) continue the crew-based observer programme in Pakistan (SC/69A/CMP/05) and replicate this approach throughout the region wherever possible, especially in areas where systematic cetacean surveys are not feasible;
- (3) continue the use of UAVs to assess body condition in conjunction with other metrics to assess seasonal/annual variation and evaluate health, scarring and foraging success; photographic data collected in Oman from 2019-22 is used to conduct an updated visual health assessment using the same methodology set out by Minton *et al.* (2022);
- (4) noting that data can only be collected for periods when whales are calling, conduct continuous and simultaneous passive acoustic monitoring in ASHW identified habitat in both the western Arabian Sea (different parts of Oman's waters, Socotra and the Gulf of Aden) and eastern Arabian Sea (Pakistan, India, Sri Lanka and the Maldives) to: (a) describe and assess changes in spatiotemporal distribution throughout the Arabian Sea; and (b) use song structure variation as an indicator of movements of individuals, potential sub-structure within the population, and monitor for future mixing with other populations;
- (5) conduct further satellite telemetry studies aimed at key data gaps in temporal distribution and sex composition of existing data, including movement behaviour of individuals during periods not covered by previous tagging studies (February and June to October), and increasing the sample size of females - in particular this will inform important management decisions in re-routing shipping to mitigate the risk of ship strikes;
- (6) collate and analyse stranding data throughout the suspected ASHW range to better understand trends in whale distribution and mortality;
- (7) complete genetic analyses of the *Megaptera indica* type specimen and compare the generated data with samples from Oman in order to clarify the taxonomic status of ASHW; and
- (8) regularly update abundance and trend estimates with the most recently available photographic mark-recapture data.

9.2.2 Central American humpback whales

The main objective of the Central American humpback whale CMP is to conserve the CAHW population and its habitat through collaborative regional actions to reduce anthropogenic threats. The CMP aims to provide range states with scientific evidence and management tools to implement actions to conserve the Central America-Mexico-USA population. SC/69A/CMP/08 summarised the Third Workshop for the Conservation Management Plan for the Central American Humpback Whales held at La Paz, Mexico (28-29 October 2022). The workshop focused on scientific aspects of Central American humpback whales with an emphasis on updates to abundance estimates, distribution, movements, migration and genetics. Participants represented eight countries and discussed research priorities to further conservation efforts and general awareness.

Attention: SC, CC, CG

At SC68B and SC68D, the Committee reiterated the recommendation that the Central American humpback whale population be treated as a 'priority population' for the CMP development process. Therefore, the Committee **recommends**:

- (1) continuation and increased collaboration of the range states; and
- (2) the CMP is presented at the next meeting.

9.2.3 Mediterranean sperm whales

The Mediterranean sperm whale is listed as 'Endangered' on the IUCN Red List. In 2020, 2021 and 2022, the Committee recommended this population be treated as a 'priority population' for the CMP development process. In addition to ship strikes, anthropogenic noise and bycatch, Mediterranean sperm whales are particularly vulnerable to marine litter. Range states include Albania, Algeria, Cyprus, Egypt, France, Greece, Italy, Libya, Malta, Monaco, Morocco, Spain, Tunisia and Turkey. The Committee looks forward to receiving an update at SC69B. The Committee **welcomes** the news that ACCOBAMS is considering the possibility of a CMP for sperm whales in the near future and **agrees** consideration should be given to a joint ACCOBAMS/IWC CMP.

Attention: CG, CC, ACCOBAMS

The Committee **reiterates** its recommendation from SC68C (SC2149) that the Mediterranean sperm whale be treated as a 'priority population' for the CMP development process and **encourages** the ACCOBAMS Scientific Council to initiate this process as soon as practical.

9.2.4 Mediterranean fin whales

A draft version of the CMP for Mediterranean fin whales prepared by ACCOBAMS was presented to the Committee. The overarching objective of this CMP is to manage human activities that affect fin whales in the Mediterranean Sea in order to maintain a favourable conservation status throughout their historical range, based on the best available scientific knowledge. Following completion of the CMP, the most urgent action is the appointment of a coordinator. Funding must be found at the earliest opportunity to set up the Steering Group and ensure the CMP moves forward at pace. The need for stakeholder workshops to finalise the CMP is an essential part of the process as agreement between the primary stakeholders is key to the effectiveness of CMPs and successful implementation of actions. The Committee **welcomes** the news that ACCOBAMS has adopted the IWC guidelines for its draft Mediterranean fin whale CMP and the progress made therein.

Attention: SC, CG, CC, ACCOBAMS

The Committee **reiterates** its recommendation (SC2151) for these whales to be treated as a 'priority population' for the CMP development process.

The Committee **recommends** relevant IWC members and ACCOBAMS parties finalise the CMP for fin whales in time for SC69B and allow it to be reviewed by the Commission at IWC69.

9.3 Progress on previous recommendations

The Committee recognises that cancellation of the 2020-22 in-person meetings severely delayed its work. The international and collaborative nature of CMPs requires significant input before progress on previous recommendations can be adequately measured. Despite this, the Committee has seen very encouraging progress on the existing CMPs for SE Pacific southern right whales, SW Atlantic southern right whales, franciscana and South American river dolphins, including the implementation of actions, research, outreach, coordination and fundraising. These CMPs represent dedication, determination and goodwill. The individuals, communities, stakeholders and governments involved deserve praise for their efforts.

The Committee looks forward to the completion of CMPs for priority populations in the near term, including Arabian Sea humpback whales, Central America humpback whales and Mediterranean fin whales. Future CMPs will focus on Mediterranean sperm whales, Cuvier's beaked whales and delphinids, including Risso's, common and bottlenose dolphins. The Black Sea Commission (Sub-Regional Coordination Unit) has suggested harbour porpoise, bottlenose and common dolphins as candidate species for CMPs.

9.4 Workplan

The Committee agrees to the workplan provided in Annex F. ICGs can be found in Annex V.

10. STOCK DEFINITION AND DNA TESTING (SD-DNA)

At SC69A, the Stock Definition and DNA Testing WG provided advice on stock structure to other sub-committees (Item 10.1), received voluntarily submitted information on the DNA registers maintained by Japan, Iceland, and Norway (Item 10.2), made progress on updating the genetic data quality guidelines (Item 10.3) and considered recommendations to avoid the depletion of tissue samples in existing collections (Item 10.4).

10.1 Provide advice to other sub-groups on population structure for requested stock

The SD-DNA WG has been tasked with reviewing high-priority stock related papers from other sub-committees and WGs and providing them with stock structure related feedback and recommendations. These discussions often refer to the genetic data quality and genetic analysis guidelines (see Item 10.3).

10.1.1 North Pacific gray whales

Two stock structure hypotheses (4a and 7a) were identified as a high priority for inclusion in the modelling framework used to evaluate the status of North Pacific gray whales during the range-wide workshops held between 2014-18 and in subsequent discussions (e.g., IWC, 2021b, Annex F). In both hypotheses, the Pacific Coast Feeding Group (PCFG), defined as the animals observed during the feeding season (June to November) in the region between 41° and 52°N (northern California, USA to British Columbia, Canada) in more than one year according to photo-ID data (IWC, 2015a, Item 9.2, p.23), is considered a feeding group part of the eastern Breeding Stock of gray whales. Existing photo-ID and genetic data (Lang *et al.*, 2012; 2014; Calambokidis *et al.*, 2019) suggest some degree of external recruitment into the PCFG, presumably from whales that previously fed in the Bering and Chukchi Seas (i.e., the Northern Feeding Ground, NFG).

The Committee reviewed new information using drone-based photogrammetry to estimate length-at-age growth curves and to measure the fluke and skull width of whales photographed on the PCFG feeding ground between 2016-22. These measurements were compared with those derived from whales migrating past central California during scientific whaling between 1959-69 and presumed to represent the NFG. PCFG and NFG whales were found to have similar growth rates, but whales photographed on the PCFG feeding ground reached shorter asymptotic lengths (by 0.30m and 0.86m for males and females, respectively) and had skull sizes that are ~2% smaller and fluke spans that are ~1% smaller than presumed NFG whales. Whilst the two datasets compared use different methodologies and were collected during different time periods, contemporary data using aerial photogrammetry of presumed NFG whales (1994-98, Perryman *et al.*, 2002; 2017-19, Christiansen *et al.*, 2021) found similar mean lengths to those from the scientific catch data. It is unknown if the morphometric differences reflect ecological divergence driven by selection for small body size in PCFG whales or if whales with smaller body sizes are more likely to recruit into the PCFG.

Given evidence of immigration into the PCFG, the Committee notes that morphological data collected from PCFG whales may contain a mix of internally and externally recruited individuals. To evaluate this possibility, the Committee **encourages** additional work be conducted, including:

- (1) simulations to generate null distributions of the morphometric data under the hypothesis that whales sampled in the PCFG comprise a single versus a mixed group and comparing that simulated data to the empirical data; and
- (2) multivariate analyses of the empirical data to evaluate if two cohorts can be detected.

After reviewing this new information, the Committee **agrees** that the high priority stock structure hypotheses currently under consideration remain appropriate for inclusion in the modelling framework.

10.1.2 North Atlantic humpback whales

The Comprehensive Assessment of North Atlantic humpback whales was completed in 2002 (IWC, 2002, Item 10.5, p.44). Since that time, substantial new information has become available. In 2018, the Committee agreed it was timely to consider a rangewide In-depth Assessment.

The Committee reviewed new information relevant to stock structure of North Atlantic humpback whales. Genetic analysis of tissue samples collected from humpback whales on feeding and wintering areas in the North Atlantic identified two primary clusters (SC/69A/NH/02): (1) the Greater Antilles and Lesser Antilles wintering grounds and the Gulf of Maine feeding ground were grouped into a 'western' cluster; (2) the majority of whales sampled on the Cape Verde wintering ground and the Norway/Barents Sea feeding ground were part of a smaller 'eastern' cluster. Most whales sampled on the Icelandic feeding area assigned more strongly to the western cluster; as did some of the whales sampled on the Norway/Barents Sea feeding ground and some of those sampled on the Cape Verde wintering grounds. The results indicated that a high level of recent immigration (10-25%) of western breeding stock whales into the Cape Verde Islands (CVI) was occurring, consistent with a non-trivial proportion of whales in the CVI wintering ground being of western origin.

Comparison of photo-ID data between feeding and wintering areas showed a similar pattern to that seen in the genetic analysis results (SC/69A/NH/05). However, the photo-ID analysis showed connections between the Lesser Antilles wintering ground to eastern feeding grounds, suggesting the migratory patterns of whales overwintering in the Lesser Antilles were more similar to those from the CVI breeding segment than the area in the Greater Antilles which is geographically closer.

Attention: SC

The stock structure of North Atlantic humpback whales is currently being considered as part of a range-wide Comprehensive Assessment (see Item 8.2.6 and Annex M). After reviewing substantial new information on the connectivity between feeding and breeding grounds used by humpback whales in the North Atlantic, the Committee **recommends**:

- (1) photo-ID data evaluating the connectivity between breeding grounds and between feeding grounds be made available for assessment;
- (2) additional details of the model underlying the calculation of transition probabilities based on the photo-ID data provided, including an evaluation of model fit;
- (3) genetic analyses to evaluate the proportion of each breeding stock that is represented on each feeding ground (i.e., a mixed stock analysis) be conducted; and
- (4) new and updated information relevant to the population structure and mixing of North Atlantic humpback whales be presented at SC69B.

10.1.3 North Pacific humpback whale

The Comprehensive Assessment of North Pacific humpback whales began in 2016 with an intersessional workshop held in 2017 (IWC, 2018c). A summary of the stock structure hypotheses currently under consideration for the assessment was provided in IWC, 2022a (Item 8.1.1). With respect to structure on the ENP wintering grounds, two hypotheses are being considered, one which assumes all whales that breed off Mexico, including those found off Baja California, are part of a single Mexico breeding stock; a second that considers whales that use the Archipiélago de Revillagigedo wintering area and whales that winter off mainland Mexico are two separate breeding stocks (the offshore Mexico and mainland Mexico breeding stocks, respectively). In both hypotheses, the Mexico breeding stock(s) are distinct from the Central American breeding stock, but questions remain about the location of the boundary between them.

The Committee reviewed new information relevant to the breeding stock identity of whales in southern Mexico. Analysis of photo-ID data collected from multiple locations in northern, central and southern Mexico, as well as Central America, showed higher movements among the southern sampling areas, which suggests that most whales photographed in southern Mexico are part of the Central American breeding stock (Martínez-Loustalot *et al.*, 2022). However, some temporal and spatial variation was apparent in the proportion of Central American breeding stock whales found at different sites within the southern Mexico region. The results of genetic analyses showed that the mitochondrial DNA (mtDNA) control region haplotype frequencies of whales sampled in southern Mexico were significantly different from those generated from whales sampled in Baja California, Bahía de Banderas, and the Revillagigedo Archipelago, while no significant differences were found between southern Mexico and Central America (Martínez-Loustalot *et al.*, 2020). Thus, the results of both photo-ID and genetic analyses were generally consistent with the current location of the boundary between the Central American breeding stock and Mexican breeding stock (under hypothesis B1) or the Mexico coastal breeding stock (under Hypothesis B2).

The stock structure of North Pacific humpback whales is currently being considered as part of an In-depth Assessment (see Item 8.1.1 and Annex K). After reviewing new information from genetic and photo-ID studies that relate to whether the whales that use southern Mexico are part of the Central American breeding stock or should be included as part of the breeding stock(s) in northern Mexico, the Committee **agrees**: (1) the results are consistent with greater interchange between southern Mexico and the Central American breeding stock than with the breeding stock(s) in northern Mexico; and (2) the stock structure hypotheses currently under consideration remain appropriate for the In-depth Assessment.

10.1.4 Bering-Chukchi-Beaufort bowhead whale

The last IR for BCB bowhead whales was conducted in 2018. During this review, four stocks of bowhead whales were considered, including the BCB, the eastern Canadian-Western Greenland (ECWG), the Okhotsk Sea (OKS) and East Greenland-Svalbard-Barents Sea (EGSB) stocks. Following a review of the genetic data (Baird *et al.*, 2018), the Committee agreed there was a lack of substructure within the BCB stock but some level of historic or contemporary gene flow could exist between the BCB and ECWG stocks. Additional analyses to explore potential differentiation within the ECWG stock should be conducted.

The Committee reviewed the results of new and updated analyses aimed at addressing the 2018 recommendation. SC/69A/SDDNA/01 incorporates samples from the BCB, ECWG and OKS stocks and uses standard population genetic analyses as well as ordination analyses (i.e., a Principal Coordinate Analysis, PCoA) to look at differences both within and between stocks. The results were generally consistent with those from previous studies (e.g., Baird *et al.*, 2016; 2018). The strongest differences were found between the Okhotsk Sea stock and the BCB and ECWG stocks. While differentiation between the BCB and ECWG stocks exists, it was less apparent, suggesting some level of historic or contemporary connectivity could exist. While some heterogeneity among the samples from the Okhotsk Sea was potentially present in the nuclear PCoA analysis and should be investigated further, no signal of heterogeneity within the ECWG stock was detected.

After reviewing the results of new and updated genetic analyses of bowhead whales from the BCB Seas, the Eastern Canadian-Western Greenland, and Okhotsk Sea stocks, the Committee **agrees** the results are consistent with previous analyses which suggest that, while all three stocks are distinct, some level of historic and contemporary connectivity could exist between the BCB Seas and Eastern Canadian-Western Greenland stock.

10.1.5 *Franciscana*

The franciscana is a small dolphin endemic to the southwestern Atlantic coastal waters between central Brazil and central Argentina. It is considered the most threatened marine cetacean species in South America (Secchi *et al.*, 2003) and is listed as ‘Vulnerable’ on the IUCN Red List due to fishing-related mortality at levels believed to be unsustainable (Zerbini *et al.*, 2017). In 2020, a proposal that 11 management units should be recognised within the franciscana’s range was put forward (Cunha *et al.*, 2020b). Since that time, the Committee has focused on evaluating the level of support for each proposed subdivision based on genetic and non-genetic lines of evidence relevant to stock structure. A summary of that work was presented as part of a workshop held in Curitiba, Brazil, in June 2022 (SC/69A/REP/01).

The boundary between FMA III and FMA IVa which separates the Uruguayan and Argentinian waters of the Rio de la Plata was drawn to facilitate separate management by those two countries. Some data supporting limited movements of franciscana within FMA IVa has since become available (Wells *et al.*, 2021). Moreover, recent sightings of franciscana near this boundary during aerial surveys conducted to estimate abundance (SC/69A/ASI/19rev2) suggest that franciscana might have a continuous distribution between these two FMAs. Additional information is needed to better inform the placement of this boundary.

Attention: SC, CMP

After reviewing the Report of the Workshop to Finalise the Review of the Franciscana, held 4-5 June 2022 in Brazil, the Committee **endorses** the following recommendations:

- (1) the 11 proposed FMAs are considered to represent separate management units for the assessment of the franciscana dolphin by the IWC;
- (2) an integrated range-wide analysis implementing a genome-wide approach is conducted to continue refining understanding of franciscana stock structure; and
- (3) the nomenclature ‘FMA II Babitonga’ is adopted in all future SC reports and assessments.

While noting that the proposed boundaries between FMAs are based on the best available information, the Committee **agrees** that additional research to better resolve these boundaries is needed in some areas. In particular, the Committee **encourages** that additional studies, including aerial surveys and collection of additional samples to enable genetic analyses, are conducted to further evaluate the boundary between FMA III and FMA IVa.

10.1.6 *Sotalia guianensis*

The Guiana dolphin is a small coastal delphinid that ranges from Nicaragua to southern Brazil (Flores *et al.*, 2009). This species is listed as ‘Near Threatened’ by the IUCN (Secchi *et al.*, 2018) and faces various anthropogenic threats throughout most of its distribution. In 2020, the Committee received a proposal to identify 12 management units within the Guiana dolphin’s range (Cunha *et al.*, 2020a). A review of the support for recognition of these proposed units is being conducted through an ICG formed in 2020 (IWC, 2021c, Annex K).

The Committee reviewed a previously submitted progress report on the status of current knowledge (SC/68C/SM/18) that includes a section summarising available data that might inform the understanding of stock structure within the range of the Guiana dolphin. While the 12 management units incorporate relatively small discrete areas, Guiana dolphins were historically considered to be continuously distributed between Nicaragua and southern Brazil. The collection and genetic analysis of samples throughout the range is needed to better understand if the boundaries between areas are appropriately placed.

Stranded or bycaught individuals are an important source of genetic samples, but few or no strandings have been reported in some areas of the range. Obtaining biopsy samples from this species is challenging and capturing individuals for tagging and genetic sampling is risky given the potential for capture myopathy. As such, alternative methods of obtaining information relevant to stock structure should be considered. One such approach currently being explored for the tucuxi is the use of environmental DNA (eDNA) to non-invasively collect water samples where the species DNA may be present, although such analyses may be less powerful to resolve subtle population structure.

The Committee **agrees** to continue its evaluation of the available genetic and other (e.g., stable isotopes, contaminants) lines of evidence pertaining to population structure in order to provide advice on proposed management unit delineations.

Attention: SC, R

The Committee **recognises** the need to better understand the population structure and boundaries of the Guiana dolphin throughout its range and **agrees** to continue its evaluation of available genetic and other (e.g., stable isotopes, contaminants) lines of evidence pertaining to population structure via the ICG established in 2020 in order to provide advice on proposed management unit delineations.

Further, the Committee:

- (1) **recommends** the initiation of a range-wide analysis implementing a genome-wide approach be conducted to further understanding of the stock structure of the Guiana dolphin;
- (2) **encourages** stranding programmes throughout the range of the species to collect samples from stranded Guiana dolphins and make them available for integrated genetic analyses; and
- (3) **recommends** exploration of the use of environmental DNA to inform understanding of the population structure and distribution of the species.

10.1.7 North Atlantic fin whale

The last IR for North Atlantic fin whales was completed in 2016 (IWC, 2016b, Annex D, item 3.1). Eight stock structure hypotheses were considered, and their respective plausibility was mostly evaluated in light of non-genetic information, given the lack of structure detected using the available genetic data (Pampoulie *et al.*, 2008). Three hypotheses (IV, VII, and VIII) were ranked ‘low plausibility’ and omitted from further consideration due to incompatibilities with tagging data.

A new IR was conducted this year and the Committee considered the previous stock structure hypotheses. While genetic data from additional samples have been generated since the last IR (see SC/69A/IST/05; Annex O, Appendix 3), it has not yet been analysed. Given that no new additional data are available, the Committee agrees that the stock structure hypotheses considered under the last IR are sufficient for use in the current IR.

The Committee noted that the genetic dataset available for North Atlantic fin whales is in some respects similar to that used in the RMP/AWMP IR of North Atlantic minke whales that was completed in 2017 (IWC, 2018b, Annex D, item 3.1). Following a similar approach with respect to the genetic analyses used could be helpful. Most of the available samples are from Iceland. Gaps in sample coverage in other areas limit the ability to conduct most of the analyses (e.g., evaluating mixing, relatedness analysis and even conventional analyses). An ICG was formed to guide additional analyses of genetic and other data that could be used to assess the plausibility of the existing hypotheses and to inform mixing parameters for the next IR.

Attention: SC

In preparation for the next Implementation Review of North Atlantic fin whales, the Committee **recommends** collaborative sharing of available tissue samples and genetic data from across the range of fin whales in the North Atlantic to facilitate analyses of genetic structure and mixing.

10.2 DNA Registers

The Committee received voluntary updates of the DNA registers from Japan, Iceland and Norway through 2022. Details are given in Annex O. Almost all samples in the Japanese and Icelandic registers have been analysed for mtDNA and a standard set of microsatellites. Almost all Norwegian samples have been genotyped for a standard set of microsatellites and SNPs.

Representatives of Iceland and Norway submitted a statement reasserting the position of the governments of Iceland, Norway and Japan on DNA registers (see Annex W). The Committee **thanks** Japan, Norway and Iceland for providing voluntary updates to their DNA registers using the standard format agreed in 2011 and including the detailed information contained in their DNA registers.

10.3 DNA data quality and genetic analysis guidelines

Two sets of guidelines have been developed in the Committee’s discussions of stock structure: (1) the DNA quality guidelines, which provide advice on best practices for ensuring the quality of data produced for genetic analyses; and (2) the genetic analyses guidelines, which provide advice on genetic analyses commonly used in the Committee’s work. Both documents will need updating as analytical approaches and technologies evolve. The DNA data quality guidelines are currently being updated (see Item 10.3.1). The guidelines for genetic data analysis were published in the *Journal of Cetacean Research and Management (JCRM)* (Waples *et al.*, 2018). Some of the analytical approaches included in the genetic data analyses need to be updated in light of advances in genomic approaches. While some discussion of these necessary updates was held, no progress on this item was made due to time constraints.

10.3.1 DNA data quality guidelines

The DNA data quality guidelines address DNA validation and systematic quality control in genetic studies and are currently available on the IWC website.⁶ As the use of high-throughput sequencing approaches to produce genetic data has become increasingly common, the need to update these guidelines to address the associated data quality issues has been highlighted. However, the Committee notes there are challenges associated with providing advice on the use of both traditional technologies (e.g., microsatellite genotyping, Sanger sequencing) and more contemporary and emerging approaches that rely on high-throughput sequencing. Both approaches are used to address questions of interest to the Committee, thus both remain relevant to include in the guidelines. Sections of the DNA data quality guidelines that apply to high-throughput sequencing data will be updated intersessionally.

10.3.2 DNA data quality and analysis guidelines checklist

Given that both guideline documents contain extensive information, a concise 'bridge' document is needed to: (1) provide a checklist of key aspects of data quality and analysis that could aid interpretation of documents reviewed by the Committee; and (2) update aspects of the guidelines, particularly with respect to genomic methodologies and analysis. Work to generate this document will be conducted intersessionally.

Attention: SC, S

The Committee has developed two sets of guidelines that provide advice on: (1) best practices for ensuring the quality of data produced for genetic analyses; (2) genetic analyses commonly used in the Committee's work. These guidelines are intended to be 'living documents', updated as analytical approaches and technologies evolve.

With respect to the DNA data quality guidelines, the Committee:

- (1) **recognises** the importance of continuing to provide advice on data produced using traditional approaches (e.g., microsatellite genotyping, Sanger sequencing), but also
- (2) **encourages** the use of high-throughput sequencing approaches that may provide increased resolution to address questions of interest to the Committee, and
- (3) **emphasises** the value of generating high quality reference genomes that can serve as a resource for other studies.

10.4 Recommendations on the avoidance of sample depletion

This agenda item was established due to concerns about the depletion of tissue samples collected as part of the IWC's SOWER and POWER surveys. Since that time, discussion has primarily focused on providing advice on genomic approaches, such as Whole Genome Sequencing, that would maximise the value of the tissue used. The Committee reviewed past progress of this agenda item and **agrees** to continue its work on this topic intersessionally with a focus on: (1) providing advice on the amount of tissue typically needed for commonly used approaches to produce genetic and genomic data; and (2) discussing how to increase the utility of the advice compiled to those evaluating requests to use IWC samples (e.g., POWER Steering Group).

10.5 Review terminology used for stock structure related terms used within the IWC

Following a recommendation in 2012 (Taguchi *et al.*, 2017), a 'go-to' glossary of stock related terms was compiled, with the aim of encouraging consistent use of stock related terms within reports from and papers submitted to the Committee. Initial work on this glossary focused on defining the most commonly used terms in assessments of baleen whales (IWC, 2013, Item 11, p.39). While the Committee has made some progress standardising terminology across sub-committees which focus on large whale assessments, aligning this terminology with the SM sub-committee has been more difficult. Limited time was available to discuss stock structure-related terminology. The Committee therefore **agrees** to continue this work intersessionally.

10.6 New genetic approaches for use by the Scientific Committee in addition to stock structure issues

No papers detailing new genetic approaches were received.

Attention: SC, R

The Committee **welcomes** the opportunity to review papers that take advantage of technological advances to improve the ability to detect and identify species, subspecies, stocks and individual cetaceans. As in previous years, the Committee **encourages** submission of similar papers in the future and recognises the relevance of these techniques to the Committee's work.

⁶<https://iwc.int/scientific-committee-handbook#ten>

10.7 Progress on previous recommendations

Previous recommendations from 2019-22 were reviewed and updated.

10.8 Workplan

The Committee **agrees** to the workplan provided in Annex O. ICGs can be found in Annex V.

11. CETACEAN ABUNDANCE ESTIMATES AND STOCK STATUS

11.1 Review of abundance estimates

The Committee reviewed a wide variety of abundance estimates for cetaceans around the world. The review process considered *inter alia*:

- (1) whether there is sufficient information provided in the paper for evaluation;
- (2) whether the survey design and analysis methods are broadly appropriate;
- (3) whether the survey was effectively implemented and resulted in adequate sample sizes;
- (4) whether the analysis was implemented as intended, with no critical errors, and the underlying assumptions were met;
- (5) whether the abundance estimate is useful as a basis for conservation and management advice; and
- (6) whether the conclusions are appropriate given the analysis.

The Committee's review of abundance estimates was aided by the pre-meeting report of the ASG (SC/69A/REP/02; referred to here as the ASG report). For each abundance estimate reviewed, the ASG Report contains a summary of the paper, a list of concerns and comments from independent reviewers, and the ASG's discussions and recommendation. Decisions in the ASG Report are recommendations to the Committee.

The review process benefited from the engagement of many authors who revised their analyses in response to suggestions. Descriptions of abundance estimates, methods and categorisation rationales are given in Annex D (item 2.1).

The system used by the Committee to categorise abundance estimates is given in Annex D, Appendix 3. Categories are only used to identify how estimates can be used most appropriately by the Committee and its subgroups.

Attention: SC, S, C

The Committee **recognises** that the IWC Table of Accepted Abundance Estimates is an important tool for the work of the Committee and the Commission. The Committee **recommends** that the following estimates should be incorporated into that table, uploaded to the IWC website when indicated and endorsed by the Commission.

Specifically, these estimates are:

- (1) Māui dolphins in 2021 along the northwest coast of the North Island of Aotearoa New Zealand: 48 (95% CI 40-57). Category 3;
- (2) Southwest Atlantic right whales: 3,652 (95% CI 2,884-4,448) in 1999; 4,217 (95% CI 3,749-4,755) in 2009; and 4,633 (95% CI 3,849-5,681) in 2019. Category 1A; the 2019 estimate should be added to the webpage;
- (3) Southern right whales (New Zealand): 2,762 (95% CI 2,100-3671) in 2009 and 4,742 whales (95% CI 3,853-6,013) in 2020. Category 1A;
- (4) Southern right whales (South Africa): 1,226 (SE 52) in 1990; 2,332 (SE 77) in 2000; 4,401 (SE 151) in 2010; and 6,470 (SE 285) in 2020. Category 1A and added to the webpage;
- (5) Antarctic blue whales (circumpolar): 2,050 (95% CI 1,135-3,704) in 2019. Category 3. The Committee **recommends** that the data from this study (SC/69A/ASI/01rev1) be endorsed as Category 4 and **agrees** that this decision could be revisited next year when the wording and implications of this new category are further considered (see Item 11.3);
- (6) Eastern North Pacific gray whales: 20,720 (95% CI 18,954-22,720) in 2010 and 16,650 (95% CI 15,170-18,335) in 2022. Category 1A. The entire time series should be added to the webpage (revising any previous estimate since 2007 that has changed as a result of this update, Annex D);
- (7) Pacific Coast Feeding Group gray whales: 147 (CV 0.09) in 2000, 201 (CV 0.09) in 2010, and 212 (CV 0.08) in 2020. Category 1A. The entire time series should be added to the webpage (see above);
- (8) Bowhead whales in the West Greenland feeding area: 888 (CV 0.46) in 2022. Category 1A and added to the webpage;
- (9) Franciscana in FMA IVb: 3,448 (95% CI 723-16,343) in 2019; 5,710 (95% CI 1,200-27,174) in 2022. Category 2;
- (10) Franciscana in FMA IVc: 1,866 (95% CI 400-8,946) in 2019. Category 2;
- (11) Franciscana in Brazil portion of FMA III: 13,137 (CV 0.327) in 2021. Category 1A;
- (12) Franciscana in Uruguay portion of FMA III: 30,011 (CV 0.354) in 2023. Category 1A;
- (13) Franciscana in FMA III: 43,148 (CV 0.311) in 2022. Category 1A and added to the webpage;
- (14) Franciscana in FMA Ia: 1,183 (CV 0.76) in 2018. Category 1A and added to the webpage;
- (15) Franciscana in FMA Ib: 1,590 (CV 0.53) in 2011; and 1,521 (CV 0.47) in 2017. Category 1A and added to the webpage;
- (16) Franciscana in FMA II: 9,284 (CV 0.28) in 2009. Category 1A and added to the webpage;

(17) *Franciscana* in FMA III along the Brazilian portion of the range of the stock: 9,437 (CV 0.34) in 2014. Category 2;
 (18) Humpback whales in the eastern North Pacific (along the US west coast): 502 (CV 0.08) in 1989; 1,083 (CV 0.06) in 1998; 1,982 (CV 0.08) in 2008; and 4,973 (CV 0.05) in 2018. All Category 1A;
 (19) Short-finned pilot whales in the US Exclusive Economic Zone (Hawaiian Islands): 11,566 (95% CI 6,054-22,098) in 2002; and 17,583 (95% CI 8,014-38,576) in 2010. Category 1A; and
 (20) Bryde's whales in the US Exclusive Economic Zone (Hawaiian Islands): 1,794 (95% CI 1,035-3,109) in 2010. Category 1A.
 The Committee **agrees** that all these abundance estimates meet the definition of an Evaluation Extent of 1 ('examined in detail by the Committee').

During its review of an abundance estimate for Māui dolphins provided by Constantine *et al.* (2021), comparisons were drawn with a prior individual-based population model for this population. The Committee believed this fully integrated analysis might be preferred, if updated.

Attention: R-Cooke

The Committee **recommends** that the individual-based population model analysis of Māui dolphin genetic capture-recapture data (Cooke *et al.*, 2019) be updated using recent data and presented at SC69B.

During its review of an abundance estimate for southwest Atlantic right whales (Romero *et al.*, 2022), the Committee noted substantial differences between these results and results presented by Cooke (2013), though the latter do not incorporate recent data. Discrepant results should be reconciled to better understand abundance and trend for this population.

Attention: R-Cooke

The Committee **recommends** that the photo-ID population assessment and abundance estimates for southwest Atlantic right whales (Romero *et al.*, 2022) provided by Cooke (2013) be updated to include more recent data and the results presented to SC69B.

During its review of an abundance estimate for ENP gray whales by Eguchi *et al.* (2022), the Committee noted that the estimated abundance had declined substantially between 2016-22.

Attention: CG-USA

The Committee **reiterates** the importance of the long-time series of eastern North Pacific (ENP) gray whales to support the provision of subsistence whaling management advice developed by ASW and IST. The Committee **strongly recommends** that continued annual surveys of ENP gray whales be funded, conducted and reported to the Committee, with additional effort undertaken to update the estimates of detection probability, the proportion of night-time passage and the availability bias correction factor for offshore whales.

Palka (2006; 2020) present density estimates for marine mammals from aerial and shipboard surveys in several areas of the northwestern Atlantic Ocean. The author intends to create an updated list of abundance estimates by combining relevant surveys and applying the most recent correction factors where and when appropriate. The survey methods and analyses are of high quality and have been reviewed satisfactorily so only the method of combination would require further review.

Attention: SC-ASI

The Committee **agrees** that the survey and analysis methods of Palka (2006; 2020) were appropriate and that updated estimates from the analysis of these data, for minke, fin, humpback, blue and sei whales in the northwest Atlantic Ocean (US waters), could be endorsed in appropriate categories next year without further review of the methods. Until then, the Committee **recommends** Category P.

Bradford *et al.* (2021) report on abundance estimates for 21 species of cetaceans in the US Exclusive Economic Zone of the Hawaiian Islands using ship-based, line transect surveys conducted in 2002, 2010 and 2017. For estimates derived from low sample sizes, Category 4 endorsement (of the data) requires consideration of the quality of survey methods, coverage and environmental conditions, and therefore must be made on a case-by-case basis. These aspects of the Bradford *et al.* (2021) surveys were considered excellent.

Attention: SC, S, C

The Committee **recommends** that the data on low cetacean abundance in the US Exclusive Economic Zone of the Hawaiian Islands during the summer-autumn period, provided by Bradford et al. (2021), be endorsed as Category 4 data, without the endorsement of specific abundance estimates, for the following species and years:

- (1) Risso's dolphins: 2002, 2010, 2017;
- (2) Pygmy sperm whales: 2002, 2010, 2017;
- (3) Dwarf sperm whales: 2002, 2010, 2017;
- (4) Cuvier's beaked whales: 2002, 2010, 2017;
- (5) Common minke whales: 2002, 2010, 2017;
- (6) Sei whales: 2002, 2010, 2017;
- (7) Fin whales: 2002, 2010, 2017;
- (8) Blue whales: 2002, 2010, 2017.

These recommended endorsements of the data as Category 4 do not alter the Committee's decision last year to categorise the corresponding blue whale abundance estimates as 'Not Suitable'.

- (9) Short-finned pilot whales: 2017; and
- (10) Bryde's whales: 2002, 2017.

The Committee considers that the requirements for data and code submission established for the ASI review of abundance estimates have not been effective and need to be re-evaluated. The Committee notes that procedures for data and code provision relevant for ASI could be woven into the Committee's revised Data Availability Agreement (DAA) and therefore postpones consideration until planned DAA revisions have been discussed.

The heavy workload of the ASI sub-group has necessitated regular pre-meetings and numerous sessions at annual SC meetings. With the change to biennial meetings, a two-year accumulation of abundance estimates and other continuing work may make this workload unmanageable. The Committee also notes that Status of Stocks Initiative (SOSI) is important to the Commission, but its development will be significantly slowed by biennial meetings, and further slowed if the accumulated abundance estimate review list increasingly dominates the sub-group's agenda.

Attention: SC

Noting that ASI is one of the sub-groups that will suffer the greatest negative impact from the reduced frequency of SC meetings, and that reduced ASI productivity will severely impact the work of the other sub-groups that rely on its work, the Committee **strongly recommends** the continued funding of annual meetings of the Abundance Steering Group (i.e., inter-sessional meetings in odd years, and pre-meetings in even years), otherwise the ASI sub-group will not be able to complete its work.

11.2 Update and review abundance table maintained by the IWC and abundance estimates on the IWC website

The Secretariat's Lead for Modelling and Statistics provided a report on changes to the IWC Table of Agreed Abundance Estimates. All additions, removals, revisions and minor corrections to the Table agreed at SC68D have been completed. A description of re-categorisation, additions, removals and revisions is given in Annex D (see item 3.1 and Appendix 5).

An effort to provide combined estimates of abundance in a publicly accessible manner raised questions about review of such *post hoc* combinations.

Attention: S-Katara

The Committee **requested** that the Secretariat's Lead for Modelling and Statistics, and her predecessor in that role, identify and investigate the origins of any estimates in the IWC Table of Agreed Abundance Estimates that are the result of *post hoc* combining of several small-area estimates by other Committee subgroups, so that the Committee can consider at SC69B the best practices for *post hoc* generation of such combined estimates and whether to recommend inclusion on or removal from the IWC website.

The Committee received the report of an ICG tasked with providing explicit criteria regarding which abundance estimates should be published on the IWC webpage.

Attention: S, SC, SC-ASI

The Committee **agrees** that abundance estimates representing very large areas or nearly complete populations that are believed to have no severe biases should be published on the webpage. Smaller sub-units or subregions of particular interest to the Commission or the public may also be included.

A previous description of a confidence interval on the IWC website was incorrect.

Attention: S-Wilson

The Committee **recommends** replacing text on the IWC website that describes how to interpret a confidence interval with the following:

'It is impossible for cetacean abundance estimates to be completely precise and IWC estimates are presented as a 'best estimate' figure, accompanied by a 95% confidence interval, showing a range of plausible values for the population's actual abundance. As an example, the 1991/92-2003/04 abundance estimate for Antarctic blue whales is 2,300 with a 95% confidence interval of 1,150-4,500. This means that the range 1,150-4,500 was computed using a method that has a 95% chance of including the population's actual abundance.'

11.3 Methodological issues

During the evaluation of Bradford *et al.* (2021), Palka (2006; 2020) and Hamabe *et al.* (2023), it became apparent that the existing classification system was not sufficient to provide advice to Committee sub-groups in certain cases. Well-designed and implemented surveys yielding small sample sizes (due to the scarcity of whales in the surveyed area) resulted in abundance estimates that the Committee considered insufficiently trustworthy for direct use in Committee assessments or management procedures, but nevertheless constituted reliable information about (low) abundance.

The updated list of category descriptions is provided as Annex D, Appendix 3.

Attention: SC, SC-ASI

The Committee **recommends** that Category 4 be added to the list of options for Committee categorisation/endorsement of abundance estimates and associated data, described as follows:

Category 4: This category, for survey data, is for cases when too few sightings (or recapture data) were obtained to provide an endorsable abundance estimate, because whales were scarce in the surveyed area. However, the survey design and analysis were of sufficient quality to provide reliable information about the (low) number of whales in the area, and these data could be used for fitting population models or In-depth Assessments despite not yielding a reliable abundance estimate. Because the RMP allows the use of abundance estimates with few or zero sightings, Category 4 also includes abundance estimates derived from Category 4 data, specifically for use with the RMP.

The Committee will review this wording at SC69B and refine if necessary.

11.3.1 Mark Recapture abundance estimation

Mark-recapture techniques have seen numerous developments in recent years and are used by the Committee.

Attention: SC-ASI, R

The Committee **recommends** a document providing guidance on the use of mark-recapture techniques to estimate cetacean abundance be developed and presented to the Committee in SC69B to help progress the work of ASI and welcomed the offer of Kelly and Wade to coordinate this effort within an ICG. These guidelines should consider study design, photo-ID and matching, mark-recapture models, software and related issues.

11.3.2 Consider diagnostic methods for mark-recapture models

Following the development of guidelines for mark-recapture models, a checklist will be developed to assist in the future review of mark-recapture analyses.

11.3.3 Progress on simulation software to evaluate methods for abundance estimates

The Committee has used simulated data to evaluate novel analysis methods for line transect abundance, and while the datasets were archived, the original executable code is now outdated. The Committee provided financial support for a project to document, update and streamline the code so that it is compatible with current compilers. Smith *et al.* (2021) describe the updating process, which is now complete, and the code will become available via GitHub (IWC, 2023a, Item 11.4.2). The Committee notes that regular use of the software will help ensure it is maintained and **endorses** plans to develop the user manual of the simulation software.

11.4 Provide advice to the Commission on the status of stocks

The Committee has been asked to provide information on the status of whale stocks for use by the Commission and wider public. A Status of Stocks Website was deemed practical and useful in Committee discussions. ASI began to develop this in 2017 under the name: Status of Stocks Initiative (SOSI).

SOSI aims to summarise completed Committee work for presentation on the IWC website. SOSI will showcase how assessments are conducted by the Committee with methodology and results provided at increasing levels of detail. The Secretariat has supported the SOSI website as an effective means of communication that would help address some of the most common questions about whales received from the public.

The Committee noted that the IUCN/IWC Coordination ICG will help ensure that SOSI and the IUCN Red List are distinct, yet consistent and complementary, and the Committee sought to enhance collaboration with IUCN as SOSI development continues.

The Committee discussed possible coordination with the Committee's Extinction Alert effort, and whether that programme could provide useful information to SOSI regarding highly endangered stocks, especially when data are scarce or no formal stock assessment has been completed by the Committee. The relationship between the two initiatives was considered promising and collaboration is encouraged.

11.4.1 Report from Steering Group

The SOSI Steering Group prioritised: (1) small critically endangered stocks that do not require complex assessments; (2) stocks that have undergone RMP/AWMP assessment that require simple updating; and (3) more complex situations where different modelling approaches have been used. A list of priority cases was established: ENP gray whales, North Atlantic minke whales; BCB Seas bowhead whales; WNP Bryde's whales; vaquita; ENP right whales; Okhotsk Sea bowhead whales; and Southern Hemisphere humpback whales. The Steering Group aims for the first SOSI web pages to be published 'live' for the public shortly after IWC69 (Autumn 2024).

11.4.2 Progress with modelling

Intersessionally, the Modelling ICG compiled information on the status of assessment models developed by the Committee and undertook revision of existing modelling software that will be used to compute the final SOSI results for ENP gray and Southern Hemisphere humpback whales. The Committee identified additional modelling work required before status assessments of North Atlantic common minke whale, BCB Seas bowhead whales and WNP Bryde's whales could be finalised for SOSI.

11.4.3 Language, terminology and content development

The Committee **draws attention** to a large number of agreed specifications and recommendations about the continued development, content and design of the SOSI website, as elaborated both here and in Annex D (items 5.2.1-25).

In what follows, informal names for potential webpages are drawn from SC/69A/ASI/06, namely the *Welcome Page*, *Status Summary* and *Status Details* pages. These represent three levels of detail, with the *Welcome Page* being the simplest and most visual, and the *Status Details* page being the longest and most technical. The table of thermometer plots (SC/69A/ASI/06) is a specific visual representation of status assessment and would likely be a component of the *Welcome Page*. The thermometers will display the Relative Abundance and Recent Change metrics; two key statistics to describe the status of stocks.

The point-of-entry page (i.e., *Welcome Page*) will be the first SOSI content seen by visitors and may be the only content many read. The Committee **agrees** that while it is important to introduce the topic properly, the point-of-entry page should grasp the public's attention quickly; the introductory text should be kept short to ensure the status thermometers and brief summary information for each assessed stock are highlighted. Since the Committee is a scientific body, care should be taken that deliberative background and expository material are not compromised for the sake of visual appeal. Extensive use of collapsible text boxes, links to further detail, etc., should be used to balance these competing objectives.

The Committee **agrees** that the first stock-specific information following on from the *Welcome Page* with thermometers should be the simple *Status Summary* page. The more technical *Status Detail* content should be a separate page.

Though the purpose of SOSI is to report on completed work by the IWC, the Committee has struggled with the question of whether and how SOSI should address stocks where small population size raises serious conservation concerns without comprehensive population models (e.g., vaquita). The Committee **agrees** there are cases where it has carefully evaluated the relevant information for such stocks and made strong recommendations to the Commission in the absence of model-based assessments, and that it is appropriate to include these stocks in SOSI. In these cases, the Committee **agrees** that a qualitative assessment, including some information on abundance and trend, would be sufficient and the status information would not need to be highly detailed.

The Committee noted that clear and visually appealing range maps with a consistent style would be a valuable component of *Status Summary* pages. However, there is a lack of consensus on the definition of the range of a population. The Committee must first establish what is meant by 'range' and then work to map ranges.

Attention: SC, NH, SH, SM, SDDNA

The Committee **agreed** that appropriate Committee subgroups should be tasked to define the scientific meaning of 'range' and work on delineating ranges for stocks considered by SOSI.

Attention: SC, NH, SH, SM, SDDNA

The Committee **recommends** a time span of 20 years for summarising Recent Change, noting that brief text can be added to the Status Summary to explain special cases. The Committee **recommends** the following scale for cumulative 20-year change relative to the starting point (Recent Change): ' $\leq -20\%$, -20% to -10% , -10% to 10% , 10% to 20% , $\geq 20\%$,' but noted that in cases of very sharp declines or increases, some annotation or footnotes might be required. The key thresholds in this choice roughly correspond to annual rates of 1% increase and decrease.

The Committee **agrees** the following numerical ranges and labels for describing Relative Abundance: 0.01-0.19 [very low], 0.20-0.39 [low], 0.40-0.59 [moderate], 0.60-0.79 [good], 0.80+ [very good]; and noted that these are distinct from IUCN Red List categories.

In 2021, concern was expressed about uncertainties inherent in assessing the status of a stock, and the risk of giving a false impression of high precision. After discussion, the Committee proposes the following text:

'Uncertainty is a fundamental aspect of research in almost any field of science. The IWC's Scientific Committee has developed a range of techniques and guidelines to assess populations and quantify uncertainty. When reading about these assessments, it is important to look at the ranges of uncertainty provided, in addition to the central estimates, in order to fully understand what we know and don't know about population status.'

The SOSI Content ICG will finalise this text in the coming year and will consider adding an explanation as to why information on the website may not reflect recent sudden changes.

The IUCN/IWC Coordination Group and the Content ICG developed text to explain the differences between IUCN Red List assessments and IWC population status assessments. The Committee reviewed draft text and **agreed** the two ICGs should finalise wording shortly after SC69A as this is a key component of the SOSI website.

The Committee **agrees** that a brief summary statement about status/recovery will be included for each stock on the *Welcome Page*, in addition to the visual elements, such as the Relative Abundance and Recent Change thermometers.

The Committee **agrees** that IUCN Red List labels and links for the particular species, subspecies or population, and links to the relevant Extinction Alert pages, could be added to *Status Summary* pages where appropriate. When provided, the IUCN link should point to the Red List evaluation for the particular species, subspecies or population, not to a generic page about the Red List or IUCN.

11.4.4 Future work

Since the existing ICG structure effectively progressed SOSI development, the Committee re-establishes all SOSI ICGs. Once the finalised content, model results for the initial stock(s) presented, language, and design are complete, the Committee could endorse publication of SOSI web pages. This is expected shortly after IWC69 (Autumn 2024).

11.5 Progress on previous recommendations

11.5.1 RMP guidelines for model-based abundance estimates

Guidelines for undertaking surveys within the Revised Management Scheme were first agreed by the Committee in 1993 (IWC, 1993, Item 7), with a subsequent update in 2012 (IWC, 2012, Item 5.5). Hedley *et al.* (2014) explored model-based abundance estimation and its relation to the design-based approach. A workshop on spatial model-based approaches and software was held in 2017 (IWC, 2018a, Item 12.2). Satisfied that model-based abundance methods were useful and reliable, the Committee noted there was a need for RMP guidelines on surveys to be modified to incorporate spatial modelling approaches to estimate abundance (IWC, 2018a, Item 12.3.1).

SC/69A/ASI/20 offered an updated overview of spatial model-based abundance estimation from distance sampling line-transect surveys, including a review of models and estimation approaches, diagnostics, uncertainty estimation, results presentation and available software. The question of whether specific RMP guidelines (i.e., 'rules') should be developed on the basis of general practitioner advice in SC/69A/ASI/20 was referred to the IST Sub-Committee.

SC/69A/ASI/21 provides a history of both the 'Requirements and Guidelines for Conducting Surveys and Analysing Data within the Revised Management Scheme' document (IWC, 2012b) and the recent work done to ensure it provides guidance on the use of spatial models for abundance estimation.

11.5.2 North Pacific sei whale review

During SC68D, ASI reviewed Hakamada *et al.* (2009) and Hakamada *et al.* (2016), both presenting abundance estimates for sei whales in the JARPN II survey area (east of Japanese coast, west of 170°E, north of 35°N, south of Russian and US EEZ), based on ship-based multi-species sighting surveys. At that time, the Committee concluded that additional information was required before the estimates could be fully evaluated and no endorsement was made because of potential issues related to combining estimates based on small sample sizes across areas and years with potential biases due to migration (IWC, 2022a, Item 11.1.6). A report from the ICG established in SC68D to investigate these issues helped clarify Committee discussion (IWC, 2022a, Item 11.8). The Committee concluded that, while there were still uncertainties regarding how the results from survey areas and years were combined and how whale migration influenced the abundance estimates, these concerns did not preclude categorisation of the (non-combined) abundance estimates.

Thus, the estimates and/or data are sufficient to be used appropriately by other sub-groups in their activities, such as In-depth Assessments.

Attention: SC, S, C

*The Committee **recommends** that the abundance estimates or datasets pertaining to North Pacific sei whales in years from 2002-12 listed in Tables 3 and 4 of Annex D be endorsed as the indicated Categories. The Committee **agrees** that all these abundance estimates meet the definition of an Evaluation Extent of 1 ('examined in detail by the Committee').*

11.6 Biennial workplan

11.6.1 Plastics Resolution

The Committee noted that the work of ASI is not suited to contribute to IWC Resolution 2022-1 (Resolution on Marine Plastic Pollution) and did not add any relevant items to the ASI workplan.

11.6.2 Communications Initiative

The Committee appreciated the suggestion from ASI that featuring the following ASI topics would help advance the Communications Initiative:

- (1) the process ASI has developed for rigorous and standardised evaluation of abundance estimates, coupled with relevant images from cetacean abundance surveys;
- (2) SOSI, including mock-up webpages; and
- (3) specific new abundance estimates that may be of interest to the news media, such as estimates indicating dramatic increases or decreases in abundance or estimates for charismatic species.

11.6.3 Recommendations database

The Committee noted ASI's decision to postpone consideration of the recommendations database because many of the existing ASI recommendations were ones that could not easily be considered complete due to their nature. ASI Convenors will consult intersessionally with the Secretariat.

11.6.4 Workplan tasks

The Committee **agrees** with the ASI workplan provided in Annex D. ASI ICGs for 2023/24 are provided in Annex V.

12. BYCATCH AND ENTANGLEMENTS

12.1 IWC's Bycatch Mitigation Initiative

SC/69A/HIM/13 provides an overview of progress made by the IWC Bycatch Mitigation Initiative over the past year. Activities include: (1) production of factsheets in collaboration with FAO; (2) an agreement to provide IWC with funds to contribute to an FAO project to improve the understanding and management of cetacean bycatch in tuna fisheries in the Indian Ocean and western Pacific Ocean; (3) engagement with the Indian Ocean Tuna Commission; and (4) participation in Western and Central Pacific Fisheries Commission. Planning continues for the implementation of pilot projects in countries previously identified as priorities. These pilot projects are locally led with IWC support and aim to monitor, mitigate and manage bycatch on small-scale fisheries using gillnets. The Bycatch Mitigation Initiative (BMI) has been working with the Peruvian Government to develop the Terms of Reference for the first consultancy related to the Peru pilot project. In addition to pilot projects, the BMI provides support and, where possible, advice and expertise to affiliated projects. The BMI is also engaged in capacity building and the development of a 'library' of bycatch mitigation and monitoring equipment, as well as external fundraising to enable implementation of the BMI workplan. Membership of the Expert Panel on Bycatch which supports the BMI is currently under review; new members will be appointed in May 2023.

The Committee **commends** the impressive work of the IWC's BMI and its coordinator (Passadore) and **welcomes** Svoboda as the new Chair of the SWG on Bycatch.

12.2 Collaboration on bycatch mitigation

A report commissioned by the South Pacific Regional Environment Programme (SPREP) identifies bycatch by commercial oceanic purse seine and longline vessels fishing within the EEZs of Pacific Island countries and territories as the most serious threat to cetaceans based on reports from on-board fisheries observers (Miller, 2023). The false killer whale was the species most often bycaught in these fisheries. It was noted that the work around the Hawaiian archipelago (USA) may help to inform mitigation efforts that can be applied elsewhere throughout the South Pacific. Discussion also highlighted the need for research to understand how to effectively reduce target catch loss and bycatch risk associated with depredation. The Committee has established an ICG (see Annex V) to assist with further work on addressing threats to cetaceans in the region, including collaboration with SPREP.

SC/69A/HIM/06 describes collaboration between the IWC and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) on whale entanglement in the Southern Ocean krill fishery. In response to a report

of the incidental mortality of three juvenile humpback whales during the 2021 calendar year, SC-CCAMLR approached the IWC to better understand these bycatch events and how to avoid them in the future. The Committee established an ICG at SC68D that subsequently provided advice on a range of topics, including data collection and recommendations for mitigation measures (Leaper *et al.*, 2022). This report was reviewed by CCAMLR which requested further assistance from the Committee, in particular for refining additional data to be collected by observers and crew when whale entrapments occur and, in the longer term, advising Antarctic krill trawling operators to minimise risk of whale entrapments.

Biuw provided some observations from a study in early 2023 onboard one of the Norwegian krill trawlers around the South Orkney Islands. He also noted that a stronger tensioned exclusion net designed to prevent whale entrapment is now being used by the Norwegian vessels. At very slow towing speeds, he believed the current configuration may not pose a serious risk, despite some sagging of the exclusion net.

In response, it was noted elsewhere that humpback whales are regularly entangled in static nets, even when taut and if young whales are actively approaching the nets, additional mitigation measures may also need to be considered. The Committee considered a draft data form for recording data on whale entanglements/entrapments. A final edited version of this form will be made available to the CCAMLR Secretariat by July 2023. An ICG was formed with Terms of Reference in Annex V.

12.3 Review new methods and estimates of bycatch and entanglement rates, risks and mortality

The Committee considered several papers which used the Bycatch Risk Assessment (ByRA) tool (Hines *et al.*, 2020). SC/69A/HIM/10 describes how the tool was used to map areas of bycatch risk for three species of small cetaceans around the island of Chiloé, Chile. SC/69A/HIM/12 details ByRA use in two of the major artisanal fisheries along the northern and central Chilean coast, the artisanal swordfish gillnet fishery and northern anchovy purse seine fishery. The Committee commended the extensive work reported in both projects, in particular on the broad range of stakeholders engaged. The Committee also received information on measures developed and implemented in Chile since 2012 for assessment, monitoring, reduction and control of discards and bycatch in its national fisheries (SC/69A/HIM/17). The Committee **commends** regulations designed to improve monitoring and mitigation and looks forward to assessments of the effectiveness of these regulations at future meetings.

Willson described recent progress with developing multi-taxa bycatch risk and mitigation studies off the Arabian Sea coast of Oman using the ByRA toolkit. The study used satellite telemetry occurrence data of Arabian Sea humpback whales together with fishing vessel distribution data compiled from satellite imagery and vessel-based surveys. He also noted that the Ministry of Agriculture and Fisheries of the Sultanate of Oman has announced that no new fishing licenses for gillnets will be issued to the Oman dhow fleet. This is expected to result in a shift to new gear types for this fleet and reduce cetacean bycatch. The Committee commended Oman for these positive steps toward mitigating bycatch of endangered species and extends support to authorities should any assistance be required to evaluate alternative gear types to replace gillnets and/or assess interactions between fisheries and cetaceans as a result of changes to gear types.

The Committee considered a population modelling approach for estimating sustainable limits to human-caused mortality that had been applied in a case study of bottlenose dolphins affected by capture in an Australian demersal otter trawl fishery. The approach incorporates environmental and demographic stochasticity, including the dependency of offspring on their mothers (Manlik *et al.*, 2022). The Committee noted a considerable amount of ongoing work on bycatch reference points, and, particularly in Europe, a need for threshold values in order to implement legislation. The Committee has had extensive discussions about the implications of environmental variability on estimating Maximum Sustainable Yield Rate (MSYR), with similar implications for r_{max} . Lack of time prevented a detailed evaluation of the approach in Manlik *et al.* (2022).

SC/69A/HIM/05 describes a multi-stakeholder marine mammal reporting network supported by a mobile app and national database established to collect, archive and analyse data on strandings and cetacean landings in Ghana. The Committee **encourages** further information from the region and **commends** this approach, which has particular utility for areas with difficult-to-monitor artisanal fisheries and exemplifies the value of collaboration between a wide range of stakeholders.

SC/69A/HIM/11 describes ongoing work with fishing communities in Hong Kong aimed at identifying areas of bycatch risk for finless porpoise. Three fishing communities participated in the project that combined tracking devices on fishing vessels with autonomous acoustic devices (AAD) on active fishing gear to monitor cetacean presence and interactions. The Committee **commends** plans to continue and expand this work to other regions with similar fisheries and bycatch species.

The Committee considered a review of odontocete cetacean interactions with different types of trawlers (Bonizzoni *et al.*, 2022), finding 19 species which had modified their foraging behaviour around trawls. Global reviews of multiple data sources on a particular type of fishery or gear can provide valuable insights into trends and the circumstances that may increase bycatch risk. It was noted that there are far fewer reported cases of baleen whale interactions with trawls, but this review of odontocete interactions may help to inform mitigation approaches to prevent the entrapment of whales in krill trawls in the Antarctic (see Item 12.2).

12.4 Reporting of bycatch and entanglements (both small and large cetaceans) including National Progress Reports

Entries into the Progress Reports [database](#)⁷ for the past year with respect to bycatch and ship strikes are available on the IWC portal.

12.5 Review mitigation measures for preventing bycatch and entanglement

SC/69A/REP/01 reports on a workshop held in Brazil in June 2022 to finalise the review of the franciscana in order to update the CMP. The workshop considered updated information on incidental takes and mitigation measures in the range states. Recommendations included that the incidental capture of franciscana should be reviewed for all Franciscana Management Areas (FMAs). The workshop also recommended that acoustic deterrent devices continue to be tested in all FMAs, in addition to the continuation of promising initial trials of plastic bottles as acoustic reflectors on gillnets. These trials provide a further method to reduce franciscana bycatch in bottom set trammel nets (SC/69A/HIM/01). Results showed a statistically non-significant negative effect on dolphin bycatch using plastic bottles, combined with a statistically significant positive effect on target fish catch.

In Uruguay, the artisanal gillnet fleet and, to a lesser extent, the industrial pair trawl fleet, are the main fisheries affecting franciscana (SC/69A/HIM/15). Results of initial trials in the Río de la Plata and the Atlantic coast of Uruguay showed that pingers significantly reduce the bycatch of franciscana in the artisanal gillnet fishery, while in the industrial fleet they suggest a moderate reduction. Plans to increase the sample sizes for both gillnet and trawl vessels are hoped to demonstrate whether the efficacy of pingers on gillnets is sufficient to be accepted across the fishery.

The Committee received information on an unexpected increase in the first months of 2023 of franciscana stranding rates along the south and southeast Brazilian coasts. Stranding rates in areas further south did not show a similar increase. It is thought that this continued high stranding rate could be linked to a new small-scale fishery. The Committee **reiterates** the valuable role that stranding data can play in monitoring bycatch, particularly as a first indicator of local changes.

Secchi described a detailed analysis of new estimates of Potential Biological Removal (PBR) for franciscana in FMAs I to IV. Abundance was estimated from aerial surveys using line-transect for all areas (see Item 11.1 for accepted franciscana abundance estimates). Bycatch estimates were based on a number of different approaches, which include monitoring the gillnet fishing fleet and counts of stranded animals adjusted for the probability of detection. Bycatch ranged in orders of magnitude, from a few tens in FMA Ia to thousands in FMA III. Estimated bycatch mortality exceeded the PBR from nearly double in FMA Ia to about fivefold or more in other FMAs when using a recovery factor of 1.0 within the equation used to calculate PBR. The authors suggested these new estimates confirm that this species cannot sustain the current levels of non-natural mortality. Immediate and severe restrictions on fishing practice and effort are necessary to avoid the collapse of franciscana.

There was considerable discussion of these estimates. It was noted that when viewed in conjunction with current abundance estimates, the estimated annual mortality estimates of franciscana in Southern Brazilian waters would have led to a complete extirpation of the local population. It was proposed that animals from the genetically identical and contiguous habitats in Uruguay were replacing the losses of the Southern Brazilian population. The Committee **agrees** that further review of the bycatch estimates is needed and might best be achieved, for the case of franciscana and other situations, through a process similar to that established by the Committee for reviewing abundance estimates.

The Committee notes that, while there is uncertainty regarding levels of bycatch, these estimates exceeded PBR in all FMAs. It **reiterates** previous concerns that the bycatch of franciscana is not sustainable. The Committee **agrees** it can provide better advice on bycatch mitigation, particularly where measures should be prioritised, if more information on bycatch estimates and methods is provided. The Committee also discussed some more general issues regarding bycatch estimation and risk analyses.

Attention: SC

*In light of the review of the status of the franciscana, the Committee **recommends** that estimates of franciscana bycatch be presented and reviewed at SC69B.*

The Committee **agrees** on the value of spatial approaches (with respect to both fishery and cetacean data) in assessing bycatch risk and evaluating mitigation strategies. The Committee **encourages** further application and development of the type of approach evaluated in SC/69A/REP/04.

Attention: SC

*The Committee notes that over the years it has received estimates of bycatch for many different species/populations using a variety of direct and indirect methods with differing levels of reliability and scrutiny. Given the importance of bycatch estimates when developing management advice, the Committee **recommends** it develop a process to facilitate more detailed review of bycatch estimates, with an initial priority for populations of conservation concern. Following discussions at this meeting, the Committee suggests that consideration of franciscana bycatch estimates at SC69B might prove a useful pilot to test any new process.*

⁷<https://portal.iwc.int/login>

SC/69A/HIM/08 identified small passive reflective objects ('pearls') that can improve the acoustic visibility of gillnets across a broad range of frequencies used by different odontocete species. Trials of modified nets fitted with these 'pearls' were conducted in two commercial fisheries. Although there were no significant differences in bycatch rates during these trials, the Committee noted that trials to evaluate bycatch reduction require relatively high bycatch rates. Further analysis of porpoise behavioural data using an acoustic array around the nets is planned. These modified nets currently cost about twice as much as those not outfitted with pearls, but there could be cost reductions with economies of scale.

SC/69A/HIM/09 describes the implementation of bycatch mitigation measures in Matang, Peninsular Malaysia, to address previously identified bycatch of Indo-Pacific humpback (*Sousa chinensis*) and Irrawaddy dolphins (*Orcaella brevirostris*) in inshore gillnets and driftnets, and Indo-Pacific finless porpoises (*Neophocaena phocaenoides*) in off-shore trawls. One project is trialling the use of acoustic pingers on driftnets targeting threadfins. Another project will develop and test prototypes of a Bycatch Reduction Device (BRD) to reduce bycatch of finless porpoises in trawl nets.

SC/69A/HIM/03 describes the US Government's efforts to develop geolocation and broadcasting capabilities to provide information on gear location, and on-demand fishing technology that avoids using static buoy lines affixed to fishing traps. There is also a 'gear library' with systems from different manufacturers for fishermen to borrow and provide feedback to improve functionality. In 2022, the on-demand gear functioned as intended approximately 90% of the time. This was high enough to be acceptable to many but not all fishers who participated in the trials. Financial costs remain an impediment to full acceptance. It has long been noted that one of the biggest challenges is the development of electronic systems to provide information on the location of gear in order to avoid gear conflicts between trap fishermen and also with fishermen using mobile gear.

Choi summarised the research activities conducted by National Institute of Fisheries Science, Korea (NIFS), to reduce bycatch of marine mammals in Korean fisheries, which cover stow nets, trap nets, set nets and trawls. There was no bycatch documented while monitoring stow-net vessels equipped with a marine mammal bycatch reduction device. Research is now being conducted to minimise the loss of target catch in the fishing gear where this device is installed. A zipper-type mechanism is being tested which allow nets to be opened under the waterline while being hauled in to enable trapped animals to escape. This can only be effective in situations where marine mammals can still reach the surface to breathe while caught. The zero-bycatch rate reported for the red crab pot/trap fishery encouraged research to examine the characteristics of materials used in the lines from these traps which might inform bycatch reduction strategies for other pot/trap fisheries. NIFS has also conducted tests investigating the response of finless porpoise to acoustic deterrent devices due to concerns over habituation and effects of these devices on other marine organisms. The Committee **commends** the authors on the apparent success of this excluder device for finless porpoises in stow nets and looked forward to results both from expanded use and trials with trawls. Choi noted that the NIFS team were specialists in fishing gear design rather than marine mammals. The Committee notes the importance of involvement of gear technologists in bycatch mitigation and **encourages** Choi and colleagues to engage with the IWC BMI coordinator and Expert Panel on bycatch.

12.6 Review of topics related to Hector's and Māui dolphins in New Zealand (with SM)

A pre-meeting 'Workshop on Hector's and Māui dolphins in New Zealand: Consideration of spatial risk assessment of threats' (SC/69A/REP/04) was held prior to SC69A. The Committee thanks all those involved for a very comprehensive review. The Committee **agrees** with the general approach of Spatially Explicit Fisheries Risk Assessment (SEFRA) to incorporate a spatial approach to risk assessment and **endorses** the recommendations in [SC/69A/REP/04](#)⁸ to improve the approach set out by Roberts *et al.* (2019). Different views were expressed as to whether the results of Roberts *et al.* (2019) are suitable to inform the spatial extent of management measures to reduce impacts on Māui dolphins.

Wade noted that a more complete justification of choices made for prediction variables is that spatial models are essential before the results can be considered to provide a best estimate of Māui dolphin distribution. This refers to diagnostic statistics that indicate the model used had far less support from the data than the best model selected by AIC (delta AIC of 60). Additionally, there was not a figure to show predicted distribution for the best model so that sensitivity can be evaluated (i.e., sprat for fish instead of Ahuru). In light of this, and also because of several other modelling issues identified in SC/69A/REP/04, some members supported the view that the model does not provide acceptable results for providing management advice for spatial planning to minimise anthropogenic effects on Māui dolphins, while other members continued to support the conclusions outlined in SC/69A/REP/04 regarding the use of this model to inform spatial aspects of current management.

Attention: CG (New Zealand)

Noting the agreed population estimate of 48 Māui dolphins in SC/69A/REP/04, the Committee **recommends** highest priority should be assigned to management actions that immediately eliminate bycatch of Māui dolphins, including closure of any fisheries within the range of Māui dolphins that are known to pose a risk of bycatch to dolphins (i.e., set net and trawl fisheries). It re-emphasises the need for precautionary management given the critically endangered status of this subspecies and the inherent and irresolvable uncertainty which surrounds information on most small populations.

⁸<https://archive.iwc.int/pages/view.php?ref=20045&k=8001be575a>.

The Committee **agrees** there is considerable uncertainty as to the presence of Māui dolphins in harbours and their off-shore distribution. In light of this uncertainty, the Committee **recommends** further research into distribution, including, *inter alia*, the use of acoustic recorders, drones and other technology.

12.7 Review progress on definition of r_{max} for small cetaceans for use by the Scientific Committee

At SC68D, the Committee agreed a definition of r_{max} (IWC, 2023a, Item 12.8). The Committee **agrees** that the ICG established at SC68D to develop a list of potential methods for estimating or setting r_{max} and evaluate the data requirements, strengths and weaknesses of each approach, should continue its work.

12.8 Review proposals for best practice protocols for releasing free-swimming, entangled small cetaceans

An ICG was established at SC68D to formulate guidelines for the best response to incidents of free-swimming small cetaceans carrying or trailing gear, as a complement to the IWC's principles and guidance for large whale disentanglement. In parallel, NOAA published a comprehensive set of guidelines that met many of the ICG's terms of reference. The NOAA Fisheries Small Cetacean Entanglement Response Best Practices (US Marine Mammal Health and Stranding Response Program 2022) was developed to provide guidance for responders to entangled small cetaceans with a national scope of the United States. This document does not provide the necessary training or authorisation to qualify the reader to take specific actions, but it does provide an overview of the options and considerations.

The Committee notes the value of decision trees/illustrations and the focus on safety for humans and animals. The Committee **agrees** that modified and streamlined adaption of the document might be more helpful to responders in countries with differing levels of available resources. Therefore, the Committee established an ICG to adapt the NOAA document for a broader global audience. This guidance for disentanglement of free-swimming cetaceans would be complementary to the CMS best practices for releasing bycaught cetaceans by personnel aboard the fishing vessel that caught them (Hamer *et al.*, 2020). The Committee **encourages** members to bring forward new information on the survival of small cetaceans released from either type of entanglement.

12.9 Progress on previous recommendations

The Committee has repeatedly stated its serious concern for survival of the Critically Endangered Baltic Proper harbour porpoise which is genetically and morphologically discrete and numbers only a few hundred individuals. In February 2022, measures came into force which closed static net fisheries and stipulates mandatory pinger use in some important harbour porpoise habitat. However, ICES (2020) advice was that bycatch must also be mitigated throughout the entire range of the population. Last year, the Committee discussed an apparent impasse to the deployment of pingers in the region due to concerns that pingers could interfere with military operations. It also established an ICG to further investigate and provide advice on this issue. The ICG noted there had been no progress on the pinger issue with the governments in question; responses to letters from the Secretariat to Baltic Member States did not offer any prospect of solution or fully explain why pingers would not be acceptable. Anon. (2023) identifies specific areas of important porpoise habitat where permanent or seasonal closures are recommended if pingers cannot be used throughout the population's range. In addition, the authors propose increasing the pace of research, development, testing and implementation of alternative gear, so that static nets can be fully replaced by alternative gear in both recreational and commercial fisheries.

The Committee referred to the discussion at SC68D and notes that proposals being considered for real time (dynamic) closures were unlikely to be feasible. It was suggested that the IWC Extinction Alert should focus on the Baltic harbour porpoise to encourage greater political will to implement mitigation options, such as those described by Anon. (2023).

Attention: CG, S

Given serious concerns, the Committee:

- (1) **reiterates** previous recommendations (SC2097, SC2218) for all Baltic Sea range states to urgently implement long-term bycatch mitigation measures for the Baltic Proper harbour porpoise. In lieu of large-scale implementation of pingers in static net fisheries, further closures of fisheries with high bycatch risk, primarily static net fisheries, should be urgently implemented;
- (2) **notes** a number of concerns about the efficacy of dynamic management areas that rely on responding to detections of harbour porpoise presence. Hence, it **recommends** further consideration of additional areas that have been suggested for closures of fisheries and is ready to offer technical advice on evaluating these;
- (3) **encourages** countries whose military forces cannot accept large-scale use of pingers to fully investigate the potential effect of pingers on military underwater acoustic activities as well as possible technical adaptations to pingers to minimise these effects. The Committee is ready to offer technical advice and has established an intersessional group to facilitate this;

- (4) **encourages** countries in the Baltic Sea Region to initiate, as soon as possible, a new static acoustic survey to estimate the abundance and distribution of the Baltic Proper harbour porpoise to follow up on results of the SAMBAH project;
- (5) **again encourages** the Baltic Sea range states to propose the Baltic Proper harbour porpoise for inclusion in CMS Appendix 1 at its conference of parties later this year and calls on all CMS Parties to support this listing (SC2010); and
- (6) **requests** the IWC Executive Secretary to maintain the ongoing dialogue with range states and the EU Commission by writing to inform them of the Committee's ongoing concerns and recommendations.

The Committee has previously expressed its concern over the bycatch of common dolphins in the Bay of Biscay and made a number of recommendations. ICES (2022) provide new estimates of annual common dolphin mortality due to bycatch. The annual estimate inferred from French strandings in the Bay of Biscay and along the Western Channel was 9,040 (95% CI 6,640-13,300) common dolphins between 2019-21. In the Bay of Biscay and Iberian Coast (Areas 8 and 9), the mean annual bycatch estimated from at-sea observations between 2019-21 across all métiers was 5,938 (95% CI 3,081-9,700). A number of scenarios involving different lengths of seasonal closures and pinger use were evaluated in relation to PBR, the quantitative conservation objectives of OSPAR and conservation objectives under EU legislation.

Recent stranding data for the winter of 2022/23 show no sign of reduction in bycatch mortality and the winter of 2023 is likely to be another record-breaking stranding season, with a total of 1,374 small cetaceans reported stranded between 1 Dec 2022 and 1 April 2023 along the Bay of Biscay. A three-year research programme launched in April 2022 aims to better understand the origins of common dolphin catches in the Bay of Biscay and evaluate the biological and socio-economic consequences of mitigation scenarios. Although France has a Government Action Plan for the reduction of common dolphin bycatches in the Bay of Biscay, this mainly focuses on monitoring actions, with the main mitigation measure being compulsory pingers on pelagic trawls. It was suggested that the increase in bycatch since 2015 was most likely related to a shift in dolphin distribution because there was no evidence of an increase in fishing effort.

Ridoux also noted that, following the Conseil d'Etat's recent decision to request the Government to implement spatio-temporal closures, fishermen's representatives have decided to withdraw from all WGs and collaborative projects. In discussion, the Committee was discouraged to hear about deteriorating stakeholder negotiations which could hinder further urgent mitigation actions. It is unclear how this will affect the implementation of the Government Action Plan.

Spain has also participated in the ICES assessments. Vazquez drew attention to initiatives that Spain has implemented over the past three years to mitigate cetacean bycatch. In January 2022, the Spanish Ministry for Ecological Transition and Ministry of Agriculture and Fisheries endorsed the National Plan for the reduction of bycatch in fishing activities, focusing on marine mammals. These include acoustic deterrent devices for bottom trawling vessels in the Cantabrian Sea and Bay of Biscay and testing the effectiveness of acoustic deterrent devices and dolphin excluder devices in paired bottom trawling. Since 2020, the Spanish Ministry of Fisheries and Agriculture has implemented an on-board observer programme focused on the assessment of cetacean bycatch in pair trawlers, gillnets and purse-seine fisheries.

Attention: CG, S

The Committee notes that bycatch levels of common dolphins in the Bay of Biscay remain a concern with no evidence of any decrease in bycatch. Therefore, the Committee **reiterates and reinforces** its previous concerns.

The Committee **recommends** urgent action by the European Commission and relevant member states to implement advice for temporary closures of all fishing métiers of concern and application of pingers to pair trawlers that ICES (2022) considered necessary to achieve the objectives agreed by OSPAR and be fully consistent with conservation objectives under EU legislation.

The Committee **requests** the IWC Executive Secretary to inform the EU Commission and range state of the Committee's ongoing concerns and recommendations.

At SC68D the Committee recommended trials using sinking ground line in Scottish creel fisheries. SC/69A/HIM/02 reports on trials which involve collaboration with fishers on Scotland's west coast who are re-rigging gear with sinking line to assess its practicality, understand any difficulties that might arise from its use and suggest possible solutions. The trial is currently underway with promising results and enthusiastic participation from the fishermen involved. The Committee **commends** those involved for the positive working relationship and particularly welcomes proactive involvement from the fishermen and their willingness to engage with the trial and report their experiences.

The Committee has previously recommended further collaboration with the BMI to test bycatch mitigation methods in fisheries in Sarawak, Malaysia, and determine whether fisheries interview data could be used to extrapolate mortality rates for local cetacean populations. Ambie *et al.* (2023) reports on this work which found that, because a significant proportion of gillnets are attended to while set, over 50% of entanglements are reported to result in live releases, leading the authors to promote training for fishers in safe handling and release practices. This study was partially funded through the IWC Small Cetacean Voluntary fund; further work will include bycatch mitigation trials and training conducted in collaboration with the IWC BMI.

Svoboda presented an update on the ‘Coordinated Development and Implementation of Best Practice in Bycatch Reduction in the North Atlantic region’ (CIBBRiNA) project. CIBBRiNA will run for six years with the aim to improve bycatch knowledge in different fisheries, minimise bycatch of priority Eastern Tropical Pacific (ETP) species and assess the impacts of bycatch on their populations. There is a focus on participation and collaboration with international organisations, including the IWC and fisheries Advisory Councils. The project should be able to start in September 2023. However, because some species, such as the harbour porpoise and common dolphin, do not qualify as priority species according to the criteria of LIFE, a lower funding rate of 67% (instead of 75%) was approved by the European Commission.

The Committee commended the significant effort this project proposal represented and noted that the project was affiliated with the IWC’s BMI. As a beneficiary partner in the CIBBRiNA project, the IWC will work on joint solutions for bycatch while providing expertise both through the Committee and its Expert Panel on Bycatch.

Attention: CG, S

*The Committee noted that the European Commission criteria for priority species were problematic for projects seeking EU funding for work on cetacean populations that the Committee has identified as of particular conservation concern. The Committee **recommends** that the European Commission consider revising these criteria for funding thresholds to facilitate projects which address critical cetacean conservation issues.*

*The Committee **requests** the IWC Executive Secretary write to the EU Commission to explain the issues that have been identified.*

Following consideration of many studies at this meeting, the Committee notes that, over recent decades, it has evaluated an ever-increasing body of evidence which highlights the central role of gill and trammel nets in the bycatch of cetaceans all over the world. These interactions often appear unsustainable and may eventually lead to the extinction of populations or species.

Attention: CG, G, I

*Deeply concerned by the negative impact of gill and trammel nets on the conservation status of many cetacean populations, the Committee **strongly encourages** Member States and others to invest in the development and adoption of alternative fishing gears to ensure sustainable fisheries and good conservation status of cetacean populations.*

12.10 Workplan

The Committee **agrees** to the workplan provided in Annex J. ICGs can be found in Annex V.

13. SHIP STRIKES

13.1 Review new methods and estimates of rates of ship strikes, risk of ship strikes and mortality (including review progress on ship strike database)

The IWC Ship Strikes and Strandings Data Manager reported on progress and use of the IWC Ship Strike Database (SC/69A/HIM/16). This includes new reports and a large dataset from Australia to be integrated into the IWC database. The next large dataset to be acquired and integrated is that held by NOAA in the USA. There has also been recent work to assess ship strikes which involve sailing vessels and examination of data related to these incidents. Over the past year, there have been 10 requests for data, including the Mediterranean, Caribbean and Northeast Atlantic.

Information from the IWC Database has contributed to discussions about the NW Mediterranean IMO PSSA proposal. Records in the database from this region have been updated. The Committee offers special thanks to Fortuna and her colleagues in Italy who conducted a detailed review of ship strike data from the Mediterranean Sea. This review added previously unknown records and improved existing records in the database. Similar regional efforts to examine media archives and other sources in relevant languages in order to identify ship strike records could greatly enhance the database. The Committee **encourages** SC members to offer their assistance to these regional reviews.

The IWC is establishing an Expert Panel on Ship Strikes which will report both to the Ship Strikes WG and the Committee. The Panel will be appointed in May 2023. It will include those with shipping management expertise and will cover the tasks of the current Ship Strikes Data Review Group and Ship Routing Group.

SC/69A/HIM/07 presents results of a ship strike risk assessment for Arabian Sea humpback whales (ASHW) and an evaluation of potential mitigation measures. The study used satellite tracking data from implant tags deployed between 2014-17 to develop an ensemble ecological niche model across the ASHW suspected range in the northwest Indian Ocean. This was combined with satellite-sourced ship tracking data to assess ship strike risk. Simulations routing vessels 40 n.miles further offshore from the main route currently used by vessels off the Arabian Sea coast of Oman were found to reduce ship strike risk by 88%.

The Committee **notes** that the risk reduction predicted by moving shipping a little further offshore appeared to be significant and discussed ways to present these data and routing options to range state governments and shipping. Given the status of Arabian Sea humpback whales, the Committee agreed that mitigation strategies might not need to wait for similar analyses of potential impacts on other whale species in the region. It was noted that sufficient data for some other key species may already exist and could be included in the analysis. It was also noted that telemetry data did not cover the whole year and any consideration of routing measures should consider gaps in knowledge of the seasonal distribution patterns of the ASHW population (see Annex F, item 9.2.1.).

SC/69A/HIM/04 describes a study using ship strike reports from offshore sailing races to calibrate a collision model that could also be applied in the broader context of commercial shipping. The model was applied to the Ocean Race 2022-23 as a case study. The number of predicted collisions could then be compared with the number observed, since sailing races often have several reported collisions. It was noted that the IWC had previously developed a guidance document for organisers of offshore sailing races to help reduce the risk of collisions with whales (Ritter *et al.*, 2014). The Committee recognises the value of analyses that compare predictions with actual collision rates and noted it could be valuable to expand this to other vessel types. The Committee looks forward to receiving new information on this work next year.

Portal *et al.* (in review) integrated telemetry and traffic data to assess vessel collision risk to humpback whales off the central coast of Brazil between 2016-19. A state-space model was used to account for observation error and regularise telemetry data. Residence time and proportion of time spent by whales in the upper 10m layer of the water column, combined with fleet-specific vessel density, were used to estimate the relative risk of a collision. A high risk of collision was estimated for the Abrolhos Bank, the main breeding ground for this population.

The authors expressed appreciation for the agreement between IWC and Marine Traffic that has provided access to AIS data. The Committee notes it would be useful to have comparable risk metrics to enable comparison between regions where ship strike risk assessments have been conducted. In particular, the whale distribution models used in Portal *et al.* (in review) and SC/69A/HIM/07 were based on telemetry studies, whereas other risk assessments have been based on observational data. Risk metrics are often calculated differently between studies. The Committee **encourages** analyses of common metrics that could allow comparison of risk assessments between areas.

Rae *et al.* (2023) describes the first attempt to consider the severity of ship strikes on individual whale welfare. The 'Welfare Assessment Tool for Wild Cetaceans' (WATWC) methodology was used, based on the Five Domains model. Expert opinion was sought on six hypothetical but realistic case studies which involve humpback whales struck by ships. The results confirm ship strike is a welfare issue of significance, even when it may not impact population viability. It was noted that, while ship strikes are often assessed from a conservation perspective, there are clear implications for the health and welfare of struck but surviving cetaceans, and that welfare considerations often provide the motivation for stakeholders to implement mitigation measures.

Daume *et al.* (2023) describe an osteopathological analysis of the skeleton of a fin whale that revealed multiple healed fractures of ribs and a scapula. Reconstruction of the likely cause of events suggests collision with a ship, inflicting the fractures and leading to post-traumatic posture damage. The injured bones had fully healed before the fin whale was killed by a whaler. This study provides evidence for survival of a ship strike by a fin whale with severe injuries causing long-term impairment.

13.2 Mitigation of ship strikes in high-risk areas

Two recent studies (National Marine Fisheries Service, 2020; Garrison *et al.*, 2022) have assessed the effectiveness of the US vessel speed requirements aimed at reducing ship strikes of North Atlantic right whales. In the 10 years since the speed rule was implemented, there has been a decline in the total number of documented right whale vessel strike mortalities but an increase in reported serious and non-serious injuries. Overall compliance with the speed rule has continued to improve over the past decade and collectively exceeded 80% across all Seasonal Management Areas for the 2018-19 season. However, there has been poor compliance with some mandatory Seasonal Management Areas and generally with voluntary Dynamic Management Areas. An encounter risk model was also developed to identify the primary regions and seasons where the highest risk of vessel strike mortality occurred. The model results suggest that increasing temporal and spatial coverage of vessel speed restrictions along the US East Coast would be an effective tool to reduce overall risk of vessel strike mortalities in North Atlantic right whales.

There was some discussion about what might have caused the apparent contradiction of increased reported collisions but fewer mortalities in the decade after speed restrictions were introduced. One suggestion was to investigate whether shipping had increased in the area. Alternatively, outreach may have meant collisions were more likely to be reported, particularly those that resulted in less serious injuries.

13.2.1 Review progress towards assessing and mitigating ship strikes in previously identified high-risk areas

The IWC Ship Strikes WG provided an update on mitigation measures in high-risk areas identified in the IWC Ship Strikes Strategic Plan. This follows up on Committee recommendations relating to: (1) the sub-Antarctic Island at 54°15'S 36°45'W; (2) Traffic Separation Scheme (TSS) off Dondra Head, Sri Lanka; (3) Hellenic Trench, Greece; and (4) IMO PSSA in the NW Mediterranean.

The Committee **welcomes** the substantial progress to implement voluntary speed restrictions or routing measures to reduce ship strike risks in these areas, commended the shipping companies that had taken these actions, and looks forward to further progress. The Committee also **reiterates** its previous recommendations for routing measures to be implemented through proposals to IMO south of Sri Lanka and in the Hellenic Trench.

The Committee has previously made recommendations relating to ship strike risk to sperm whales around the Canary Islands. Fernandez provided an update on recent ship strike incidents. Collaboration between national and regional administration on ship strikes has been maintained, with some projects involving the Canary Islands' Universities. One fast ferry company now collects whale sightings data on all routes using onboard observers and has a project developing the use of thermal cameras to detect whales. The Committee **encourages** the newly formed Expert Panel on Ship Strikes to collaborate with relevant stakeholders in the Canary Islands.

13.2.2 Provide advice on routing measures

No information was received under this agenda item.

13.2.3 Review new research relevant to mitigation

The OCEAN project⁹ and LIFE SeaDetect project¹⁰ are ongoing ship strike mitigation projects funded by the European Union. Both involve development of real-time detection systems with the aim of allowing vessels to take action to avoid ship strikes.

13.3 Cooperation with IMO Secretariat and relevant IMO committees

SC/69A/O/02 summarises cooperation with the IMO on noise and ship strikes including a number of meetings related to the proposed PSSA in the NW Mediterranean.

13.4 Progress on previous recommendations

The main progress on previous recommendations relates to mitigation in high-risk areas (see Item 13.2.1).

13.5 Workplan

The Committee **agrees** to the workplan provided in Annex J. ICGs can be found in Annex V.

14. ENVIRONMENTAL CONCERNS

14.1 Chemical pollution

14.1.1 Review intersessional work on Pollution 2025

The intersessional Steering Group on Pollution 2025 compiled information from scientific studies published in recent years to address the Committee's numerous recommendations related to the issue of chemical pollution (SC/69A/E/04). These studies predominantly focused on exposure to chemical pollutants (heavy metals, trace elements, legacy and emerging organic contaminants) and their effects on cetacean health, demographic parameters and other indicators. To assess cumulative risks of multiple stressors to populations, the development of models and new methods are being pursued, as are interdisciplinary collaborations and co-production of knowledge with indigenous and local stakeholders.

The Committee notes an ongoing difficulty in assessing and addressing progress on previous recommendations due to the delay in endorsement of SC recommendations by the Commission (due to COVID-19). The Committee found the production of a single document summarising the most relevant and recent information highly valuable.

Attention: SC

*At future meetings, the Committee **recommends** that Convenors of all sub-committees, WGs and ICGs produce a similar document to SC/69A/E/04, summarising recent research in response to sub-committee recommendations. While labour-intensive, this directly helps to address the Committee's need to identify tangible progress on recommendations and close them when possible.*

14.1.2 New information on pollution

The Committee reviewed papers regarding pollution (SC/68A/E/01, E/02, E/04 and E/05) and notes that, among various pollutants, microplastics were ubiquitous in the marine environment. Concerns regarding the impacts of microplastics in the food web included likely metabolic impacts to individual animals, the duration of these chemicals in the food web, the degree to which they occur in prey species, and the lack of information on concentration levels in cetacean tissue that would likely be associated with health risks to individual animals.

⁹<https://ocean-navigation-awareness.eu/>.

¹⁰<https://life-seadetect.eu/>.

High calf mortality of right whales at Península Valdés, Argentina, was reported during 2003-13 (SC/69A/E/02). Concentrations of persistent organic pollutants were on average two to 13 times higher in calves than mothers. In adults and juveniles, the concentrations were two to 10 times higher than in reproductive females. All pesticides found during the analysis are already banned for agricultural use in Argentina. The authors noted that persistent pesticides could affect calf physiology and health and potentially reduce survival, thereby affecting efforts for the recovery of right whale population in this region.

The Committee received information on the phenomenon of 'stinky whales' (see Polyakova *et al.*, 2023; Item 7.1.3). The authors report that the most likely source of this iodoformic odour was bromophenols (specifically, 2,6-dibromophenol), which were 500-fold higher in stinky whale tissues. The source of these bromophenols was identified as likely to be colonial near-shore polychaetes. Polyakova *et al.* (2023) now consider this issue resolved.

14.2 Diseases of concern

14.2.1 Review progress in intersessional work on emerging diseases

A report entitled 'Emerging Pathogens in the Context of Marine Mammal Health' was presented (SC/69A/E/16). Recent emerging pathogens of concern include SARS-Cov2 and highly pathogenic avian influenza (HPAI), both of which have successfully crossed into mammals. In March 2023, the World Organisation for Animal Health (WOAH) convened an *ad hoc* expert group to develop a Guidance Framework for HPAI outbreak management in marine mammals. A final draft of the guidance document is expected by the end of May 2023.

Attention: SC

Recognising the need to correlate cetacean health data with ongoing ecosystem changes to evaluate the relative vulnerability of cetaceans in a changing ocean, the Committee:

- (1) **recommends** that the long-term monitoring of impacts of known and emerging pathogens, toxins, pollutants of concern and anthropogenic activities remains a standing recommendation for the E sub-committee;
- (2) **recommends** further investigation of the individual and cumulative effects of these threats on health, reproduction and survival at an individual and population level, and a report of the findings at SC69B; and
- (3) **recommends** both prospective and retrospective health and risk assessments are carried out within the context of rapidly changing marine ecosystems to inform management advice.

14.2.2 Review new information on diseases of concern

New information was received on the significant threat which *Toxoplasma gondii* poses to the management and recovery of Hector's and Māui dolphins. The New Zealand Government is preparing a Toxoplasmosis Action Plan which should soon be available. While species-specific vaccines for toxoplasmosis are currently used for sheep management, they are not yet available for wild marine mammal species. Research using captive marine mammal species and into delivery methods for free-ranging animals are both needed.

14.3 Strandings and mortality events

14.3.1 Review progress of steering committee for IWC Strandings Initiative

A progress report was presented by the Whale Killing Methods & Welfare Issues WG (WKM&WI) at IWC68 (IWC, 2022c, Annex K), where the Commission endorsed its recommendations (SC/69A/E/16). These recommendations will likely be helpful for euthanising stranded cetaceans, when necessary. The Global Strandings Network (GSN) was initiated at the World Marine Mammal Conference (WMMC) in Barcelona, 2019. It is slowly becoming active. GSN representatives will take part in the IWC's Strandings Expert Panel (SEP) workshop in Venice (8-10 May 2023) to discuss emergency response and capacity building.

The Committee recognises the need for a comprehensive global cetacean stranding database initiated by the IWC. That database will be valuable to the Committee, the CC and others outside the IWC. SC/69A/E/13 provided an overview of the database's purpose by summarising current data holdings and current/future data use. The paper outlined steps to develop a data management framework to implement a global strandings database and recommended further steps for its development.

It was noted that data sharing guidelines will need to be developed to protect the rights of data owners, among other reasons. Data from non-member countries could be incorporated into the database through various ways, including members of the SEP who have links to the relevant stranding networks.

Attention: SC, S, C

The Committee **reiterates** strong support for the Strandings Initiative and welcomes the new Chair of the Strandings Expert Panel (SEP). The Committee **commends** the work of SEP and its outgoing Chair over the last intersessional period and **endorses** efforts to re-evaluate and prioritise the current workplan, recognising that some work has been delayed. The priorities should be part of the Progress Report presented to SC69B.

The Committee is pleased the first in-person meeting of the SEP will occur 8-10 May 2023 and:

- (1) **recommends** this workshop review the workplan and prioritise activities to better focus the near-term effort by considering which tasks might be more uniquely suited to another intergovernmental organisation and which tasks might be better implemented by another group, potentially with support from the IWC;
- (2) **agrees** the SEP should continue to develop the necessary networks to build a robust global stranding response programme;
- (3) **acknowledges** that stranding events are not limited to cetaceans but may affect multiple taxa and thus **recommends** that the SEP work with the Global Stranding Network to develop a global stranding collaboration workshop at the next Society for Marine Mammalogy biennial conference;
- (4) **recommends** that the SEP and Stranding Coordinator continue to identify and pursue priority partnerships that would leverage opportunities for emergency response coordination and capacity building; and
- (5) **recommends** a full report of the workshop along with a costed workplan with relevant funding proposals is presented to SC69B.

The Committee commends work done scoping the IWC stranding database and **recommends** work commences to identify the data and information to be included in this database and report findings to SC69B. In particular, the E Convenors should work with the GDR WG and Secretariat to identify their data acquisition and data management needs in regard to strandings, taking into account Resolution 2022-1.

14.3.2 New information on unusual mortality events

An update was received regarding the UME during 2019-23 for ENP gray whales, discussed also in the CMP and ASW sub-committees (see Items 9.1.3 and 7.1.3 respectively). Strandings occurred along the entire range of the Eastern North Pacific gray whale, from Mexico to Alaska, including the wintering, migratory and feeding areas. It was further noted that the environmental conditions associated with the two UMEs were very different. Strandings to date in 2023 suggest the UME may be coming to an end.

14.3.3 Update on next steps to implement the four-year workplan

It was recognised that the Strandings Initiative workplan for 2021-24 has been endorsed by the Commission. A meeting of the SEP will take place in Venice, Italy 8-10 May 2023, where the workplan will be considered in light of pending changes to biennial Committee meetings.

14.3.4 Update on efforts to expand regional representation on the SEP

The issue of adequate regional representation on the SEP will be addressed at the May 2023 SEP workshop. The IWC Strandings Coordinator will subsequently reach out to scientists and other relevant experts from underrepresented regions.

14.3.5 Other information and recommendations

SC/69A/E/03 reported on the increasing number of euthanised large whales in southern Brazil. In all cases, euthanasia was accomplished using the low residue euthanasia protocol, which served as a guideline for drug choice and dosage. Some adaptations to the base protocol were implemented. The authors noted that the protocol was effective.

14.4 Climate change

14.4.1 Review any reports from intersessional workshops on climate change that pertain to cetaceans

Climate change affects cetaceans both directly and indirectly through their prey, habitat, food webs and ecosystems (SC/69A/E/07). Among the many impacts now observed and predicted are: shifts in cetacean distribution and abundance; loss of habitat; altered species and trophic interactions; altered inter and intraspecific competition; reduced reproductive success; changes in phenology and migrations; relocations of feeding and/or breeding grounds; trophic mismatches; increased exposure to pollution, pathogens, extreme weather events, marine heatwaves and toxic algal blooms; changes in behaviour; increased stress levels and higher susceptibility to diseases or other anthropogenic stressors. Climate change impacts can also negatively affect the health, body condition, immune system and survival of individuals and reduce the adaptive capacity and genetic variability within populations or species. It was further noted that it is not possible to consider the impacts of climate change on cetaceans without integrating information on other changes in the ocean environment due to anthropogenic activities.

The Committee received information on the effects of climate change on marine mammals in US waters (Gulland *et al.*, 2022). While this focuses on the USA, the effects of climate change and cumulative stressors will inevitably vary across different parts of the world, however, the review provides a valuable overview of existing and potential effects of climate change on cetaceans.

14.4.2 Review new information and recommendations

The Climate Change ICG met in the margins of the SC meeting and discussed its work programme. The ICG was asked to provide comments to the Committee during SC69B on the following: (1) how to encourage further submissions to the Committee regarding the impacts of climate change on cetacean populations; (2) providing a better understanding of how the work of each sub-committee interacts with climate change; (3) review progress on the recommendations of the 2021 workshop; (4) consider how other pressures on populations can be integrated into climate change-focused work.

14.5 Underwater noise

14.5.1 Review progress from intersessional work on impacts to cetaceans from underwater noise

SC/69A/E/11 synthesised findings from intersessional work regarding impacts to cetaceans from underwater noise. Since at least 2004, the SC and CC have discussed the effects of anthropogenic noise on cetaceans. Cetaceans rely on sound for survival. It is their primary sense, necessary for successful foraging, migration and reproduction. Man-made ocean noise has increased dramatically in recent years, with sources ranging from shipping to seismic exploration, drilling and construction. Anthropogenic ocean noise is identified as a priority threat in the CC's Strategic Plan. Research is ongoing to understand the impact of noise on cetaceans and the efficacy of various approaches to reducing exposure.

14.5.2 Review new information and recommendations

A summary of progress on the IWC global review of marine seismic airgun surveys, an initiative of the sub-group working on Anthropogenic Underwater Noise in the CC, was presented to the Committee. In mid-February 2023, the Secretariat circulated a questionnaire to all Member States, receiving 19 responses as of 24 March. The first round of responses helped identify areas for improvement in the questionnaire to gather more precise data and avoid ambiguous responses. The information provided will be analysed in more detail and discussed from a global perspective.

14.6 Marine debris

14.6.1 Review progress on recommendations on marine debris

The ICG reported on its participation at the ASCOBANS-ACCOBAMS marine debris workshop. Recommendations from this workshop were discussed and include: (1) emphasise the importance of long-term studies; (2) the need for standardised approaches to post-mortem studies; (3) the importance of strandings networks; (4) the assessment of floating debris during aerial surveys; (5) integration of marine debris concerns into the IWC's CMPs, where appropriate. The vulnerability of some species was also highlighted and the potential of some to be used as indicator species. The workshop called on the IUCN to consider marine debris in its next assessment of the sperm whale (IWC, 2019d).

14.6.2 Review progress on recommendations on marine debris

The IWC's most recent workshop¹¹ on marine debris was held in December 2019. An update from the ICG was presented on the progress of work, which also outlined the focus for the next intersessional period. The Committee notes recent concern expressed by the Commission regarding the impacts of marine plastics on cetacean populations and their environment (Resolution 2022-1).

In response, the Committee asked the ICG on Marine Debris to expand its Terms of Reference to include the following three points: (1) identify 'hotspots' of cetacean exposure to plastic debris; (2) prepare a synthesis of information related to the impacts of marine plastics on cetaceans; (3) prepare a summary of approaches that the Committee should consider in developing global and regional risk assessment related to cetacean exposure to plastic debris. The Committee considers this to be the highest priority for the E sub-committee.

There was considerable discussion within the Committee regarding Commission Resolution 2022-1. Literature on the impacts of marine plastic debris on cetaceans is rapidly increasing but information on this topic from a regional perspective is inconsistent. Each annual SOCER includes a section on marine debris generally. It was agreed that the synthesis document being prepared by the ICG should also prepare a summary of information available on marine plastic debris from the past five years.

14.7 Habitat alteration as anthropogenic impact on cetaceans

The Committee received information on the potential impacts of deep-sea mining on cetaceans. This indicated that deep-sea mining across vast areas and at varying depths has the potential for serious impacts on cetaceans. It recommends research should better evaluate the impacts of anthropogenic noise associated with such activities, as well as other possible adverse effects, such as impacts related to resuspension of bottom materials and mining tailings. A new ICG on deep-sea mining was established (see Annex V).

¹¹<https://archive.iwc.int/pages/view.php?ref=17025&k=72253392b8>.

Attention: SC, G, I, R

*Noting the growing concern over the effects of deep-sea mining and its potential to adversely impact large sea areas, the Committee **recommends**:*

- (1) *independent research be conducted to better understand impacts;*
- (2) *new deep sea mining developments thoroughly assess impacts to cetaceans and their ecosystems; and*
- (3) **agrees** *to establish a new ICG to consider this and present further at SC69B.*

14.8 SOCER (focus on Indian Ocean)

Based on several IWC resolutions, the State of the Cetacean Environment Report (SOCER) was initiated to provide regular updates on environmental matters that affect cetaceans. The 2023 Report focuses on the Indian Ocean and its marginal seas (see Annex S). The Committee **thanks** the authors for compiling this information in such a concise way and notes that this report is the 20th annual SOCER to be received by the Committee.

14.9 Review strategy to better integrate E workplan with other Committee sub-groups

The Committee **agrees** that the Convenors of the E sub-committee should query other Convenors regarding the environmental information needs of other sub-committees. This information would be passed on to the ICG Convenors early in the intersessional period.

14.10 Review strategy on developing and using a ‘One Health’ approach

The Committee further discussed the ‘One Health’ concept and recognised the holistic value of this approach to the wellbeing of all ecosystem components, including humans. SC/69A/E/15 was discussed under this agenda item. In a veterinary context, the term ‘One Health’ captures how relationships between humans, animals and the environment may affect the spread of diseases. The US Centre for Disease Control’s One Health Programme reports that more than 70% of emerging human diseases are zoonotic, meaning they originate in animals and can cross to human and other animals. The Committee **agrees** on the need to expand this approach by directing research and scientific analyses related to the conservation of cetacean populations.

14.11 Progress on previous recommendations

The Committee reviewed the status of recommendations made by the E sub-committee between 2019-22. The Committee **agrees** to review the E Sub-Committee’s 19 recommendations made between 2021-22 at SC69B.

14.12 Workplan

The Committee **agrees** to the workplan provided in Annex G. ICGs can be found in Annex V.

15. ECOSYSTEM MODELLING

The Ecosystem Modelling WG informs the Committee on relevant aspects of the nature and extent of ecological relationships between whales and the ecosystems in which they live. Its report is given as Annex H. The Committee focused on the following topics:

- (1) preparations for the second workshop on the role of cetaceans in ecosystem functioning as part of the Committee’s response to Commission Resolutions 2016-3 and 2018-2 and a related request from a CC WG; and
- (2) review of issues relevant to ecosystem modelling within the Committee.

15.1 Review progress on estimating pre-exploitation and current abundance of large whale populations

Analyses of the ‘ecosystem functioning of cetaceans’ requires pre-exploitation and current abundance estimates of large whale populations. In response to tasks identified last year (IWC, 2023a, Item 15.3), such estimates were provided for the Southern Ocean and North Atlantic. Annex H, Appendix 2 gives estimates from two different modelling approaches of pre- and post-commercial whaling abundance in units of number of whales and biomass for Southern Ocean blue, fin, humpback and Antarctic minke whales. There was relatively good agreement in key outputs for the two multi-species models. Both models estimate the current total biomass of these species at approximately 20% of the historical level - information which is important for modelling the role of cetaceans in ecosystem functioning. These models assume an invariant carrying capacity which should be re-examined given the impacts of climate change on krill. The estimates provided have not yet been reviewed by ASI and consequently have yet to be endorsed by the Committee.

As the role of whales in the Southern Ocean and Northeast Atlantic are expected to be different, best estimates of pre-exploitation and current biomass of whales in the Northeast Atlantic were provided in Annex H, Appendix 3. These estimates were from single-species models. The focus was on the best current abundance estimates, though pre-exploitation estimates are provided where they exist. The ratio between current and pre-exploitation biomass estimates for all cetaceans in the region was around 30%, but some of the abundance estimates must be re-examined to ensure they only reflect abundance in the Northeast Atlantic.

The Committee **welcomes** this new information and notes the similarities between the biomass estimates for the pre- and post-commercial whaling periods (approx. 20% and 30% of the historical level respectively) for the various models used in the Southern Ocean and Northeast Atlantic. This information is important for evaluating the role of cetaceans in ecosystem functioning and will be valuable for the forthcoming workshop considered under Item 15.2.

15.2 Workshop on the Role of Cetaceans in Ecosystem Functioning: Gap Analysis

15.2.1 Discuss plans for upcoming workshop scheduled for November 2023

Whales play a broad range of roles in an ecosystem, including nutrient transport and cycling, carbon sequestration and as predators. Under Commission Resolution 2016-3 on the role of cetaceans in ecosystem functioning, the Committee was asked to identify knowledge gaps and develop a plan to fill these gaps. Resolution 2018-2 encouraged the Committee to collaborate with the CMS and other international organisations in this work.

A three-day virtual joint workshop with CMS to conduct a gap analysis was held in 2021 (IWC, 2022d). The workshop included two keynote reviews of cetaceans and ecosystem functioning and additional presentations on specific functions (e.g., whale falls, whale pump, whale conveyor belt, role as predators). The workshop developed a list of questions, hypotheses and tasks to be considered at a second workshop:

- (1) development or modification of existing ecosystem models to form the basis of subsequent items;
- (2) inputs required for a robust assessment of the contribution of cetaceans to ‘ocean fertilisation’, ‘carbon cycle and sequestration’, ‘delivery of nutrients and energy’, and ‘habitat provision’ (i.e., contribution relative to species other than cetaceans, with respect to consumption, metabolism, biodiversity and habitat, including the deep-sea floor);
- (3) quantification of spatial difference in ecosystem functioning of cetaceans, focusing on links with environments and regional ecosystem characteristics (i.e., historical trends in different places);
- (4) quantification of temporal changes in ecosystem functioning of cetaceans, with focus on the difference between pre-whaling and current populations, and identification of information and knowledge;
- (5) qualitative assessment of the future roles and ecosystem functioning of cetaceans, with a focus on implications of global changes; and
- (6) different contributions to ecosystem functioning over different cetacean species/functional groups (i.e., small versus large, mysticetes versus odontocetes, etc.).

In 2021, the Committee agreed to focus on (3) and (4) at a second in-person workshop which will be better suited to engage in discussions regarding the detailed quantitative analysis of ecosystem functioning and issues related to ecosystem modelling (see Annex H, Appendix 4).

The Committee **welcomes** a progress update (SC/69A/EM/05) on this topic after the first IWC-CMS workshop in 2021. It was informed that the Whale and Dolphin Conservation charity (WDC) has established a workstream with an initial focus on addressing the priority research gaps identified at the workshop. It also hosted a workshop at the 34th European Cetacean Society meeting (April 2023) to discuss the latest research on the contribution of small cetaceans to ecosystem functioning and identify relevant research gaps. The Committee looks forward to receiving the report of this workshop when it becomes available.

The Committee reviewed and reconfirmed the terms of reference for the IWC-CMS workshop on cetaceans and ecosystem functioning and **approves** the draft agenda for the second IWC-CMS workshop (see Annex H, Appendix 6). The results of the workshop will be communicated at SC69B.

15.2.2 Updates from the Conservation Committee’s Working Group

Last year, the Committee received the report of the CC’s Workshop on Socio-Economic Values of the Contribution of Cetaceans to Ecosystem Functioning (Available here: <https://archive.iwc.int/pages/view.php?ref=19617&k=>). The workshop reviewed analytical valuation methods and assessed their potential application in a cetaceans and ecosystem functioning framework. SC/69A/EM01rev1 and SC/69A/EM/02rev2 set out the CC Working Group’s (CCWG) progress since SC68D. Since January 2023, the CCWG has focused on selecting species for a pilot socioeconomic analysis and developing terms of reference for the associated consultancy.

The Committee recognises the differences between its work and the CCWG. The Committee’s focus is to evaluate ecosystem functioning, while the CCWG focuses on the socioeconomics of ‘ecosystem services.’ Annex H, Appendix 5 provides clarification and additional information on the CCWG pilot project. The Committee did not comment on priority species for the pilot project but notes outcomes from the second IWC-CMS workshop may inform its selection of candidate species or populations.

15.3 Review results of ecosystem modelling in the Antarctic Ocean and northeast Atlantic Ocean

This subject was partially discussed under Item 15.1 in the context of ecosystem functioning.

15.4 Progress on multi-species distribution models (MSDMs)

The diversity and complexity of analytical methods used for single species and multi-species distribution models (SDMs and MSDMs respectively) continue to increase. To ensure the Committee can evaluate whether the results of such models

can be used to provide the Commission with management advice, an ICG was established at SC68C to advance work on developing guidelines and simulation platforms for SDMs and MSDMs. Due to competing priorities during the intersessional period, limited progress was made towards addressing the ICG's terms of reference. The ICG will work intersessionally and report back to SC69B (see Annex V).

15.5 Progress with development of individual-based energetic models (IBEMs)

The Committee received no papers under this item. The Committee **encourages** submission of papers at SC69B.

15.6 Modelling of competition among whales and relationships between whales and prey

Cunen *et al.* (2021) examined changes in the body condition of Antarctic minke whales sampled during the Japanese whaling research programme in the Antarctic (JARPA I from 1987/88 to 2004/05). In 2018, the Committee agreed that all approaches result in point estimates reflecting a decline when fitted to a linear trend in time. The extent of this estimated decline differs between methods and is not statistically significant at the 5% level for all approaches. Furthermore, the Committee encouraged publication in peer-reviewed journals of the results which formed the basis for this agreement. Cunen *et al.* (2021) fulfils this publication request, detailing their analyses which had been based on 'focused information criteria' models, which indicated a substantial decline in all body condition measurements over the study period: 10% for fat weight, 7% for blubber thickness and 3% for girth. The Committee **thanks** Cunen *et al.* (2021) for responding to its request.

The recent trend in temporal and geographical variation in blubber thickness of common minke whales in the northeast Atlantic was presented in Solvang *et al.* (2022). The analyses, using three approaches, revealed a significant negative trend in blubber thickness from 1993-2015 and increase thereafter. There is higher blubber thickness in the north and west than farther to the south. Recruitment to the cod stock decreased after 2013 to a current low level. The analyses indicated a significant negative relationship, which may support a connection between cod abundance and common minke whale body condition. The Committee **expresses its thanks** for this important work and **welcomes** future work on this subject.

15.7 Standing topics

15.7.1 Progress on considering effects of long-term environmental variability on whale populations

The issue of variability in baleen whale demographics was last examined at a workshop held in 2010 (IWC, 2011). The specific question posed was whether MSYR is affected by environmental variability. A previously convened ICG had been re-established but no recent analysis was submitted for review.

The Committee reiterates the importance of understanding the relationship between MSYR and long-term environmental variability, noting the impact of climate change on krill biomass in the Antarctic (see Atkinson *et al.*, 2019). Given the wide interest in this topic, the Committee **agrees** to keep this agenda item open for the next year and seeks as a high priority the submission of new papers on this topic for consideration at SC69B.

15.7.2 Review progress on evaluation of krill distribution and abundance

SC/69A/EM/03 summarises the history of CCAMLR's management of the Antarctic krill fishery, including recent developments toward a revised management approach. The revised krill management approach combines three components: periodic krill biomass estimates; estimates of precautionary harvest rates; 'spatial overlap analysis' which incorporates the estimated spatial distribution of prey requirements of krill predators. The role of baleen whale science in the revised krill fishery management approach highlights the need for information on whale abundance estimates, spatial distribution by season, krill consumption rates, residency times on the Antarctic feeding grounds and a deeper understanding of krill swarm (aggregation) preferences.

The Committee **acknowledges** both the importance and difficulty of obtaining reliable biomass estimates for krill in absolute terms to model trophic interactions and ecosystem function. The Committee also **recognises** the potential implications of climate change on the Southern Ocean ecosystem, including primary production, krill and baleen whales. The issues of whale abundance and krill consumption provide an important opportunity for CCAMLR and IWC to collaborate.

SC/69A/EM/04rev1 summarises a new Australian Antarctic Science project titled 'Managing Antarctic Krill and Conserving the Krill-based Ecosystems (KaKE)'. This 10-year project has two main goals: to inform the sustainable and ecosystem-based management of a krill fishery in East Antarctica (30°E-150°E); and to quantify the current and projected impacts of climate change on East Antarctica's krill-based ecosystem. A large body of cetacean-focused research has been proposed under this project which aims to assess the spatial and temporal distribution and variability of krill consumption by whales in areas likely to be targeted by an East Antarctic krill fishery. The current project team seeks to develop collaborations with others on this work.

The relationship between krill biomass estimates from surveys in the Southern Ocean and consumption rates of krill by baleen whales are of great interest. Krill biomass, distribution and swarm characteristics are important variables informing ecosystem models. While no krill biomass studies were presented at SC69A, the Committee **looks forward** to receiving data related to these krill surveys.

15.8 Progress on previous recommendations

The Committee notes the EM sub-committee's decision to postpone consideration of the DoR as the existing recommendations cannot easily be considered 'closed' due to their nature. The sub-committee Convenors will consult with the Secretariat during the intersessional period.

15.9 Workplan

The Committee **agrees** to the workplan provided in Annex H. ICGs can be found in Annex V.

16. SMALL CETACEANS

16.1 Small Cetacean Use as Aquatic Wildmeat

16.1.1 Review new information

New information on the take of South American River dolphins as aquatic wildmeat was reviewed by the small cetaceans sub-committee (Annex F, item 9.1.5).

16.2.2 Develop four-year workplan

Between 2020-22, members of the Committee, in collaboration with the CMS, completed a substantial review of the use of aquatic mammals in the tropics and subtropics, consolidating much of the Committee's work over the past six years (Ingram *et al.*, 2022). It was agreed that a new workplan on this topic would be developed and presented at SC69B.

16.2 Recommendation Review

16.2.1 Review of topics related to Hector's and Māui dolphins in New Zealand (with HIM)

The Committee made progress on several recommendations concerning Hector's and Māui dolphins, particularly on topics related to the review of the spatial risk assessment. This work is summarised under Item 12.6 and in Annex J (item 12).

A novel technique is being developed to better understand the life history parameters of Hector's and Māui dolphins (SC/69A/SM/02). The 'epigenetic clock' assesses chemical changes within DNA that can be equated with age. It is hoped it will soon be possible to age free-ranging dolphins from biopsy samples and thereby improve risk assessment models for this threatened species.

16.3 South Pacific Island Small Cetaceans

In 2022, an ICG was formed to start planning the proposed review of the small cetaceans of the South Pacific. The Committee received a comprehensive overview of the actual and potential threats facing the 34 cetacean species within the waters of the countries and territories of the Pacific Islands: direct take; bycatch; entanglement in and injury from fishing gear; pollution; pathogens and introduced species; resource depletion; deep-sea mining activities and climate change (Miller, 2023). Bycatch in commercial oceanic purse seine and longline vessels fishing was identified as the most serious threat. Direct take also presents a major threat in some areas for delphinids. Given what is known of threats and the paucity of data on offshore species, four focal species were proposed to be included in the forthcoming review: short-finned pilot whales (*Globicephala macrorhynchus*); false killer whales (*Pseudorca crassidens*); melon-headed whales (*Peponocephala electra*); pygmy killer whales (*Feresa attenuata*). A workplan of three to five years is anticipated.

Attention: SC, R

To advance the review of South Pacific Islands Small Cetaceans, the Committee **recommends**:

- (1) a proposal be developed for an in-person workshop in collaboration with the Bycatch Mitigation Initiative (BMI) that includes multiple stakeholders from the South Pacific Island region; and
- (2) funds for the workshop are sought both from within and outside the Committee budget.

16.4 Progress with Previous Recommendations

16.4.1 Franciscana

This Committee first reviewed the franciscana in 2004. A franciscana Task Team (FTT) was established in 2015. In 2016, the franciscana CMP was established (IWC/66/CC/11, <https://archive.iwc.int/?r=6265&k=a676e37720>) - the first to be adopted for a small cetacean. The overall objective of this CMP was to protect franciscana habitat and minimise anthropogenic threats, particularly bycatch. The Committee has facilitated, advised and reported nearly two decades of research on this species and extensively considered its stock structure, distribution and abundance, behaviour and movement patterns, life history, ecology and threats. The review of the franciscana was completed this year: SC/69A/REP/01 reviews and synthesises this work. The following summary is brief as the information provided is only intended to clarify each new recommendation.

16.4.1.1 STOCK STRUCTURE

The franciscana population is divided into 11 different Franciscana Management Areas (FMAs). This was discussed under Item 10.1.5 and in Annex O.

16.4.1.2 DISTRIBUTION AND ABUNDANCE

The franciscana is endemic to the western South Atlantic Ocean, ranging from Espírito Santo State, Brazil, to Golfo Nuevo, Chubut Province, Argentina. It is a primarily coastal species that occurs in some bays and estuaries. The population is discontinuous with two areas in the north of its range where the species is extremely rare. Aerial surveys documented high densities of franciscana in previously poorly surveyed areas within Río de la Plata, Uruguay. The Committee notes that more information on seasonal distribution is required and the border area between Argentina and Uruguay requires additional survey work.

Attention: SC, R, G-Argentina, G-Brazil, G-Uruguay

Given the high density of franciscana observed at the border of FMA III and FMA IVa, the Committee **recommends** that surveys are conducted to investigate:

- (1) distribution between the coasts of Argentina and Uruguay and in the Río de la Plata estuarine area; and
- (2) seasonal distribution across all Franciscana Management Areas.

The Committee received information on a novel methodology that employed the use of synchronous Unmanned Aerial Vehicle (UAV) and Passive Acoustic Monitoring (PAM) surveys to estimate the cue rate (the rate at which each individual emits echolocation signals) of franciscana in Brazil. This methodology was applied to the echolocation cue rate recorded from franciscana in Espírito Santo (FMA Ia), Brazil, in order to estimate abundance.

Attention: SC-ASI, R

The Committee **agrees** that the use of passive acoustic monitoring methods could provide a reliable method to estimate franciscana abundance and trends. The Committee therefore **recommends**:

- (1) efforts to develop approaches to use acoustic methods to estimate population density and abundance are continued; and
- (2) the Abundance Steering Group (ASI) reviews the feasibility of methods described in this report (Annex Q) to estimate abundance of franciscana.

This Committee has reviewed 25 abundance estimates for eight of the 11 franciscana stocks (detailed in Annex D, item 2.1.7). Franciscana abundance estimates accepted during SC69A are presented under Item 11.1. Relatively small stocks occur in FMA II Babitonga and FMA Ia (approx. 1,000 dolphins), while FMA III has approx. 40,000 individuals. Estimates for FMA IVa, IVd and IVe have never been computed and surveys in this region (FMA IV) should be a priority. Additional surveys are required in Argentina to refine estimates for FMA IVb and IVc and assess trends in abundance for all stocks.

Attention: SC, R, Argentina, Brazil and Uruguay

Given the fundamental importance of abundance estimates in assessing the status of franciscana stocks, the Committee **recommends**:

- (1) surveys to obtain abundance estimates of FMAs IVa, IVd and IVe in Argentina should be considered of highest priority; and
- (2) surveys should continue in other areas, particularly in FMAs IVb and IVc to allow trends in abundance to be investigated.

16.4.1.3 BEHAVIOUR AND MOVEMENT PATTERNS

Telemetry studies have indicated considerable variation in core habitat size across different FMAs: (1) 1.6 km², Baía Babitonga, Brazil; (2) 23.4 km², Bahía Samborombón, Argentina; (3) 79.3 km², Bahía San Blas, Argentina. Some evidence exists that adult franciscana form monogamous reproductive pairs and perform mate guarding. A matrilineal society, where offspring remain for some time in the same group as their mother, has been proposed.

Attention: SC, R

To further elucidate information on franciscana group behaviour, core area size and movements, the Committee **recommends** further telemetry studies are conducted throughout the species' range.

16.4.1.4 LIFE HISTORY

Life history information is either not available or may have become outdated for most franciscana stocks. This data gap is critical for management of the species and must be addressed.

Attention: SC, R

Available life history information on franciscana is not available for some management stocks (FMA Ia, FMA IVa, FMA IVd and FMA IVe) and outdated for others (FMA III). The Committee therefore **recommends** research is conducted to update and provide new estimates of reproductive and growth parameters across the franciscana range.

16.4.1.5 ECOLOGY

Presented information pointed to the possibility that: (1) franciscana may have an ‘unusually high’ metabolic rate; and (2) franciscana habitat and prey species may be changing.

Attention: SC, CMP, R

Given the possibility that franciscana may have an unusually high energy demand and their habitat and prey species may be changing, the Committee **recommends** studies to better understand franciscana diet and feeding ecology are conducted throughout their range.

16.4.1.6 THREATS

Although the most pervasive threat to the franciscana is bycatch, the Committee notes the multiple and cumulative threats that occur throughout the species’ range. As well as persistent and long-term threats from pollution, new threats are emerging, including climate change and the development of marine renewable energy installations. The Committee discussed at length the considerable pressure each FMA is under and developed a suite of recommendations. These aim to reduce the impact of cumulative and individual threats by strengthening existing legislation, developing new legislation, increasing habitat protection and implementing effective bycatch reduction measures.

Attention: CG- Brazil, Argentina

The Committee **expresses concern** over the continued and unsustainable incidental take of franciscana and **requests** actions to further enhance existing and new marine protected areas.

The Committee **requests** the Government of Brazil consider:

- (1) expanding the northern limit of the gillnet fishing exclusion zone established ‘IN12/2012’ to the Cape of São Tomé while maintaining the zone’s inshore and offshore boundaries; and
- (2) establishing Marine Protected Areas in important franciscana habitats, including the estuary mouth of the Rio Doce, areas adjacent to the Jurubatiba National Park, the Baía de Babitonga and Albardão.

The Committee **requests** that the Government of Argentina consider establishing marine protected areas in important franciscana habitats, specifically the Río Negro estuary.

Attention SC, CMP, E, R, CG-Brazil, Uruguay, Argentina; S

Recognising the multiple and cumulative threats that franciscana face throughout their range, the Committee **expresses concern** that new developments, such as renewable energy installations, could significantly add to these threats. The Committee also **draws attention** to the lack of any impact assessment framework that specifically included this species. The Committee **agrees** that any assessment of impacts to franciscana should consider cumulative impacts and **recommends**:

- (1) franciscana should be designated as a priority species to be included in any existing and all future environmental impact assessments across all range states, particularly when licensing new activities such as renewable energy developments; and
- (2) through new research and drawing on expertise of the SC, the cumulative effects of chemical pollution, stress hormones, biotoxin, diseases and other stressors on franciscana be conducted and reviewed.

The Committee also **requests** the Secretariat write letters to the governments of Brazil, Uruguay and Argentina highlighting concerns over cumulative impacts on franciscana and the lack of focused assessment processes to protect them.

Attention SC, CMP, E, R, CG-Brazil, Uruguay, Argentina; S

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The Committee also **requests** the Secretariat write letters to the governments of Brazil, Uruguay and Argentina highlighting concerns over cumulative impacts on franciscana and the lack of focused assessment processes to protect them.

Attention: SC, G, Argentina, Brazil, Uruguay, R

The Committee **expresses concern** over the continued and unsustainable incidental take of franciscana in most FMAs and **requests** governments across the species' range better articulate bycatch reduction goals in fisheries management plans.

The Committee **recommends**:

- (1) all available franciscana estimates of incidental mortality are reviewed at SC69B;
- (2) bycatch monitoring is expanded or implemented in fisheries affecting the franciscana throughout the species' range;
- (3) technological and/or operational measures (e.g., area-based conservation) are urgently implemented by the three range countries to reduce fishing-related franciscana mortality;
- (4) testing the use of low-cost methods (e.g., plastic bottles attached to fishing nets) to reduce franciscana bycatch in gill-nets and pingers in trawl nets be continued; and
- (5) the use of acoustic listening devices is continued and expanded in bycatch and mitigation studies so that franciscana activity near fishing gear can be documented and assessed in detail.

16.4.1.7 PUBLIC AWARENESS

The IWC Voluntary Fund supported an education and public awareness campaign called 'Our Neighbour the Franciscana' which helps to visualise threats facing the franciscana and explains what the public, particularly fishers, can do to reduce these threats.

16.4.1.8 CONCLUSIONS

While stock structure, abundance estimates, some threats and biological parameters have been subject to thorough review, the Committee notes that estimates of bycatch are still not fully understood. The Committee established an ICG (see Annex V) drawing on expertise from across the Committee to review estimates of bycatch throughout the species' range. The ICG will provide a report at SC69B with a view to assessing whether the data is sufficient for a Comprehensive Assessment. This would help range states prioritise conservation actions and provide a framework to better understand species subject to high bycatch.

16.4.2 Lahille's dolphin

The Lahille's bottlenose dolphin Task Team was established in 2021, following recommendations made by this Committee. New information was presented from the Bahía Blanca estuary, Argentina. Group size ranged from one to 20 individuals and dolphins occurred all year round. The importance of the Bahía Blanca estuary for the Lahille's bottlenose dolphin was highlighted as one of the few sites in Argentina where the subspecies still regularly occur (SC/69A/SM/04).

The size of each local population and the entire southern Brazil-Uruguay Evolutionary Significant Unit (ESU) was estimated. A population viability analysis (PVA) predicted the extinction of some local populations and a dramatic reduction of the metapopulation under the existing management regime (SC/69A/SM/05).

SC/69A/SM/05 presented information on high levels of bioaccumulated organochlorine compounds from 28 males in the Patos Lagoon estuary, Brazil. PCB concentrations were higher than levels known to cause toxic effects and showed an increasing trend. Mirex levels were significantly higher than those previously recorded. There was less clarity with regards to DDT concentrations trends.

The Committee **expresses concern** for the conservation status of the Lahille's bottlenose dolphin and **notes** that the entire subspecies likely numbers less than 250 mature individuals. As such, the Committee **recommends** this subspecies is considered as a priority candidate for a CMP. Considering the last review of the Lahille's dolphin status was conducted in 2017, the Committee also **recommends** that a workshop is organised to update subspecies status in all three range states. In addition, the Committee **requests** that the Government of Brazil, the IUCN and CMS reassess the conservation status of this subspecies.

Attention: SC; SC-TT; CG-Brazil; CG-Argentina; CG-Uruguay; IUCN; CMS

The new information provided to the Committee indicates it is likely that less than 250 mature individual Lahille's bottlenose dolphins remain. Given that PVA models predict a continued decline throughout the subspecies range, the Committee recommends:

- (1) the range states treat this subspecies as a priority candidate for a CMP and develop a proposal before SC69B; and*
- (2) a workshop is conducted to update the status of the subspecies in all three range states.*

*The Committee **strongly encourages** range state governments to reassess the conservation status of the Lahille's bottlenose dolphin for the National Red List of Threatened Species in Brazil.*

*The Committee **requests** IUCN and CMS consider reassessing the status of the Lahille's bottlenose dolphin in their respective categories and appendices.*

16.4.3 Sotalia

The Commissioner for Brazil prioritised the Guiana dolphin as a candidate for a CMP on behalf of the governments of Brazil, France and Panama. The proposed objective of the CMP is to promote the conservation of the Guiana dolphin across its range in South and Central America. In 2018, this Committee listed the Guiana dolphin as a priority species for evaluation. The 2023 update on the status of this species focused on the findings of a seven-year stranding programme in southern and south-eastern Brazil. Over 1,200 strandings were assessed. More than 30% showed evidence of anthropogenic interactions, mainly from fisheries. Given the low abundance of Guiana dolphins throughout their range, the Committee emphasised the need to establish collaborative efforts to reduce impacts from fisheries and strengthen management actions. The Committee welcomed this announcement and congratulated all countries on their collaboration. An ICG was established to interact with Brazil, France and Panama on scientific matters and priorities to be included in a draft CMP (Annex V).

Attention: SC, CC

Following the nomination by Brazil, France and Panama for the development of a Conservation Management Plan (CMP) for the Guiana dolphin, the Committee:

- (1) **endorses** the nomination by Brazil, France and Panama to establish a CMP for the Guiana dolphin;*
- (2) **encourages** the proponents to prepare a draft CMP, pending consideration and endorsement of the nomination by the Conservation Committee; and*
- (3) **establishes** an ICG to interact with the proponents on scientific matters and priorities to be included in the draft CMP.*

16.4.4 Vaquita

The plight of the porpoise vaquita caused this Committee to develop the 'Extinction Alert' initiative. This initiative is a communications tool which will allow the IWC to speak out in a timely manner to address a grave concern about the survival of a species or a distinct population. The initiative was approved at IWC68 and is discussed in detail at Item 19 and on the IWC website. The first statement issued by this initiative focuses on the vaquita.

This Committee has expressed extreme frustration for decades with regards to the vaquita's decline due to a single threat: bycatch in fishing gear. The Committee was informed that official statements had recently been made at several CITES meetings which implied that environmental change rather than bycatch had precipitated this decline. It was noted that this Committee has repeatedly presented evidence showing a declining population trend concomitant with decades of entanglement in gillnets used for shrimp/finfish and more recently in an increasingly open and uncontrolled illegal gillnet fishery for the totoaba (*Totoaba macdonaldi*) which is also endangered. The vaquita will become extinct in the near future unless the risk of entanglement in gillnets is entirely eliminated.

The status of the vaquita has been the subject of great concern to this Committee which has made dozens of recommendations (see IWC, 2023b, Annex Q).

Attention: SC, CC, CG-Mexico

*The Committee **reiterates** previous concerns and urgent recommendations regarding the vaquita.*

*The Committee **draws attention** to the continued decline of the vaquita population and threat of gillnet entanglement which remains the primary threat to this species. The Committee **strongly encourages** Mexico to urgently and fully implement the 'Agreement regulating gears, systems, methods, techniques and schedules for the performance of fishing activities with smaller and larger vessels in Mexican Marine Zones in the Northern Gulf of California and establishing landing sites, as well as the use of monitoring systems for such vessels' (September 2020).*

*The Committee **draws attention to** previous recommendations that **strongly encourage** Mexico to urgently implement efforts to fully fund and support efforts to develop, test and facilitate the use of alternative fishing gears for shrimp and legal*

finfish, including collaboration with the Expert Committee on Fishing Technologies and civil society to eliminate the need to fish illegally by providing viable legal livelihoods that do not endanger vaquita and other megafauna species.

*The Committee also **strongly encourages** Mexico to endorse the previous and current recommendations from the International Committee for the Recovery of the Vaquita (CIRVA) and facilitate regular future meetings.*

SC/69A/SM/01 provided an update on the acoustic monitoring programme, a key method for providing information on the species' status. Between 2015-18, acoustic data indicated that the population numbered fewer than 20 individuals and that the area where they were detected was contracting. In 2022, a total of 13,964 hours of acoustic recording effort resulted in 77 acoustic detections within 17 of the 42 sampled sites. Most detections were made in the western portion of the 'so-called' Zero Tolerance Area (ZTA). The data indicate the acoustic detection rate has decreased by almost 12% since 2021.

At SC68D, the Committee expressed concern over the decision by CITES to permit the international commercial trade in captive-bred totoaba meat, when it was clear that it would be extremely difficult to distinguish between captive-bred and wild-caught totoaba, thus allowing illegal trade to be conducted much more easily. An update was requested on the current situation with regard to efforts being made by multinational agreement bodies to curb the trade of totoaba. Given the ongoing illegal fishing in the Upper Gulf, both CITES and the World Heritage Committee will consider additional measures targeting Mexico at future meetings. These include the potential for trade sanctions imposed by CITES if sufficient progress has not been made by Mexico to prevent illegal fishing. It was highlighted that effective alternative fishing gear is available that does not endanger the vaquita. A small artisanal trawl (chango ecológico) is the only authorised fishing gear for shrimp catching in the Upper Gulf. After participating in training courses, fishermen using chango ecológico obtained a catch similar in size to that usually caught from traditional gillnets. In 2022, a new sustainable fishing model was implemented that allowed fishermen to sell fish caught with the chango ecológico at a higher monetary rate, typically double market value. Tests of this initiative will continue in 2023 and it was noted that the success of this programme was due to the efforts of a group of local fishermen (PESCA ABC), Cetacean Action Treasury, Museo de la Ballena in La Paz, Mexico and the Regional Administrative Monitoring of Marine Species (MAREM).

The Committee was made aware of several recent media releases which reported illegal fishing had declined by 90%. It was clarified that some illegal fishing activities have reduced due to the installation of anti-gillnet devices in the ZTA, but the illegal fishery is still active and continues to threaten the few remaining vaquita. The Committee **welcomes** reports of an apparent decline in illegal fishing in the ZTA and **thanks** the Mexican Navy (and others) for their contributions. The Committee **strongly encourages** the Mexican Navy to continue and expand their efforts to the entire Gillnet Prohibition Area.

Attention: SC, CC, S

*The Committee **requests** the Secretariat send the letter drafted by the Scientific Committee and the Conservation Committee that offers to assist in reviewing the proposed research to: (1) assess the impact of environmental change on vaquita distribution and abundance; and (2) provide scientific advice to Mexico in its implementation of directives from CITES and other international fora.*

16.4.5 Strait of Gibraltar killer whales

In 2020, interactions between killer whales and vessels in the Strait of Gibraltar led to the establishment of an ICG which aimed to provide advice to the governments of Spain and Portugal on this unusual phenomenon. Since 2021, several mitigation measures to protect both killer whales and vessels have been implemented in Portuguese and Spanish waters, but the number of individual animals interacting with vessels appears to be increasing and aggressive attempts to deter the animals are escalating.

The Spanish Government is funding several projects to better understand and mitigate these interactions. These include: (1) monitoring killer whale populations using photo-ID to identify which individuals are involved; (2) mapping the spatial distribution and movement patterns of killer whales in the Strait of Gibraltar using satellite tags; and (3) understanding how vessel behaviour may provoke interactions and whether non-invasive acoustic deterrents are effective.

At the beginning of SC69A, Garcia-Bellido informed the Committee that one of the individuals known to interact with vessels had been tagged and could now be followed remotely. The killer whale's near real-time location is being shared with the Marine Traffic and Maritime Security authorities. In addition, the Committee was informed on 5 May 2023, as a result of killer whale interactions, one sailing vessel was sunk along the coast of Barbate, Spain. The Committee **agrees** that a workshop incorporating cetacean specialists, social scientists and management authorities should be organised with some urgency to assist in developing mitigation measures.

16.4.6 Tursiops taxonomy

In 2016, the Committee embarked on a three-year review of the taxonomy and population structure of bottlenose dolphins (*Tursiops* spp.) (IWC, 2015a, Item 14). On completion of this review, an ICG was established to regularly assess the taxonomy of the genus *Tursiops* worldwide and develop a taxonomy assessment framework for small cetaceans. Available information is reviewed every two to three years, with the most recent being in 2021. The review concluded that:

- (1) two different lineages exist within the Western Indian Ocean (WIO) supported by existing genetic and new morphologic information;
- (2) both morphologic and genetic evidence revealed the existence of bottlenose dolphin population boundaries in the coastal areas of the western North Atlantic (Shintaku, 2021);
- (3) a new subspecies (*T. t. nuuanu*) has been defined (Costa *et al.*, 2022); and
- (4) *Tursiops* taxonomy remains limited in several areas: the Red Sea; the waters of west Africa; the southern and eastern Mediterranean Sea; the eastern South Pacific; the waters of east Australia; the waters of Micronesia, Melanesia and Polynesia; the South China Sea.

16.4.7 Atlantic humpback dolphin (*Sousa teuszii*)

The Committee has previously expressed serious concern over the declining status of the Atlantic humpback dolphin. The Consortium for the Conservation of the Atlantic Humpback Dolphin (CCAHD) was established in 2020 and comprises many members of this Committee, local researchers and government departments throughout the species' range. In 2022/23, surveys were conducted in Senegal and Guinea, in partnership with Biotope Guinea and the African Aquatic Conservation Fund (AACF). Training programmes were conducted in Gabon, in partnership with the Gabon National Parks Agency (ANPN). A regional local ecological knowledge study was launched in seven of the species' range states: Congo, Gabon, Cameroon, Liberia, Guinea, the Gambia and Senegal. CCAHD also contributed to the CMS Single Species Action Plan and submitted a technical report which supports listing the Atlantic humpback dolphin as an endangered species under the United States Endangered Species Act (CCAHD, 2022).

16.4.8 Asian river dolphins

In 2022, the WWF River Dolphin Initiative strengthened regional support for an Asian River dolphin CMP. In addition to habitat modification, destruction and deterioration, bycatch is the main cause of mortality for all Asian freshwater cetacean species. Government representatives and scientific experts from eight countries met in Pakistan to discuss bycatch mitigation measures and the reduction of unsustainable and illegal fishing practices. This workshop produced the 'Islamabad Recommendations': a suite of measures to develop a fishery-focused freshwater cetacean CMP for Asia (WWF, 2022). Pakistan is actively seeking IWC membership to better implement this initiative. Before SC69B, this Committee and the CC will work with Pakistan to develop a formal CMP proposal to be presented in 2024.

16.5 Review direct takes and live captures of small cetaceans

16.5.1 Direct takes

The Committee has collated information on the direct take of small cetaceans for over 16 years. As part of a mentoring programme with Oxford University, an intern spent several months with the Statistics team at the IWC Secretariat. The main goals of this internship were to: (1) build a 'clean' database of existing information on all small cetacean takes held by the IWC including related metadata and documentation; (2) develop code for data cleaning and checking; and (3) investigate how to improve spatial data information from the existing data. A small cetacean-take database has been developed, containing information from 35 countries and spanning the years 1973-2021. This database contains only a fraction of the records held by the IWC. It will continue to be added to as resources permit. It was noted that spatial information is missing for most of the 4,379 records (not individuals) currently in the database: only 10% contain coordinates and 39% include only area references. It is anticipated that more assistance could be provided through mentorship or intern programmes to ensure progress can continue.

Information was presented that shows the decline in numbers of small cetaceans hunted off Taiji, Japan, is following the same pattern as recorded in commercial whaling of great whales with the most valuable species depleted first. Since 1982, the short-finned pilot whale catches have ranged between 33-59% of the quota, with a decline to 11% of the catch during the peak years (1980-85). These data reinforce the previous concerns of this Committee that coastal populations of the multiple species involved in the Japanese drive hunts have declined. The number of individuals caught is now limited by population abundance rather than catch quota. It was strongly suggested by the authors that a much more precautionary management approach should be implemented. The Committee noted that Japan is not a member of the IWC and that this country does not recognise the IWC's competence to provide advice on assessment and management of small cetaceans.

An update was provided on small cetacean hunts in Greenland (SC/69A/SM/08). Seven species are targeted in Greenlandic waters. Beluga (*Delphinapterus leucas*) and narwhal (*Monodon monoceros*) are hunted under annual quotas. Atlantic white-sided dolphin (*Lagenorhynchus acutus*), white beaked dolphin (*L. albirostris*), harbour porpoise (*Phocoena phocoena*), killer whale (*Orcinus orca*) and long-finned pilot whale (*Globicephala melas*) are not subject to quotas. Between 2003-22, a total of 72,970 small cetacean takes were reported with 4,206 of these killed in 2022. It was highlighted that some of these takes are unsustainable, with an imminent risk of narwhal extirpation in southeast Greenland. The issue of incorporating hunter knowledge was raised and it was acknowledged that hunters know a great deal about small cetaceans and their habitats in west Greenland. It was **agreed** that engaging hunters and communities in discussions was desirable. This Committee and the CC will collaborate on how best to facilitate this engagement in the future.

Attention: SC, Greenland

The Committee **expresses concern** regarding the sustainability of small cetacean hunts in Greenland and **recommends**:

- (1) Greenland follows the scientific recommendations from the North Atlantic marine mammal Commission (NAMMCO) and the Canada and Greenland Joint Commission on Narwhal and Beluga (CNB) on sustainable removals; and
- (2) a review of the progress of previous recommendations made by this Committee is conducted intersessionally and reported to SC69B.

Further, the Committee agrees the SM sub-committee Convenor should contact NAMMCO to communicate on these issues to develop the way forward.

16.5.2 Live captures

No data was received under this agenda item.

16.6 Status of the voluntary fund for small cetacean conservation research

In 2022, donations to the Voluntary Fund for Small Cetacean Conservation Research totalling £51,288 were received. The fund now totals £124,368, of which £88,554 is unallocated.¹² The Committee **strongly encourages** member countries and NGOs to donate to this fund. For further information, including a list of donors, see Item 23.3.1.

Progress was reported for all five projects currently supported by the fund. These projects focus on research and education on Guiana dolphins in Venezuela and Central America, bycatch mitigation for Burmeister's porpoise (*P. spinipinnis*) in Peru, research on Lahille's bottlenose dolphins in Argentina, and the movement of the Ganges River dolphin (*Platanista gangetica*) across barrages located on the Nepal and India border. Progress reports are available on the IWC website. All projects will be completed by 2025.

The Committee **expresses sincere gratitude** for all contributions and notes that these funds support critical conservation projects of direct relevance to the Small Cetaceans sub-committee.

16.7 Workplan

The Committee **agrees** to the workplan provided in Annex Q. ICGs can be found in Annex V.

17. WHALE WATCHING**17.1 Assess the impacts of whale watching and swim-with-whale operations on cetaceans****17.1.1 Studies on assessing impacts**

The Committee received several papers assessing the impacts of whale watching activities on cetaceans. SC/69A/WW/02 described the development of a model of qualitative energy expenditure due to changes in the behavioural state of southern right whales at Bahía San Antonio Marine Protected Area, Rio Negro, Brazil. An understanding of vessel exposure thresholds is essential for the development of management strategies that allow the responsible development of whale watching activity in this area. Including operators from the outset in discussions to develop protocols for whale watching operations was commendable. A management plan is being prepared with input from operators.

A new project was discussed to assess the impacts from whale watching and swim-with-whale operations on humpback whales in Okinawa, Japan (SC/69A/WW/04). This ongoing study is intended to provide a scientific basis for recommendations on mitigation measures. The Committee previously encouraged assessment of impacts to cetaceans from swim-with-operations (IWC, 2003, Item 14.4) and recommended those activities not be allowed until impacts are further understood (IWC, 2019a, Item 18.6). This is echoed in the IWC's [General Principles](#) for Whale Watching¹³.

The Committee is pleased to hear that the industry in Okinawa is willing to accept science-based guidance. Unfortunately, a willingness to establish regulations may not extend to the Okinawan authorities, but discussions with them are ongoing. The Committee **agrees** this research should continue and results reported at future meetings.

Attention: G

The IWC *General Principles for Whale Watching* discourage the development of direct interactions between humans and cetaceans, including swim-with-cetacean operations, where they do not currently exist and strict regulation where they do.

The Committee **urgently requests** the Japanese Government and local authorities in Okinawa consider the *General Principles* and work with local researchers to develop protective and science-based regulations where swimming with humpback whales is currently occurring to minimise the risk of injury or transmission of zoonotic disease to swimmers and harassment to whales.

¹²IP costs of approximately £11,00 will shortly be deducted from this balance.

¹³<https://iwc.int/resources/media-resources/news/iwc-general-principles-for-whale-watching>.

The Committee received information about swim-with-whales/dolphins in Baja California Sur, Mexico (SC/69A/WW/07). Swim-with operations are prohibited in Mexico without necessary permits. An activity known as ‘Sea Safari’ which does not require permits has emerged in recent years. This activity offers opportunities to swim with killer whales, which is potentially dangerous to humans and impactful to whales. No human swimmer has been injured to date, but it is likely to be only a matter of time. The local authorities have expressed interest in regulating the activity, but this has yet to be undertaken.

Attention: CG

The Committee **expresses strong concern** regarding swim-with-killer-whale activities occurring in Baja California Sur, Mexico. Currently, such activities are illegal under Mexican law and are therefore not regulated. Given it is unlikely that the prohibition of such activities will (or can) be enforced after years of no action, the Committee **strongly recommends** the activity is regulated as a matter of urgency to protect swimmers and animals.

Attention: SC, R

The Committee **recommends** social science research is undertaken to determine the demographics and motivations of participants in swim-with-killer-whale excursions in Mexico. This activity is clearly dangerous so it would be valuable to understand why people choose to take part. In addition, the Committee **recommends** that any such social science research is undertaken in all circumstances where management of cetacean watching and swim-with-cetacean operations has been a challenge, with the aim to modify and adapt management to improve effectiveness.

Attention: SC, R

The Committee **recommends** continuation of all whale watching-related research that provides relevant information for the adoption of best practices globally while also providing a foundation for science-based advice to decision-makers on the most effective management of these activities.

Attention: SC, R

The Committee **recommends** that research to assess the impact of swim-with-whale activities on targeted killer whales and other cetaceans in Mexico is undertaken as a matter of urgency.

17.1.2 Review responses to MAWI questionnaire

Little progress has been made in recent years on Modelling and Assessment of Whale Watching Impacts (MAWI). This has been primarily due to the pandemic. This project aims to develop more robust and substantive modelling approaches to assess whale watching impacts. The proposed next step is to distribute a questionnaire to modellers outside the SC, but this has not yet been implemented. The Committee will consider whether and how the project should be revived through an intersessional steering group (Annex V).

17.2 Progress with regional review of whale watching

17.2.1 Sri Lanka

No papers were received under this item.

17.2.2 Latin America

SC/69A/WW/01 updated information presented in Coscarella *et al.* (2022) describing the cetacean species present in Golfo San Jorge, Chubut, Argentina. The high diversity of cetaceans, including three species of baleen whales (sei, humpback and southern right whales) and at least five species of dolphins, attracted local attention as a potential resource for tourism. Sei whales are the most abundant species in the area. Prior to the initiation of whale watching activities, data have been collected since 2019 relating to behaviour, seasonal occurrence and relative abundance of these species. A project to investigate the reactions of whales to vessels approximating whale watching manoeuvres is currently underway. The Committee **welcomes** this paper as an example of baseline data being collected before whale watching operations begin.

Castro *et al.* (2022) reported on the socioeconomic impact of whale watching in one of the poorest areas of Ecuador. Puerto López, in Manabí province, went from being a fishing village to leading the whale watching industry in Ecuador. As a result, tourism services and employment opportunities increased, resulting in a higher quality of life in the region. The industry’s value was estimated at USD4.5 million in 2019. In addition to these local benefits, the activities helped promote whale conservation laws at the national level. In recent years, the emergence of illegal (unpermitted) whale watching operations has become a threat to the industry, necessitating urgent action. The Committee notes that much of the information in this paper should be presented to the CC, which addresses socioeconomic issues of and capacity building for whale watching communities such as Puerto López. While short-term behavioural reactions by the humpback whales to the presence of whale watching vessels have been reported in previous studies, the Committee **encourages** further research on the impacts to whales in this area.

Attention: CG; CC

*The emergence of unpermitted whale watching on humpback whales in Puerto López, Ecuador, threatens a currently well-regulated industry. The Committee **expresses concern** about this illegal activity and **recommends** that the national government and local authorities exercise greater management control to minimise short- and long-term impacts on this whale population.*

17.2.3 Timor-Leste

The Timor-Leste ICG reported that two Committee members attended three online meetings of the Assosiasaun Turizmu Maritima Timor-Leste (ATM-TL) and were able to contribute towards the development of whale watching guidelines (SC/69A/WW/08). One member met in-person with three of the four marine tourism companies in Timor-Leste. The President of the ATM-TL welcomed IWC input on whale watching guidelines, which have been drafted but not yet endorsed by the government, and any training which the Committee can provide.

The Committee received additional information about rapidly expanding whale-related tourism in Timor-Leste (SC/69A/WW/09). The focus of tourism has been whale watching and swim-with-whale tourism. In the absence of whale watching regulations or accredited training for operators, reports of poor practice and unsustainable vessel behaviour are rising. While national guidelines and preliminary industry certification and accreditation have been developed, these have not yet been endorsed. Timor-Leste has enormous potential to develop a world-class responsible whale tourism industry. Timor-Leste is exploring whether to join the IWC to obtain expert advice and participate in global cetacean conservation efforts.

Attention: SC, CC, G

*Recommendation SC2047 supported the Government of Timor-Leste in their pursuit of sustainable marine tourism and encouraged continued communication with them regarding whale watching guidelines. The Government continues to seek expert advice on how to improve its whale tourism management. An ICG was formed to continue this communication. In this context, the Committee **warmly welcomes** these updates on the whale watching situation in Timor-Leste. The Committee **recommends** the Conservation and Scientific Committees directly assist the Government of Timor-Leste to:*

- (1) develop and finalise national whale watching legislation to regulate, monitor and support sustainable whale tourism;*
- (2) work to reduce economic leakage, i.e., ensure the national economy, including local communities, receives the majority of economic benefits from whale watching activities; and*
- (3) support and assist the whale tourism sector to adopt ‘best practices’, i.e., responsible, precautionary and sustainable whale tourism practices (particularly for swim-with-whale operations), through supporting whale watching monitoring, reporting, accreditation and training.*

The ICG will continue to facilitate this assistance.

17.2.4 Southern Ocean Sanctuary (SOS)

No papers were received under this item. The Committee **encourages** the submission of papers relevant to whale watching in the SOS at SC68B where the SOS will undergo its 10-year review.

Attention: S; SC

*The Committee **recommends** the Secretariat contact the International Association of Antarctic Tour Operators (IAATO) to encourage the submission of information from its members about their whale watching activities within the SOS.*

*The Committee **encourages** members to submit information on whale watching in the Southern Ocean for consideration during the SOS review.*

17.3 Collaborative work within the IWC

17.3.1 Update on the IWC'S Whale Watching Handbook

The Secretariat updated the Committee on the IWC Whale Watching Handbook (SC/69A/WW/03). The searchable table of literature has been updated with new papers. Also, one species account, one case study and one country profile have been modified. Regular updates are ongoing. The General Principles for Whale Watching were endorsed at IWC68 and included in the Handbook and the IWC website. The Committee **welcomes** this update, expresses gratitude for updates to the website and looks forward to future progress with the Handbook.

17.3.2 Communication with Conservation Committee's Standing Working Group (SWG) on Whale Watching

Wulff stepped down as chair of the SWG on Whale Watching at IWC68 (SC/69A/WW/03). The Committee recognises and thanks him for years of leadership and dedication. Membership of the SWG was reviewed and includes the Chair and vice-Chair of the Committee, the Convenors of the WW sub-committee and other nominated SC members. Wulf agreed to remain Chair of the SWG until a replacement is found. New members were added, including two industry reps.

The IWC Whale Watching Strategic Plan will be reviewed in preparation for the revision and drafting of the new 10-Year Strategic Plan which will be presented to IWC69 for endorsement.

The Secretariat reported on its Whale Watching Communications Plan (SC/69A/WW/03). This plan will help promote efforts to increase support for the French and Spanish language versions of the Handbook and General Principles. The most recent website analytics show Handbook visits have risen to 500 different users per day - a rapid rise over the past year. The Committee thanks the New Zealand Government for its financial contribution towards maintenance, translation and content development of the Handbook.

17.3.3 Collaboration with other SC sub-groups on platforms of opportunity and citizen science

Natoli *et al.* (2022) highlighted the potential of citizen science to gather data on cetacean occurrence and distribution in under-surveyed areas. Once validated, these types of opportunistic data can be useful for detecting the occurrence of rare species and estimating the habitat utilisation of common species. In the United Arab Emirates (UAE), a public awareness campaign was undertaken, including the use of a website to provide information on various dolphin species and a means for members of the public to report sightings. In seven years, 1,103 sightings were validated. Spatial distribution analysis and Ecological Niche Modelling indicated subtle niche partitioning between the three most frequently sighted species: Indo-Pacific bottlenose dolphins, Indian Ocean humpback dolphins and Indo-Pacific finless porpoises. The Committee **commends** the authors, noting it provides useful management information on cetaceans. While the time and effort put into this outreach has been extensive, it shows that collecting data in this way is useful.

Anderson *et al.* (2022) described a bimodal pattern of occurrence of humpback whales in the central Indian Ocean using information collated from various sources, including social media and a citizen science project. The Committee noted that this paper, published in the *JCRM*, was yet another example of platform of opportunity data used in analyses of cetacean distribution and occurrence. It **encourages** the submission of such papers to the Committee at future meetings.

Regarding the Commission's Resolution 2022-1 on marine plastics, the Committee received information about faecal samples from blue whales collected by whale watching vessels near Sri Lanka. The samples were analysed for microplastics. The Committee noted that this was likely the first time such sample collection was done from a whale watching platform of opportunity.

Attention: R, CG, G, I

*Whale watching vessels have been used by researchers as platforms of opportunity to collect certain types of data, such as occurrence and photo-ID. Other types of data collection are also possible from these platforms. Noting the need for caution in encouraging more interactions or increasing their intensity, the Committee **recommends** the use of whale watching vessels to collect faecal samples from targeted cetaceans to assess the presence of microplastics. In addition, whale watching vessels can conduct trawls for prey samples, which would also capture any plastics in surface water. The Committee **encourages** local authorities, whale watching associations and other management bodies to include a prohibition against throwing trash overboard in guidelines or regulations related to whale watching. Operators should also be encouraged to remove marine debris and macroplastics from the water's surface where it is safe to do so (gear facilitating this removal should be carried on board) and to report marine debris entanglements of cetacean or other marine species.*

17.4 Other topics

17.4.1 Social science studies

The Committee welcomes a social science study (not commonly presented to the Committee) on the results of a survey of swim-with-whale tour participants in Hervey Bay, Australia, which involves humpback whales (SC/69A/WW/06). Results included the demographics of passengers and their expressed motivations for wanting to swim with whales, as opposed to whale watching from a boat. This information should assist with data-informed advice for the management of human behaviour to mitigate impacts to cetaceans. The results can also help in the development of the Conservation and Scientific Committees' whale watching communications plans. Guidelines and regulations do exist in this area (and elsewhere in Australia), but anecdotal observations suggest these are often disregarded.

Attention: CG-Australia; SC; CC

*In Australia, swim-with-whale tourism currently occurs in the state waters of Western Australia, New South Wales and Queensland. Swim-with-whale operations may also occur in Australian Commonwealth waters. The Committee **recommends** that the Australian Government:*

- (1) *assess the occurrence of swim-with-whale operations in Commonwealth waters and whether operations adhere to the Commonwealth regulations of the Australian Whale Sanctuary;*
- (2) *assess the risks to swimmers and whales of any swim-with operations in Commonwealth waters and the adequacy of current regulations for managing such activities; and*
- (3) *consider the IWC General Principles on Whale Watching when developing relevant guidelines and regulations.*

17.4.2 CMS Guidelines for recreational-in-water interactions

A member of the CMS Secretariat presented an outline of its draft Guidelines for Recreational in-water Interactions with Marine Wildlife. This document includes multiple taxa on which the Committee and the CC's SWG on Whale Watching have previously provided comments. An advanced draft will be available on the CMS website at the end of June and presented to the Sixth Meeting of the Sessional Committee of the Scientific Council in July 2023 for final comment. The draft document will then be presented to CMS COP14 in October for adoption.

CMS COP13 had requested to consider a joint product, if practical, with respect to cetaceans. There was consensus on preparing a joint product of the Committee and CMS regarding recreational in-water interactions with cetaceans, with the caveat that any joint product must be consistent with the IWC General Principles on Whale Watching regarding direct interactions. The most seamless option for such a joint product would be to add a section on in-water interactions to the CMS-IWC Whale Watching Handbook.

Attention: SC, CC, S, IGO

The Committee **recommends** that the Convention on the Conservation of Migratory Species of Wild Animals (CMS) Scientific Council and the Scientific and Conservation Committees produce a joint product on recreational in-water interactions with cetaceans. The Committee **agrees** that this product should be discussed within the 2023 Joint Meeting of the Scientific and Conservation Committee (CC). It also **agrees** that this product should be in keeping with the IWC General Principles on Whale Watching and included in the IWC Whale Watching Handbook. The Committee **requests** that the CC and Secretariat discuss these guidelines with the CMS Secretariat during the intersessional period, ideally before the Sixth Meeting of the Sessional Committee of the Scientific Council of CMS in July 2023.

17.4.3 Relationship between the WW Sub-Committee and Resolution 2022-1 on marine plastics

See Item 17.3.3 for recommendations on marine debris and plastics.

17.5 Progress on previous recommendations

At SC68D, the Committee recommended (SC2295) the preparation of a comprehensive communications plan for the IWC's whale watching products in conjunction with the CC's SWG on Whale Watching. The Committee discussed the communications plan; several low-cost effective communication projects were suggested (SC/69A/WW/05). A budget for initial implementation of this plan was offered for consideration. Communication plans for the Committee and the CC's SWG will be discussed at the Joint Meeting of the Conservation and Scientific Committees, immediately following SC69A.

Attention: SC

The Committee **recommends** the whale watching communications plan set out in SC/69A/WW/05 is considered for approval at the Joint Meeting of the Conservation and Scientific Committees.

The Committee received an update from the ICG regarding 'human-induced behavioural changes of concern'. This topic included learned behaviours that cetaceans develop as a result of interacting with human activities, such as the provisioning of dolphins, which lead to changes in behaviour that are often damaging to their welfare and survival. It was noted that the welfare assessment tool for wild cetaceans (SC2044) (Nicol *et al.*, 2020) has completed several published assessments and could be deployed to assess whale watching impacts. The negative interactions between killer whales and vessels (primarily sailing yachts) that are ongoing off the Iberian Peninsula are yet another example (see Annex Q, item 5.5). Simmonds *et al.* (2022) provided a new review of interactions between people and marine mammals.

17.6 Workplan

The Committee **agrees** to the workplan provided in Annex R. ICGs can be found in Annex V.

18. WHALE SANCTUARIES

18.1 Southern Ocean Sanctuary (SOS)

The SOS was established in 1994 in Paragraph 7(b) of the Schedule which specified that the SOS 'shall be reviewed ten years after its initial adoption and at succeeding ten-year intervals'. In 2003, the Commission established terms of reference for the review of Sanctuaries and Sanctuary Proposals and directed the Committee to undertake the first in a series of decadal reviews of the SOS (1994-2004) (IWC, 2004, Item 17.1). A second review of the SOS was performed in 2014-16 (IWC, 2016a, Item 19). The third review will be held in 2024. The terms of reference for this third review can be found in Annex N, Appendix 2.

An important component of the review process is an assessment of the scientific research undertaken within the SOS and contiguous Indian Ocean Sanctuary (IOS). At SC68D, the Committee agreed to develop a *pro forma* to ensure all relevant information can be submitted to the SOS review (Annex N). During the intersessional period 2022/23, 11 submissions were received (Annex N, item 2.3) and information was collated from previous SC documents, including the IWC-SORP and NEWREP-A reports (see SC/69A/SAN/01).

This *pro forma*¹⁴ will remain live during the intersessional period 2023/24. Information submitted via the online form will be incorporated into an updated version of SC/69A/SAN/01 (see Annex N, item 2.3) before being submitted to the Panel established to conduct the review in 2024. The Committee **thanks** the Secretariat for its assistance with creating, designing and hosting the online form.

Attention: SC, CC, R

The SOS will undergo its third decadal review in 2024. The Committee **encourages** members to submit information on research into the SOS and contiguous IOS for review via an online form no later than six weeks before the start of SC69B (see Annex N, item 2) and to provide the form link to other researchers working in these areas, including those who are not members of the Committee.

18.1.1 Finalise SOS reviewers

The Committee agreed last year to discuss and receive suggestions of names for potential external reviewers who should have recognised expertise in research fields relevant to the SOS review (IWC, 2023a, Item 18.1.1). A draft list of potential candidates and a list of criteria for selection of reviewers by the SOS Review Steering Group was agreed (Annex N, Appendix 3).

The Committee **agrees** for the next stages to be addressed intersessionally:

- (1) the Steering Group will rank the proposed reviewers according to the criteria listed in Annex N and will liaise with the experts to determine their availability; and
- (2) the Steering Group will finalise the list of external reviewers to review the SOS. At least one of these reviewers will have participated in previous reviews to ensure continuity.

Three external reviewers will be invited to attend the Committee meeting and/or Sanctuary review pre-meeting (dependent on the format of SC69B).

18.1.2 Discuss the SOS review process

The SOS review may be conducted either as a pre-meeting at SC69B (a small amount of SC funds is available for this) or during the SC meeting itself. Due to budgetary constraints, the format of SC69B has not yet been determined and these decisions will be made by the Chair in collaboration with the Convenors and Secretariat during the intersessional period.

18.1.3 Receive documents on the SOS

SC/69A/SAN/01 updated the research bibliography of de la Mare *et al.* (2016). See Item 18.1 for more information on the compilation of research conducted in the SOS since 2016.

It was noted that the State of the Cetacean Environment Report (SOCER) will provide essential information on anthropogenic impacts in both the SOS and IOS. See Annex N (item 2.3) for further discussion.

Leaper *et al.* (2022) reported on cetacean bycatch in the krill fishery in the Southern Ocean, which highlights an anthropogenic impact in the Southern Ocean (see Annex J, item 2.2).

18.1.4 Joint work with ASI to review SOS whale stocks and abundance

A document detailing abundance estimates and trends will be prepared in consultation with ASI for presentation at SC69B. The Secretariat will contact CCAMLR intersessionally to request information relevant to the SOS review.

18.1.5 Joint work with WW to review whale watching in the SOS

Whale watching is one of the potential anthropogenic impacts identified in sanctuaries (see Item 17.2.4 and Annex N, Appendix 4).

18.2 New information for Indian Ocean Sanctuary (IOS)

18.2.1 Progress on previous recommendations

At SC68A, the Committee welcomed new information on research undertaken within the IOS by the IUCN Important Marine Mammal Areas (IMMA) network, and information from meetings of IndoCet (Indian Ocean Network for Cetacean Research). The Committee looks forward to information from the postponed Indian Ocean Cetacean Symposium originally planned for July 2020.

18.2.1.1 INDOCET

SC/69A/SAN/02 included an update on the Indian Ocean Cetacean Network (IndoCet) Consortium. IndoCet has been dedicated to the research and conservation of all cetacean species in the south-western Indian Ocean (SWIO). Its website

¹⁴https://forms.office.com/pages/responsepage.aspx?id=7ps8IRk6ZE-XE4jjFDUwmkgIA_Oyl1BAoLQWUkZmvJBURjRWS0dRSVRNRUIwJEMzMTBISE9UN-EyNC4u&web=1&wdLOR=c96CF834B-42DB-42FA-9046-418D09795BA0 .

Table 6
Proposed Sanctuaries Work Plan.

| Item | Intersessional 2023-24 | 2024 | 2025 | 2026 |
|--|------------------------|------|------|------|
| Finalise and invite SOS reviewers | X | | | |
| Receive documents relevant to SOS review | | X | | |
| Conduct SOS review | | X | | |
| Report outcome of SOS review | | X | | |
| Receive documents relevant to the IOS | X | X | X | X |
| Receive guidance from Commission on IOS review | | X | | |
| Plan IOS review | | X | X | |
| Finalise and invite IOS reviewers | | | X | |
| Conduct IOS review | | | | X |
| Report outcome of IOS review | | | | X |

hosts network [newsletters](#)¹⁵ as well as [news](#)¹⁶, metadata for regional projects, IndoCet publications and a [strandings](#)¹⁷ reporting tool. Further developments to the website will focus on making sure it functions as an active repository for cetacean data available from the region, including telemetry data. Further information is available in Annex N (item 3.1.1).

SC/69A/SAN/02 reported on the creation of several regional collaborative initiatives, including the COMBAVA project (Coopération régionale pour l'étude des Mouvements des Baleines à bosse et Valorisation des résultats), the QWIO (Quieter Western Indian Ocean) Project, and the Indian Ocean Humpback Dolphin Consortium (IOHDC). In 2019, IndoCet hired a stranding coordinator in South Africa. IWC Entanglement Response training workshops are planned in Reunion and Mayotte in June 2023. Additional details can be found in Annex N (item 3.1.1).

The Committee **welcomes** the information provided on the IndoCet Consortium and **encourages** the continuation of this important work. The Committee looks forward to receiving updates from IndoCet at future meetings.

18.2.1.2 IMPORTANT MARINE MAMMAL AREAS (IMMAS)

The IUCN Marine Mammal Protected Area Task Force (2019) reported on the Western Indian Ocean and Arabian Seas Important Marine Mammal Area (IMMA) Workshop, held in Salalah, Oman, 4-8 March 2019. For the first time, experts identified IMMAs for Arabian Sea humpback whales, Indian Ocean humpback dolphins and unprecedented concentrations of Omura's whale, as well as three different blue whale populations. The full list of marine mammal species included in the region's IMMAs, along with the boundaries of accepted IMMAs, can be viewed [here](#)¹⁸. More details on the workshop can be found in Annex N (item 3.1.2).

The Committee **welcomes** the thorough review and assessment involved in the Important Marine Mammal Areas (IMMA) designation process and **agrees** that IMMAs are a valuable tool for cetacean management and conservation.

18.2.1.3 UN OCEAN DECADE

At SC68D, the Committee agreed there are many areas of common interest and synergy between the UN Ocean Decade priorities for the Southern Ocean and the work of the Committee (IWC, 2023a, p.152). The Committee recommended that the Secretariat contact the Intergovernmental Oceanographic Commission (IOC) of UNESCO (coordinators for the UN Decade of Ocean Science for Sustainable Development) to discuss collaboration between the IWC and UN Ocean Decade (SC2299). The Secretariat has been in contact with the IOC about possible areas of mutual interest, including SORP. A meeting will be held in May to progress this collaboration.

18.2.2 Review the State of the Cetacean Environment Report

The State of the Cetacean Environment Report (SOCER) is an important source of information for a potential Indian Ocean Sanctuary review. Stachowitsch *et al.* (2018) and SC/69A/E/06 focus on the Indian Ocean. SC/69A/E/06 provided a summary of threats in the IOS, including bycatch, habitat degradation and loss, pollution and marine debris (see Annex N, item 3.2).

18.2.3 Receive documents on the IOS

SC/69A/CMP/04rev1 described progress from the Arabian Sea Whale Network. Regional activities have been extremely limited due to lack of funding, but there has been progress in some nations. Increased awareness and capacity building in Arabian Sea humpback whale (ASHW) range countries should help to progress the proposed joint IWC-CMS regional Conservation Management Plan (see Annex N; Annex F, item 9.2.1; Anon., 2022).

¹⁵<https://indocet.org/en/newsletters/>.

¹⁶<https://indocet.org/en/news/>.

¹⁷<https://indocet.org/en/research/report-a-stranding/>.

¹⁸<https://www.marinemammalhabitat.org/imma-eatlas/>.

18.2.4 Whale watching in the Indian Ocean Sanctuary

The Committee is awaiting direction from the Commission on a potential review of the IOS. The Committee **encourages** members to submit information on whale watching in readiness (see Annex R, item 3).

18.2.5 Receive guidance from Commission on IOS review workplan and budget

Following a presentation of the SOS review to IWC69, guidance will be requested from the Commission for the IOS review. Should a review of the IOS be requested, which may be conducted in 2026, the same reviewer-selection process used for the SOS review should ideally be applied to the IOS review. The online portal for the SOS review could also be used to collect information on the IOS. Items pertaining to the IOS review are contingent on direction from the Commission.

19. EXTINCTION ALERT

The Extinction Alert (EA) evolved during three virtual Committee meetings held in the COVID-19 pandemic. The initiative aims to raise the Committee's concerns before an impending extinction and record its dismay if an extinction does occur. The Committee sought a new mechanism to publicly express concern as extinction becomes imminent for an increasing range of cetacean species, sub-species and populations. The EA was initially dubbed the 'Extinction Initiative', but the Committee chose to rename it the 'IWC Extinction Alert' to better reflect these aims.

A Statement of Concern template was presented at IWC68, with the proposal that statements might be completed and published intersessionally if deemed urgent by the Committee. The Commission endorsed the template, and this proposed use, noting that completed templates must be approved by the Commission before publication. A mechanism for obtaining Commission approval during intersessional periods has not been specified, but it was suggested that Bureau approval could be sought.

Statements of Concern will compete for media attention in a crowded space. To increase the impact of these statements: (1) a package of supporting material will be supplied alongside the statement, including simple key messages, images and video footage; (2) Committee members will be given the publication date along with key messages and a copy of the statement. In the event of any statement being issued, Committee members will be encouraged to share the information as widely as possible through their organisations, professional networks and social media. Volunteers will be sought to translate the material into as many languages as possible. The Committee **endorses** the proposed media plan for this initiative.

The Committee received its first Statement of Concern for the vaquita. It **endorses** this Statement of Concern and **agrees** it should be presented to the Bureau for approval.

20. IWC LIST OF RECOGNISED SPECIES

The Committee notes there are no proposals to amend the list of recognised species. It **agrees** to keep this item on the agenda and **reiterates** the need to ensure the IWC list is synchronised with the Society for Marine Mammalogy Taxonomy Committee.

21. IWC DATABASES AND CATALOGUES

The *ad hoc* WG on Photo-ID did not meet due to scheduling conflicts.

21.1 Guidelines for IWC catalogues and photo-ID databases

There were no updates to the Guidelines.

21.2 Progress with existing or proposed new catalogues

The Committee received updates on five new and existing catalogues.

21.2.1 Right whale photo catalogues

Information provided from multi-decade photo-ID catalogues of Southern right whales from South Africa and from Australia (O'Shannessy *et al.*, 2023) were reviewed. In discussion, the importance of continued long-term studies to monitor population parameters was emphasised (see Item 8.2.3). There are extensive regional catalogues from the Southwestern Atlantic and the Committee **agrees** that the consolidation of these catalogues would be beneficial for population assessments. The utilisation of artificial intelligence (AI) software for matching ID photos was also suggested as it may facilitate the processing of backlogged photo-ID data (see Item 9.1.2).

21.2.2 Happywhale database

No information was received under this item.

21.2.3 Flukebook

No information was received under this item.

21.2.4 Southern Hemisphere Blue Whale Catalogue (SHBWC)

The Southern Hemisphere Blue Whale Catalogue currently holds images of 2,697 individual whales from research groups throughout the Southern Hemisphere. Progress with the Southern Hemisphere Blue Whale Catalogue is summarised in SC/69A/SH/11rev1. In the last year, the catalogue increased in size by 22% due to the submission of new photographs from nine regions, including Madagascar (SC/69A/SH/01). Intra-regional photo comparisons were completed for Chile and for Australia. These datasets are now ready for mark-recapture analysis of abundance in preparation for the In-depth Assessments of the blue whale populations from those regions (see Item 8.2.1).

21.2.5 Antarctic Blue Whale Catalogue (ABWC)

Photo-ID data from the Antarctic Blue Whale Catalogue were used in a mark-recapture estimate of circumpolar abundance (SC/69A/ASI/01rev1). The left-side data produced a super-population of 3,488 (95% CI 1754, 7178) whales while the right side produced 3,659 whales (95% CI 1906, 7241). The estimates were reviewed by the ASG and placed in Category 3 due to low numbers of recaptures. Category 3 estimates can be used in stock assessments as supplementary information but not in the implementation of management procedures (see Item 8.2.2).

21.2.6 Fin whale photo catalogues

No information was received under this item.

21.2.7 Humpback whale photo catalogues

The North Atlantic Humpback Whale Catalogue provided data collected between 1980-2015 for the investigation of ocean-wide movement patterns of humpback whales (SC/69A/NH/05). These data are key to understanding population structure (see Item 8.2.7).

Understanding and knowledge of the population structure of North Pacific humpback whales has been augmented with new photo-ID data from Mexico and Central America (Martinez-Loustalot *et al.*, 2023) (see Item 8.1.1).

Surveys conducted off Oman between 2019-22 identified 38 humpback whales, nine of which were new to the Oman Catalogue (SC/69A/CMP/07) (see Item 9.2.1).

21.2.8 Other photo-identification catalogues

In 2022, the western Pacific gray whale photo-ID catalogue (1994-2021) was provided to the Secretariat by the Russia Gray Whale Project (RGWP), in accordance with IWC Guidelines for Photo-identification Catalogues (Olson *et al.*, 2017). This is now openly available. It is anticipated that this will enable the comparison of the RGWP Catalogue with a catalogue of western Pacific gray whales held by industry (e.g., Tyurneva *et al.*, 2018). The comparison of these two catalogues will provide further insights to improve conservation and management of this endangered population. From research conducted in 2022, the RGWP reports a dramatic decrease in the number of gray whales feeding adjacent to northeastern Sakhalin Island (SC/69A/CMP/03; see Item 9.1.3).

21.3 Progress with existing IWC databases

The *ad hoc* WG on IWC Global Databases and Related Issues (GDR) assesses the utility and support requirements of all IWC databases relevant to the Committee's work. It collects information on these databases, summarises data use and provides recommendations to improve integration, content and workflows. It also reviews existing or planned databases to ensure they are properly resourced and prioritised.

21.3.1 Summary of IWC databases and current priorities

The Committee reviewed and updated the current list of databases and provided guidance to the Secretariat on those considered to be priorities for development or maintenance in the next intersessional period (see Table 7).

21.3.2 IWC National Progress Reports

The Committee again acknowledged the low number of NPRs submitted to SC69A (see Item 3.2) and low return rate of questionnaires sent to Heads of Delegations and Commissioners on 8 April 2023. There will be further intersessional discussion about the NPRs and the questionnaire.

SC/69A/GDR/03 described the development and implementation of an R script (R Core Team 2022) to generate PDF reports that facilitate greater accessibility and interpretation of NPR data as well as an authored output that can be submitted as a meeting document. The Committee **welcomes** the development of this script and other suggestions to improve data quality in NPR submissions.

Attention: S

The Committee **recommends** the Secretariat issue a circular to key contact points identified by the Heads of Delegation, requesting the submission of NPRs in February 2024 to allow time for further reminders. The Committee **recommends** the application of the R script to generate PDF reports if requested and further **requests** the Secretariat to address the National Progress Report data submission and data quality issues identified in SC/69/GDR/03.

Table 7
Scientific Committee Databases.

| Database/Application | Status | Secretariat work required | SC use | Priority for development or maintenance | Progress since SC68D | SC Sub-Committee/Group |
|--|----------------------|---|---------|---|----------------------|------------------------|
| Blue Whale Song Library | Stalled since 2018 | Develop database (£4,000 available) - no further instructions received | None | Ask SH Convenors | None | SH |
| Catch Summary Database | Live | See SC/69A/GDR/02 | High | High | See SC/69A/GDR/02 | IST/IA/ASI |
| Individual Catch Database | Live | See SC/69A/GDR/02 | High | High | See SC/69A/GDR/02 | IST/IA/ASI |
| Cetacean Diseases of Concern Intranet | Stalled since 2017 | Develop database/intranet - no further instructions received | None | None | None | E |
| Discovery Marking Data | Live | Develop database | Medium | Low | None | ASI, SH, IA, IST |
| Entanglement Response | Post-poned | Develop database | None | None | None | E/HIM |
| IWC biopsy sampling database | Under development | Updates only (in progress). Incorporate into NPRs? | None | Consider under DMS | Ongoing | SD-DNA |
| IWC photographic cruise database and archive | Live | Updates only (in progress) | Medium | Low | Ongoing | PH |
| Journal https://journal.iwc.int/ | Live | We are in the process of improving access to the JCRM archive. Volumes 5-24 and all Special Issues are now available on OJS platform. JCRM Supplements to follow in the short term. | High | Low | Done | JCRM Editorial Board |
| National Progress Reports https://portal.iwc.int/ | Live | Integration of standard FAO areas. Consider future rebuild under DMS. | High | Medium | Ongoing | ALL |
| New integrated sightings, photo-ID, database | Stalled | Updates only (funding available). | None | None/check | | PH/NH/SH |
| Research Requests https://forms.office.com/r/wEmk6Py8U5 | Live | None required. Changed to a form, retired database. | Retired | None | Done | ALL |
| SH Blue Whale Catalogue https://www.bluewhalecatalogue.org/ | Live | Migrated to IWC server. Development ongoing. IWC hosts. | High | None | Ongoing | SH/CMP/PH |
| Ship Strikes https://portal.iwc.int/ | Live | Consider future rebuild under DMS. Bulk import tool (CSV) - Not done. Allow data to be submitted via API directly from country databases - Not done, low priority. Update records found to have errors - Partially done, vessel and species will require more work. | High | High | Ongoing | HIM/IA/IST |
| Small Cetaceans Catches (Bycatch and Direct) Survey Database (SOWER and POWER) | Under development | Consider under DMS. Initial design and implementation. Incorporate into NPRs? | None | Consider under DMS | | SM |
| South Georgia southern right whale photo-ID catalogue | Under development | See SC69A_GDR02 | None | Medium | See SC69A_GDR02 | ASI |
| WNP gray whale catalogue | Available on request | None required | None | None | Done | PH/SH |
| | Stalled | Migration to new system | None | None/check | | CMP |

Table 8
Other IWC Committee Databases.

| Database/Application | Status | Work required | Progress |
|--|-------------------|---|----------|
| Conservation Reporting Database https://crm.iwc.int/data/conservation-database | Live | Finalise specifications - Done Develop database and Review at CC 2022 - Done Recommendation: Add to IWC CRM https://crm.iwc.int/data/conservation-database Small trial group to test data entry and access - Ongoing Continue adding country data - Ongoing | Ongoing |
| Database of Recommendations https://recommendations.iwc.int | Live | Minor bug fixes, but stable | Done |
| InforMEA project database https://crm.iwc.int/ https://elearning.informea.org/ | Live | Deployed. Data population and back-dating underway. As member of inforMEA, IWC can add web-based training courses for free | Ongoing |
| IWC on InforMEA https://www.informea.org/en/treaties/international-whaling-comission | Live | Meetings, National focal points, Country Members, Resolutions (ongoing) | Ongoing |
| WW Handbook https://wwhandbook.iwc.int/en/ | Live | Update to CraftCMS v4 | None |
| National Legislation Database | Under development | Built on Confluence, population underway (in partnership with Monash University) | Ongoing |

Table 9
Core IWC Secretariat productivity databases.

| Database/application | Status | Work required | Progress |
|--|--------|--|----------|
| Bibliographic reference database (EndNote) | Live | Import Commission papers and communication circulars. | None |
| Meeting Registration and document upload | Live | For SC69A Microsoft tools were used for registration and automatic addition of users to our office 365 SC groups and document submission, approval and production. | Done |
| Document Web Archive https://archive.iwc.int | Live | General maintenance and updates. Back-dating of paper archives. | Done |

21.3.3 Review database procedures, evaluate integration and consolidation of existing databases, and define rules for accessing data

SC/69A/GDR/01 and SC/69A/GDR/02 describe the Secretariat's draft data management strategy and progress towards implementation. The strategy aims to streamline data management, optimise data dissemination and advance communication of valuable data. This data infrastructure will include metadata providing data descriptions with policies for data sharing. The data will include information such as sightings, catch, animal welfare and genetics information.

The Committee **welcomes** the development of a data management strategy and acknowledges the need to resource and prioritise Secretariat support for IWC databases. The Committee notes that the strategy should have a holistic approach that considers all SC-related databases and data flows. The authors acknowledged that the strategy should be further developed and welcomed intersessional discussion.

An ICG was established to progress the data management strategy. It will include members from many countries to ensure the strategy accommodates a range of opinions and needs regarding data collection, collation and reporting (see Annex V).

SC/69/GDR/04 describes *WhaleVis* - an interactive visualisation and analysis dashboard for the IWC catch database. The tool is designed to facilitate understanding of whaling events and resulting changes in whale population distribution, and to prioritise management and conservation efforts for populations under threat of extinction. The dashboard provides a set of visualisations of catch data and the ability to extract selected portions of the database in comma-delimited format. The Committee discussed the importance of catch data for other sub-committees and **welcomes** the development of this sophisticated data visualisation tool.

Further discussion focused on the exposure of data associated with catches and how the IWC can be confident that any online data visualisation and accessibility tools are compliant with national and EU data protection and privacy laws. The Committee also discussed under what circumstances and how parties can waive protections if they wish to do so.

Attention: S

The Committee **recommends** the Secretariat investigate relevant national and EU data protection and privacy laws. In accordance with these laws, the Secretariat should develop licensing and data-use policies for SC-related datasets containing personal and/or vessel-specific data.

The Committee **requests** the authors limit data within the *WhaleVis* tool to ensure the online application does not allow visualisation of or access to vessel-specific records.

21.4 Potential future IWC databases

21.4.1 IWC database proposal pro forma

There were no requests to update the IWC database proposal proforma.

21.4.2 New proposals for IWC databases

The WG did not receive any proposals to develop new IWC databases but is aware of discussions regarding the development of a strandings database (Annex G, item 3.1). Part of the role of the Ship Strikes and Strandings Data Manager position within the Secretariat is to scope the development of such a database to assess how and where the IWC can best engage.

21.5 Workplan

The Committee **agrees** to the workplan provided in Annex I. ICGs can be found in Annex V.

22. MULTINATIONAL RESEARCH PROGRAMMES AND NATIONAL SURVEYS

Multinational research programs (e.g., IWC-POWER and IWC-SORP) and national research cruises are an integral part of the Committee's work and provide valuable information for the assessment of whale stocks. These programmes occur in many regions around the world, most notably in the Antarctic and North Pacific, including the Bering and Okhotsk Seas. The Committee notes that its report does not represent an official position of the IWC on the legal nature and designation of the waters surveyed.

22.1 Surveys that include IWC funding and/or support, including IWC-POWER and IWC-SORP

22.1.1 IWC-POWER

The Committee welcomed results of the 13th annual IWC-POWER cruise (SC/69A/ASI/09) conducted in 2022 south of the Aleutian Islands. The cruise was organised as a joint project between the IWC and Japan. The plan was endorsed at SC68D. Researchers from the IWC, USA and Japan participated in the survey which used methods based on SC guidelines. Passive acoustic methods were included for the fourth time to provide an additional tool to record the presence of marine mammals, particularly North Pacific right whales. This cruise provided important information on cetacean distribution in poorly known areas that are logistically difficult to access. Half of each biopsy sample is stored at NOAA's Southwest Fisheries Science Centre on behalf of the IWC. The other half is stored in Japan. The photo-ID data are available via application.

The Committee **stresses** the importance of the IWC-POWER cruises and **reiterates** the small cost to the Committee compared with the contribution of a vessel and crew. The Committee **thanks** the Government of Japan, which generously supplies the vessel, crew and many scientists, for their continued support, without which the programme could not operate and our understanding of cetacean populations in the North Pacific would be severely limited. The Committee also **thanks** members of the Technical Advisory Group and the international scientists who have participated in these cruises. The sightings data, biopsy samples and photo-ID images feed into the work of the Committee and underpin much of the advice provided to the Commission. The Committee **stresses** the importance of covering offshore areas for which very little information is available and **thanks** Japan for sharing data collected during the cruises. The Committee **thanks** Morse for her excellent work as Cruise Leader for the 2022 survey.

The Committee received the report of the IWC-Power Steering Group (SC/69A/REP/03B), summarising progress made on the detailed plans, logistics and protocols for the 2023 IWC-POWER cruise, recommended by the Committee in 2022. The Government of Japan will kindly supply the vessel as it has throughout the programme. Acoustic equipment will be donated by the Government of the USA. The survey area in the Gulf of Alaska (high seas) overlaps the 2010 and 2011 cruises and has not been covered in 12 years. The cruise will take place between 27 July and 6 October 2023, with approximately 39 days spent in the study area. The Steering Group also considered a potential study area for 2024 in the northern Bering and Chukchi Seas, and identified information that needs to be provided at the proposed workshop which is expected to be held in October 2023 in Tokyo. This information includes: the extensive aerial and vessel survey work in the region; likely sea-ice conditions at the time of the planned cruise; permit requirements; and advice on liaising with the Alaska Eskimo Whaling Commission to ensure the cruise does not interfere with its autumn hunt.

The Committee **encourages** all member governments and range states to support IWC-POWER either financially or in-kind. This might be achieved by providing vessels and/or coordinating existing research field work with that of IWC-POWER.

A summary of the workshop outcomes for the planning of medium-long-term IWC-POWER surveys is provided in Annex D, Appendix 4.

Attention: C

The Committee **reiterates** the great value of data contributed by the IWC-POWER cruises which have covered many regions of the North Pacific Ocean not otherwise surveyed in recent years. The programme addresses important information gaps for several species and has contributed greatly to the Committee's ongoing assessment work. The Committee **endorses** the report of the Steering Group (SC/69A/REP/03A; SC/69A/REP/03B) and **recommends** that the programme continues. The Committee **encourages** all member governments and range states to support IWC-POWER either financially or in-kind to further enhance the value of the cruise.

22.1.2 IWC-SORP

The Southern Ocean Research Partnership (IWC-SORP) was established in March 2009 as a multi-lateral, non-lethal scientific research programme with the aim of improving the coordinated and cooperative delivery of science to the IWC. The Partnership currently has 13 member countries: Argentina, Australia, Belgium, Brazil, Chile, France, Germany, Italy, Luxembourg, New Zealand, Norway, South Africa and the USA. New members are warmly welcomed.

There are seven ongoing IWC-SORP themes:

- (1) 'The Antarctic Blue Whale Project';
- (2) 'Distribution, relative abundance, migration patterns and foraging ecology of three ecotypes of killer whales in the Southern Ocean';
- (3) 'Foraging ecology and predator-prey interactions between baleen whales and krill';
- (4) 'Distribution and extent of mixing of Southern Hemisphere humpback whale populations around Antarctica?' focused initially on east Australia and Oceania;
- (5) 'Acoustic trends in abundance, distribution and seasonal presence of Antarctic blue whales and fin whales in the Southern Ocean';
- (6) 'The right sentinel for climate change: linking foraging ground variability to population recovery in the southern right whale'; and
- (7) 'Recovery status and ecology of Southern Hemisphere fin whales'.

Lundquist presented the IWC-SORP Annual Report 2022/23 on the continued progress of research undertaken in the seven themes (SC/68A/SH/04). This progress includes the production of 43 peer-reviewed publications during 2022/23, bringing the total number published since the start of the initiative to 291. Since 2009, more than 208 IWC-SORP-related papers have been submitted to the SC for consideration, including 22 this year. The initiative has supported 19 PhD, 10 Masters' and eight Honours' theses, plus the work of at least five postdoctoral fellows.

Research under IWC-SORP auspices has contributed to multiple sub-committees and working groups, informed SOS reviews and also helped develop and implement photo-ID and genetic catalogues.

The COVID-19 pandemic disrupted all IWC-SORP projects, but field and lab work has now resumed. Fieldwork was conducted around the western Antarctic Peninsula, sub-Antarctic Marion Island and Prince Edwards Islands, the shelf waters from the islands at 60°30'-60°48'S, 44°25'S-46°43'W to the islands at 61°00'-63°37'S, 53°83'-62°83'W, the French Sub-Antarctic Territories, in the waters off South Africa, eastern and Western Australia, New Zealand and around Península Valdés, Argentina. Southern right whale aerial surveys occurred in South Africa, Australia and Brazil. Photo-ID images were collected. Satellite tags were deployed on killer whales, southern right and fin whales. Biopsy samples were collected from killer whales, southern right whales, fin whales, Antarctic minke whales and humpback whales. Long-term acoustic moorings were deployed. Hundreds of hours of acoustic recordings were analysed.

A brief report on the IWC-SORP Research Fund following three open competitive grant rounds was also received (SC/69A/SH/03). In 2016/17, £144,058 was allocated to 10 projects. In 2018/19, £489,154 was allocated to 15 projects. In 2019-20, £129,955 was allocated to six projects. £58,932 remains unallocated (see SC/69A/O/03). The Committee acknowledges and thanks the governments of Australia, Belgium, France and the Netherlands, WWF-Australia, the International Fund Animal Welfare and Emma Abel for their financial contributions to the IWC-SORP Research Fund. The Committee **thanks** Bell for her coordination of the Partnership and the Secretariat for financial and contract management.

Attention: SC, R, G

The Committee **reiterates** the great value of the IWC-SORP (Southern Ocean Research Partnership) programme and **commends** its work. The Committee **reiterates** that it:

- (1) **strongly encourages** the continuation of the Southern Ocean Research Partnership programme and;
- (2) **encourages**:
 - (a) continued development, testing and implementation of leading-edge technologies;
 - (b) continued development of collaborations which allow research and/or data sharing between IWC-SORP and the wider Committee.

22.1.2.1 WORKPLAN

The Committee **agrees** to the workplan provided in Annex P.

22.1.3 COMHAFAT

The IWC developed a programme to encourage collaboration with west African countries, in particular the Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean (COMHAFAT/ATLAFCO). At IWC68, a Memorandum of Understanding (MoU) between the IWC and COMHAFAT was signed. COMHAFAT shared the results of the fourth cetacean sighting survey in the coastal waters of Guinea Bissau, Guinea and Sierra Leone, that took place in 2022/23 (SC/69A/ASI/04), in addition to their plans for the upcoming 2023 survey between Liberia and Ghana (SC/69A/ASI/05).

The Committee **thanks** COMHAFAT for the provision of their cruise report and plans. The Committee **encourages** further such submissions at SC69B. The data collected by the COMHAFAT cruises are valuable, covering areas where few systematic surveys have been done, with potential to greatly contribute to the Committee's work.

Furthermore, the Committee continues to offer support in planning, training, implementation and reporting for cetacean surveys in the region, and **encourages** member governments and range states to consider hosting African scientists on their cruises and within their institutions to help with training and capacity building.

22.2 Surveys that seek IWC funding and/or request IWC oversight

No documents were submitted pertaining to this agenda item.

22.3 Surveys that seek advice from the Committee regarding survey or analysis methods

No documents were submitted pertaining to this item.

22.4 Surveys seeking Committee endorsement

SC69A/ASI/18 described plans for a voyage in 2023 in Shelikhov Bay, north-eastern Sea of Okhotsk and coastal waters west of the Kamchatka Peninsula. The survey will be conducted along systematic transects in passing mode, using standard distance sampling techniques. Photo-ID of cetaceans will also be attempted.

SC/69A/ASI/12 outlined Japan's plan for a systematic vessel-based sighting survey in the North Pacific in 2023 to estimate the abundance of large whale species in the North Pacific Ocean for management and conservation purposes. The survey will be conducted in late July to early October 2023 and will cover the area between 20°N-30°N, 140°E-180°E. Distance and angle estimations, photo-ID, biopsy and satellite tagging experiments will be conducted.

SC/69A/ASI/14 outlined the objectives and survey procedures of the 2023/2024 line transect whale sighting survey under the Japanese Abundance and Stock structure Surveys in the Antarctic (JASS-A program) in Area IV-West (70°E-100°E) in the Indo sector of the Antarctic.

The Committee **thanks** the authors for extending an invitation to foreign scientists to participate in the voyage. The Committee thanks Japan for submitting information regarding the JASS-A surveys and seeking review by the Committee.

The Committee **endorses** the plans for all surveys.

22.5 Other survey reports and plans

SC/69A/ASI/17 described a survey which lasted 32 days in the southwestern part of the Sea of Okhotsk in 2022 (44°N-50°N, 142°E-150°E). Nine species were observed, and preliminary analysis of the photo-ID data for four species led to three potentially resighted individuals. SC/69A/ASI/10rev1 described the results of a sighting survey conducted in 2022 in the North Pacific (35°-44°N, 140°-154°E.). SC/69A/ASI/13 described the results of the sighting survey of the Japanese Abundance and Stock structure Survey in the Antarctic (JASS-A) conducted using line transects and distance sampling methods in the western part of Area VI East in 2023. In addition to collecting systematic sighting and oceanographic data, biopsy, photo-ID and satellite-tracking experiments were also conducted. SC/69A/ASI/08 described a visual and acoustic survey of baleen whales around the sub-Antarctic Island in July 2022 as part of a two-year project investigating the abundance and density of krill and krill-feeding predators in the austral winter (54°5'S, 36°45'W). Observations of marine mammals and seabirds were made. A second year of surveys is taking place in 2023.

The Committee **thanks** all the authors for presenting their work and appreciates their contributions to cetacean research.

23. SCIENTIFIC COMMITTEE BUDGET

Last year, the Committee agreed its proposed biennial research programme for 2023-24. At IWC68, the Commission approved a reduction in the proposed SC research budget for 2023 from £229,626 to £210,518 and for 2024 from £227,796 to £215,228. The Commission further approved funds totalling £133,532 be returned to the Commission to reduce its overall deficit. The Committee had previously allocated these funds to 'meetings to address delayed agenda items' (IWC, 2023a).

23.1 Report from the SC-Budgetary Advisory Group

The SC Budgetary Advisory Group (SC-BAG), which includes members of the Committee, was formed at SC68D to address the need to reduce SC costs in light of the Commission's budget deficit. Currently, SC69A meeting costs are anticipated to

be around £17,000 over budget. Without a host government, this means any overspend must be fully absorbed. The total IP budget for the 2023-24 biennium is £168,324. The 2023 anticipated IP costs are £86,824, of which an additional £12,000 was funded through Voluntary ASW Funds. With the current rate of inflation, projecting these forward to estimates for SC69B costs, this would mean a £32,000 shortfall in meeting budget and an £11,000 shortfall in the IP budget. This does not include an additional estimated £15,000 needed to add a planned hybrid option similar to that used at SC69A.

The Committee discussed ways to cover this shortfall in funds. The Committee agrees that in order to reduce these overspends, the following are priority areas for the SC-BAG to focus on:

- (1) reducing the length of the SC meeting (number of either sub-committee and/or plenary days), while noting that, at IWC68, the Commission identified parts of the ASI, ASW, IA, IST, SDDNA, EM, E and HIM sub-group agendas as essential for providing the advice it needs;
- (2) use of the contingency fund;
- (3) seeking voluntary contributions to offset the shortfall; and
- (4) contacting the Bureau before it meets in June 2023 to communicate the financial issues that the Committee faces.

The SC-BAG will continue to work intersessionally and will report back at SC69B.

23.2 Status of funded research, workshop proposals, data processing and computing needs

SC/69A/O/03 provides information regarding the position on the Committee's Research Fund at the end of the 2022 financial year. The remaining balance of the contingency fund at the end of 2022 was £18,850, which represents 9% of the 2023 research budget. A contingency level of 10% is permitted, as set out in the Financial Regulations.

For 2022, the approved SC Research Fund budget was £216,309. No voluntary contributions were received into this fund. Expenditure of £179,200 occurred during the year, giving a closing balance for 2022 of £420,013. Of this, £300,477 has subsequently been spent or is committed to existing projects.

Attention: SC

*The Committee is heavily dependent on computing support and **thanks** Katara, the Lead for Modelling and Statistics, for her work as she takes over the full role from the past lead. The Committee **recognises** that support is required for this ongoing transition, which will require additional resources during the intersessional period. The Committee **recommends** that priorities, resources and timeframes are discussed and **suggests** that an intersessional Advisory Group be established to liaise with Katara to achieve these aims.*

23.2.1 Funded proposals in previous years still ongoing

The following projects received funding and were approved by the Commission in prior years and are continuing to progress (see Table 11). The value of these projects was reviewed by the Committee and their continuation recommended.

23.3 Fund reallocations and contingencies for the Research Fund, Voluntary Fund for Small Cetaceans and SORP Voluntary Fund

Table 13 (see below) shows the funds reallocated within the Research Fund at this meeting. The Contingency Fund currently stands at approximately 9% of the annual research budget. Contributions to the IWC Small Cetaceans Fund, SORP Fund and other voluntary funds are welcomed.

23.3.1 Small Cetaceans Fund

The Small Cetacean Voluntary Fund (SCVF) currently stands at £124,368, of which £88,554 is unallocated.¹⁹ Since January 2022, SCVF has gratefully received voluntary contributions totalling £51,288 from the Animal Welfare Institute, Campaign Whale, Cetacean Society International, Government of France, Government of Switzerland, Government of the Netherlands, LegSeas, OceanCare, Oceanic Preservation Fund, ProWildlife, WeWhale, Whaleman Foundation and Whale and Dolphin Conservation.

In 2022/23, there was no call for new small cetacean conservation proposals. Interim and final reports from previously funded projects were reviewed by the Committee.

23.3.2 Southern Ocean Research Partnership Fund

The Committee was updated on the progress of projects funded through the Southern Ocean Research Partnership. Despite the challenges of COVID-19 and consequent unavoidable delays, significant progress had still been made to deliver these projects. In 2022/23, there was no call for new proposals. Details of allocations and project progress reports were previously presented in SC/68A/SH/11, SC/68B/SH/05, SC/68C/SH/13 and SC/68D/SH/08. They are presented this year in SC/69A/SH/03.

¹⁹IP costs of approximately £11,00 which shortly be deducted from this balance.

Table 10
Scientific Committee approved projects for 2024 (as endorsed at SC68D).

| SC68D RP No. | Sub-Committee | Project Title | 2024 Budget £ |
|----------------------------|---------------|--|----------------|
| General | | | |
| n/a | ALL | Invited Participants 2024 ¹ | 37,432 |
| 26 | ALL | Seed Funding - Communications Small Group | 7,500 |
| Meetings/Workshops | | | |
| 2 | ALL | Annual meeting of the Abundance Steering Group | 11,340 |
| 7 | SH, CMP | SRW catch series, stock structure, and catch allocation review workshop | 11,720 |
| 25 | SAN | Southern Ocean Sanctuary review | 1,985 |
| Modelling/Computing | | | |
| 11 | IA | Essential computing to support Secretariat | 31,500 |
| 12 | IA | NP sei and humpback whale modelling | 2,500 |
| Research | | | |
| 1 | ALL | POWER Cruise 2024 | 29,870 |
| 6 | SH | Mark recapture analysis of Southern Hemisphere BW photo-ID datasets to estimate regional abundance | 18,000 |
| 9 | SH | Passive acoustic monitoring of cetaceans from the former Durban whaling ground, western Indian Ocean | 1,590 |
| 16 | CMP, SH | Passive Acoustic monitoring of the Eastern SP SRW | 11,000 |
| 18 | CMP | Assessment of spatiotemporal distribution of humpback and blue whale song along the Arabian Sea coast of Oman | 9,250 |
| 24 | NH | Assessing endangered baleen whales in the Eastern North Atlantic through passive acoustic monitoring off Senegal | 10,000 |
| 15 | SM | Assessment of the traditional drive-hunt in the Solomon Islands: Collaborating with Indigenous communities and updating the IWC direct take database | 2,500 |
| Databases | | | |
| 13 | HIM, SM | Ship strikes database coordinator | 10,000 |
| 8 | SH, PH | Southern Hemisphere blue whale catalogue 2023-24 | 15,041 |
| Reports | | | |
| 20 | E | State of Cetacean Environment Report (SOCER) for 2024 | 4,000 |
| | | | 215,228 |

¹At SC69A, £10,322 was reallocated to Invited participants, to give a total budget of £47,754 available for 2024.

The IWC-SORP Scientific Steering Committee (SSC) is able to allocate discretionary funding of up to £15,000 per budget period to ensure the smooth running of approved programmes (IWC/66/Rep01, Annex W). In 2023, a single discretionary allocation of £3,750 was made from the IWC-SORP Research Fund and £58,932 remains unallocated. A voluntary contribution of EUR45,000 was pledged at IWC68 and has now been gratefully received from the Government of Belgium.

23.4 Proposed budget for 2023-2024 developed under the Committee's guidelines

As noted under Item 23, the Committee agreed its proposed research programme for 2024 last year. A rigorous process of scoring and ranking was applied to ensure fair evaluation of each proposal. Not all research proposals were approved for funding as they were either determined not to be a priority or required in the 2023/24 workplan. The Commission approved a budget of £210,518, £12,568 less than required to undertake the Committee's final proposed research programme. As the reduced budget process becomes fully implemented, and to minimise impact on the longer-term work programme that the Committee had previously anticipated, the SC-BAG agreed that this full reduction should be taken from the Invited Participants fund for the 2023-24 period only.

23.4.1 General

23.4.1.1 INVITED PARTICIPANTS

Invited Participants (IPs) are a vital component of the Committee. IPs contribute in many ways, including as sub-committee and working group Convenors, co-Convenors and rapporteurs, subject area experts and Convenors of ICGs. The work of the Commission benefits from this budget item.

23.4.1.2 SC/68D/RP/26 SCIENTIFIC COMMITTEE COMMUNICATIONS INITIATIVE

The Communication Initiative proposals were welcomed and endorsed by the Commission at IWC68. These funds will be used to develop the communication tools set out in that proposal to improve the Committee's ability to communicate its workplan. The Communications Initiative will be launched at IWC69 (see Item 25.2).

Table 11
Projects approved by the Commission in prior years that are continuing to progress.

| Sub-Committee | Project title | Funds remaining on 1 April 2023 £ |
|---------------|--|-----------------------------------|
| | General | |
| ALL | Invited Participants | 44,068 |
| ALL | Set aside to support Commission Recommendations | 15,000 |
| ALL | Seed Funding - Communications Small Group | 15,000 |
| ALL | Contingency | 18,850 |
| | Meetings/Workshops | |
| ALL | Annual meeting of the Abundance Steering Group | 11,340 |
| SH, CMP | SRW catch series, stock structure, and catch allocation review workshop | 15,800 |
| IA | IA NP humpbacks | 10,000 |
| EM | Ecosystem Functioning Workshop 2020 | 20,550 |
| CMP | Western Gray Whale CMP | 7,500 |
| NH | NA Humpback Workshop | 16,960 |
| | Modelling/Computing | |
| SH | Assessment of Antarctic blue whales | 22,362 |
| IA | Essential computing to support Secretariat | 19,000 |
| IA | In-depth Assessment of NP sei whales | 2,500 |
| ASI | Simulating line transect data | 750 |
| | Research | |
| ALL | POWER Cruises | 52,865 |
| SH, CMP | Assessing movement rates of SW Atlantic SRW between Argentina and Brazil | 2,904 |
| CMP, SH | Passive Acoustic monitoring of the Eastern SP SRW | 4,600 |
| CMP | Assessment of spatiotemporal distribution of humpback and blue whale song along the Arabian Sea coasts of Oman | 9,650 |
| CMP | Continuation of field deployments in 2023-24 for passive acoustic monitoring for humpback, blue and other baleen whales of Oman | 5,390 |
| E | Contaminant mapping in cetaceans: review of spatial and temporal trends in POPs and heavy metals | 1,000 |
| NH | Assessing endangered baleen whales in the Eastern North Atlantic through passive acoustic monitoring off Senegal | 1,210 |
| SM | Assessment of the traditional drive-hunt in the Solomon Islands: Collaborating with Indigenous communities and updating the IWC direct take database | 2,500 |
| SH | Data archiving NI ocean humpbacks | 1,875 |
| CMP | Strandings emergency response | 9,915 |
| SH | Acoustics blue whale Oman | 2,000 |
| SH | Mid-latitude Antarctic blue whale acoustics | 1,500 |
| CMP | ASHW songs India | 2,000 |
| CMP | ASHW body conditions and fisheries mapping | 6,412 |
| SM | Franciscana aerial survey | 11,910 |
| SH | Madagascar blue whale photographs | 400 |
| IA | HW tag data analysis | 4,930 |
| NH | MEGARA 2022 | 3,000 |
| SH | Antarctic BW stock and movement | 1,076 |
| CMP | Chile-Peru SRW acoustics | 10,920 |
| CMP | Blue whale acoustics Oman | 2,003 |
| CMP | ASHW conservation | 4,945 |
| | Databases | |
| GDR, SH, PH | Secretariat database support | 12,000 |
| SH, PH | Southern Hemisphere blue whale catalogue 2023-24 | 3,306 |
| NH | Review of Spanish statistics in the IWC Catch Database | 6,278 |
| SH | Development of permanent Blue Whale Reference Library | 4,000 |
| | Reports | |
| WW | Communicating the science of sustainable, responsible whale watching | 1,500 |
| E | State of Cetacean Environment Report (SOCER) for 2024 | 2,667 |
| IST | Amendment of RMP Guidelines | 1,250 |
| ASI | JCRM SOWER | 16,740 |
| TOTAL | | 408,306 |

Table 12

Projects for which funds were identified for reallocation during SC69A.

| Project title | Amount for reallocation £ | Notes |
|---|---------------------------|---|
| Exploration of Survey Methods – West Australian BSD Humpback whales | (4,000) * | Project paid for by Australian Government. Reallocated to ‘SRW catch series, stock structure, and catch allocation review workshop’ |
| SRW Australia Aerial Survey | (12,174) * | Not all funding required due to additional funding from Australian Government |
| SWA Right Whale CMP Workshop | (3,651) | Underspend on Workshop |
| Franciscana Workshop | (6,355) | Underspend on Workshop |
| ASHW Songs India | (762) | Underspend on Project Equipment |
| Chile-Peru CMP Workshop | (356) | Underspend on Workshop |
| RMP minke whales workshop | (15,000) | Reallocated to related work |
| TOTAL | (42,298) | |

*These items were identified at SC68D.

Table 13

Projects for which funds were reallocated during SC69A.

| Project title | Amount reallocated to project (£) | Notes |
|---|-----------------------------------|------------------------------|
| SRW catch series, stock structure, and catch allocation review workshop | 14,516 | Reallocation agreed at SC68D |
| CAHW CMP Workshop | 2,460 | Overspend on workshop |
| Invited participants | 10,322 | |
| Technical meetings -NP minke whales | 15,000 | |
| TOTAL | 42,298 | |

23.4.2 Meetings/workshops

23.4.2.1 SC/68D/RP/02 ANNUAL MEETING OF THE ABUNDANCE STEERING GROUP (ASG)

In 2019, the Committee recommended that a permanent ASG pre-meeting be established as a normal component of SC meetings (IWC, 2019a, Item 12.2.1). Meetings of two to four days have been held annually since then. A pre-meeting is proposed prior to SC69B (or approximately the same time of year) for the ASG and relevant experts to meet to advance the two primary objectives of the ASI sub-committee: (1) the intersessional review of abundance estimates required by various subgroups; (2) development of the Committee’s Status of Stocks website.

23.4.2.2 SC/68D/RP/07 SOUTHERN RIGHT WHALE CATCH SERIES, STOCK STRUCTURE AND CATCH ALLOCATION REVIEW WORKSHOPS

Two workshops will be held to: (1) review the historic circumpolar catch series of southern right whales; (2) review stock structure hypotheses; (3) identify and propose catch allocation scenarios based on the catch review and stock structure reviews. The first workshop is proposed as a four-day intersessional meeting of catch history specialists. Both the availability of new data and the time since the last review suggest a review process of regional catch (and struck and lost) data of southern right whales is timely. The expected outcome is an updated regional estimate of circumpolar southern right whale catches in an agreed catch series, necessary for assessments of southern right whale exploitation for both past abundance and current recovery levels. The second workshop is proposed as a three-day pre-meeting to review contemporary and historical (19th century) population structure hypotheses and propose probable catch allocation scenarios for regional populations. The workshops will produce two reports containing: (1) an agreed catch series; and (2) catch allocation scenarios for use in upcoming assessments.

23.4.2.3 SC/68D/RP/25 SOUTHERN OCEAN SANCTUARY REVIEW

The SOS was established in 1994 and Paragraph 7(b) of the Schedule specifies that the SOS ‘shall be reviewed ten years after its initial adoption and at succeeding ten-year intervals’. In 2003, the Commission directed the Committee to undertake the first in a series of decadal reviews of the SOS (1994-2004) (IWC, 2004). The third decadal review will be conducted in 2024. The review process requires collation of documents relevant to the review process, solicitation of potential reviewers and invitation of reviewers to the SC meeting to discuss and present the review (see Item 18.1).

Table 14
Timeline for the review of the SC Handbook.

| Action | Actors | Date |
|--|-------------------------------------|---------------|
| Finalise review of the SC handbook | Zerbini, Porter, Staniland | 30 June 2023 |
| Review by small group of Convenors | Bell, Donovan, Suydam, New, Wilberg | 30 Sep 2023 |
| Review by Convenors | Convenors | 31 Dec 2023 |
| Draft Handbook made available to SC members for comments | Secretariat | 15 Jan 2024 |
| Receive comments by SC members | Committee | 15 April 2024 |
| Endorsement of SC Handbook by the SC | Committee | SC69B |

23.4.3 Modelling/computing

23.4.3.1 SC/68D/RP/11 ESSENTIAL COMPUTING SUPPORT FOR THE SECRETARIAT

The Committee is currently conducting an In-depth Assessment of WNP common minke whales. The Committee will commence an IR of North Atlantic fin whales in 2024. In both cases, the Committee has developed a complex assessment model structure. A key task in this process is to develop and validate code for the models, together with variants which are required for the associated sensitivity tests which are the core components of this process. Secretariat staff do not have the capacity to complete the process unassisted, so computing support is required, especially given the recent retirement of an experienced Secretariat staff member in this area.

23.4.3.2 SC/68D/RP/12 ASSESSMENT MODELLING FOR IN-DEPTH ASSESSMENT OF NORTH PACIFIC SEI AND HUMPBACK WHALES

The Committee is currently conducting In-depth Assessments of North Pacific sei and humpback whales. Part of an In-depth Assessment is to evaluate the status of a population using a population dynamics model that is specific to the biological and behavioural parameters of that particular population before fitting it to monitoring data. The population models are spatially structured and are fitted to estimates of absolute and relative abundance, genetics data and mark-recapture data. The project involves developing and utilising population dynamics models as required to progress the work.

23.4.4 Research

23.4.4.1 SC/68D/RP/01 IWC/POWER CRUISE IN 2025 INCLUDING ASSOCIATED WORKSHOPS/MEETINGS

The Committee strongly advocated the development of an international medium to long-term research programme which involves sighting surveys to provide information for assessment, conservation and management of cetaceans in the North Pacific, especially areas that have not been surveyed for decades. The current programme has been running since 2010 and has contributed greatly to the Committee and its assessment work. The amount of money is extremely small when seen in the context of Japan providing the vessel and associated costs which it wishes to continue to do although it has now left the IWC. The IWC contribution is for: (1) IWC researchers and equipment; (2) to enable analyses and the photographic database to be updated.

23.4.4.2 SC/68D/RP/06 MARK RECAPTURE ANALYSIS OF SOUTHERN HEMISPHERE BLUE WHALE PHOTO-ID DATASETS TO ESTIMATE REGIONAL ABUNDANCE

The Southern Hemisphere blue whale catalogue (SHBWC) has generated large photo-ID datasets for blue whales in Chile (1,004 identifications) and Australia (243 identifications). Local catalogue holders have also contributed to the SHBWC (SC/68D/SH/04). Blue whale photo-IDs comprise a mixture of right- and left-side photographs. Whales have been matched between catalogues and quality coded within the SHBWC, generating multi-year encounter histories for whales for right and left sides. To maximise use of this information, these data will be analysed in a mark-recapture framework developed to handle multiple marks and accommodate capture heterogeneity (Zhang *et al.*, 2019). Given the spatiotemporal spread of these datasets, the data will be analysed in an open population framework. These analyses will generate estimates of blue whale abundance for Chile (Northern and Southern Chile) and Australia, using customised models to accommodate multiple connected areas within each dataset.

23.4.4.3 SC/68D/RP/09 PASSIVE ACOUSTIC MONITORING OF CETACEANS FROM THE FORMER DURBAN WHALING GROUND, SOUTH AFRICA

Seasonal occurrence of whales off the former Durban whaling ground, South Africa, are currently based on historic whale catches from over six decades ago. An acoustic recorder was deployed in early 2023 with the goal of using acoustic signatures to assess how to separate historic blue whale catch data into Antarctic and pygmy blue sub-species and update current knowledge of species occurrence. Further acoustic research is planned to determine long-term seasonal acoustic occurrence and behaviour of other whales believed to occur in that region, such as sperm and killer whales. The effects of noise and environmental conditions will be evaluated. The results of this project will be important for updating management strategies for different whale species and to inform the current use of this ecoregion by different whale species.

23.4.4.4 SC/68D/RP/16 PASSIVE ACOUSTIC MONITORING OF THE EASTERN SOUTH PACIFIC SOUTHERN RIGHT WHALE

Eastern South Pacific right whales are critically endangered and the IWC has a CMP for this population. The Committee supports a Passive Acoustic Monitoring (PAM) project that seeks to assist in the identification of a breeding area. Six sites have been selected along the coast of Chile and Peru. Two sites have already been monitored off central and southern Chile. Northern Chile has been monitored since March 2022, but additional funds are needed to continue this programme.

23.4.4.5 SC/68D/RP/18 SPATIOTEMPORAL DISTRIBUTION OF HUMPBACK AND BLUE WHALE SONGS ALONG THE ARABIAN SEA COAST OF OMAN

The use of passive acoustic monitoring techniques is considered essential for resolving population identity, connectivity and seasonal presence for blue and humpback whales in the Northern Indian Ocean (NIO). Illegal Soviet whaling in the 1960s depleted both stocks, potentially severely. Passive acoustic data collection along the Arabian Sea coast of Oman from May 2022 to April 2023 was funded by the IWC and this project focuses on analyses of those new datasets, with the following objectives: (1) continue a dedicated research programme for Arabian Sea humpback whales and NIO blue whales in the waters of Oman, in accordance with previous Committee recommendations; (2) describe spatiotemporal distribution of ASHW and blue whale acoustic occurrence along the Arabian Sea coast of Oman through an assessment of singing activity; (3) develop an archive of acoustic data to assess occurrence of other cetaceans in the study areas, including Bryde's and sperm whales.

23.4.4.6 SC/68D/RP/24 ASSESSING ENDANGERED BALEEN WHALES IN THE EASTERN NORTH ATLANTIC THROUGH PASSIVE ACOUSTIC MONITORING OFF SENEGAL, WEST AFRICA

Passive acoustic monitoring (PAM) is an important tool to improve our understanding of stock structure and distribution for endangered baleen whales. Critical data gaps exist for multiple species of large whales in the North Atlantic Ocean. In the eastern North Atlantic, the coasts of Mauritania and Senegal are believed to be important winter habitats for stocks of humpback, sei and Bryde's whales. This project will contribute PAM data for assessing protected species distribution, stock structure and the potential impacts of anthropogenic noise. In particular, these data will be used to: (1) assess baleen whale presence and timing of occurrence off the coast of Senegal; (2) assess stock identity for humpback whales off Senegal by comparing with the endangered Cape Verde/Northwest Africa distinct population segment; (3) assess occurrence and potential stock identity of sei whales off Senegal by comparing with vocalisations recorded in the Gulf of Maine; (4) assess potential presence and vocal characteristics of Bryde's whales; (5) assess the prevalence and potential impacts of local seismic survey exploration; and (6) build capacity of Senegalese scientists to conduct PAM surveys.

23.4.4.7 SC/68D/RP/15 ASSESSMENT OF THE TRADITIONAL DIVE-HUNT IN THE SOLOMON ISLANDS: COLLABORATING WITH INDIGENOUS COMMUNITIES AND UPDATING THE IWC DIRECT TAKE DATABASE

An assessment of the Solomon Islands dolphin drive-hunt was funded by the Small Cetacean Voluntary Fund in 2012-15 (Oremus *et al.*, 2015). The hunt's traditional methods appear to have remained consistent throughout the available written history. Meticulous hunt logs are maintained and have been published in academic records from 1976-2013. The hunt has been ongoing since 2013. The Committee recently became aware that the communities who conduct the hunts were willing to share their 2013-22 records with researchers. This project will enable Fisheries Officers in the Solomon Islands to travel to remote villages where these hunts are conducted to copy hard records and carry out interviews with local hunters. This will update the Committee's records of direct takes, document any changes in practice and update understanding of the hunter's perspective of the cetacean population's occurrence and distribution.

23.4.5 Databases

23.4.5.1 SC/68D/RP/13 DEVELOPMENT AND USE OF THE IWC SHIP STRIKES DATABASE

This project aims to develop the IWC ship strikes database and ensure comprehensive reporting of ship strike incidents through: (1) systematic outreach to data providers; (2) review and provision of data; (3) promoting access to the database; (4) increasing use of the database; (5) outreach to other organisations. This funding will help continue work which began in 2021. The funding covers an appropriate portion of the costs of the Data Manager who oversees the submission of national data into the global IWC effort.

23.4.5.2 SC/68D/RP/08 SOUTHERN HEMISPHERE BLUE WHALE CATALOGUE

The Southern Hemisphere Blue Whale Catalogue (SHBWC) is an international collaborative effort to facilitate cross-regional comparison of blue whale photo-IDs catalogues. To date, more than 2,000 individual blue whales have been contributed to the SHBWC from researchers working on areas off Antarctica, Chile, Peru, Ecuador-Galapagos, Eastern Tropical Pacific, Australia, Timor-Leste, New Zealand, Indonesia, Sri Lanka and Madagascar. The Committee is currently working on the Comprehensive Assessment of non-Antarctic Southern Hemisphere blue whales, with a particular emphasis on Australia, southeast Pacific blue whales and New Zealand. The SHBWC is assisting in matching catalogues so that regional photo-ID based mark-recapture assessments of blue whale abundance can be provided.

23.4.5.3 SC/68D/RP/14 ONGOING SC DATABASE HOSTING AND SERVER MANAGEMENT BY THE IWC SECRETARIAT

The IWC Secretariat hosts and manages several databases on behalf of the SC. These have annual service costs associated with them, including web/database servers, storage, backups, software licences and other associated infrastructure costs. This funding will allow continuation of the hosting and management services required for SC databases. This funding does not contribute towards any salaries.

23.4.6 Reports

23.4.6.1 SC/68D/RP/20 COMPILATION OF THE STATE OF THE CETACEAN ENVIRONMENT REPORT (SOCER) FOR 2025 INCLUDING THE SECOND FIVE-YEAR GLOBAL COMPENDIUM

The SOCER is produced in response to several Commission Resolutions requesting regular updates on the state of the world's oceans for cetaceans. The SOCER is appended as Annex S to the SC report and is also available on the IWC website.

24. COMMITTEE PRIORITIES FOR 2023/24 AND INITIAL AGENDA FOR 2024

Each sub-committee developed their priorities and workplan for 2023/24. These workplans will be used by the Chair and vice-Chair to develop a draft agenda for the next SC meeting to present to the Commission at IWC69 for review and endorsement.

25. WORKING METHODS OF THE COMMITTEE

25.1 Updates on Rules of Procedures and Handbook of the Scientific Committee

Recent changes to how the Committee operates, such as virtual meetings and a proposed move to biennial meetings, requires a review of the Scientific Committee Handbook. The Committee **agrees** a timeline whereby a small group will assist the SC leadership to complete the initial review followed by consultation with the Convenors and then the wider SC membership (Table 14). The updated Handbook will be presented to Commission for their consideration at IWC69 in 2024.

The Committee **agrees** for the Chairs to consult with the IWC Bureau on limited hybrid options for SC69B, including the implications for current Rules of Procedure, the confidentiality of discussions and any financial implications.

25.2 Communications Initiative and matters related to reporting to the Commission

The Chair introduced the Communications Initiative, which aims to inform and advise the Commission in a succinct and non-technical manner. The Communications Initiative was presented at IWC68 and welcomed. It will be launched at IWC69.

Three key opportunities have been identified for the SC to explain its work during Commission meetings. The most important is the SC presentation to Plenary which will build on a new approach tested at IWC68 where the SC leadership incorporated visual material into their presentation. This was split into two stages: an introduction and a later session responding to issues raised in the meeting.

The second key opportunity is a new summary document. This will be circulated to commissioners, observers and other stakeholders approximately one month before the Commission meeting, serving as an early introduction to topics that the SC will cover at the meeting.

The third key opportunity is a 'Science Hub' - a dedicated area within the venue where promotional material can be displayed and SC members can engage with Commission participants.

There will be an additional opportunity for Convenors to contribute to the creation of factsheets, either summarising the work of their group or focusing on specific agenda items not included in the topics covered in the presentation and report. The Chair asked each Convenor to suggest one to two topics from their group's agenda. Two completed sample templates were then circulated to demonstrate the appropriate information and required level of detail.

In discussion, it was affirmed that several methods to evaluate the success of this initiative were planned and that this will be an ongoing process.

25.3 Capacity building and succession plan for the Scientific Committee

The Committee continues to pursue and enhance its succession plan. This year, co-Convenors were identified for all sub-groups to ensure adequate support, cover for absence and provide opportunities for new members to gain experience.

A key part of the SC's ability to advise the Commission relies on running complex simulation trials, which include coding, conditioning, projections and updates to incorporate new data and/or models. In discussion, the urgent need to complete the comprehensive documentation of programmes and input data for Implementation Trials was identified. The current documentation fully covers all main programmes and will be extended to inputs developed during past workshops. The current team responsible for developing Implementation Trials agreed to provide Katara, the Secretariat Lead for Modelling and Statistics, and relevant Committee members with guidance on how to run trials at future meetings. A prioritised list of stocks for succession training will be developed in recognition that the handover of such complex assessments will be a gradual process as each implementation requires the completion of multiple steps:

- (1) review the underlying model as described in the specifications;
- (2) understand the input data and their derivation;

- (3) review the implementation of the specifications in the control programme; and
- (4) review the associated programmes for the outputs.

Attention: SC, S

The Committee **recommends** the highest priority be given to completion of the comprehensive documentation of all programmes and input data for Implementation Trials.

The Committee **requests** that the team developing the current Implementation Trials provide guidance to the Secretariat and relevant Committee members to ensure the efficient handover of simulation trials.

25.4 Update on data availability requests and consideration of potential updates/clarifications

The Data Availability Group (DAG) oversees the data request procedure as outlined in the IWC Data Availability [Agreement \(DAA\)](#)²⁰ and Scientific [Handbook](#)²¹. The rules for data availability, summary lists of the available data, protocols for data access, agreement forms and contact points can be found on the IWC website. Additional data availability rules associated with SORP and the ASI sub-committee have also been developed. The IWC databases can be made available to researchers depending on agreed access rules, relevant procedures and levels of IWC support. The process of reviewing database governance and management is ongoing and focuses on accessibility of databases with different levels of IWC support. The need has arisen to review and revise the Committee's data availability procedures with a view to harmonising rules where appropriate. An ICG was formed to address this issue (see Annex V).

25.5 Governance review update following IWC68

The IWC's Working Group on Operational Effectiveness (WG-OE), a sub-group of the Finance and Administration Committee, proposed changes to the structure of the Commission and either new or revised Rules of Procedure and Terms of Reference. At IWC68, the Commission endorsed changes to its meeting operations and budget. The implications of these changes are discussed at Item 23.

Changes to the Rules of Procedure will affect how the SC Report is adopted in years when the Commission does not meet (FA68/10/01). In these 'off' years, the report from any SC meeting will be considered for endorsement using a silence procedure 30 days after its publication on the IWC website. The Committee notes that the SC69A will be the first meeting to use this procedure.

25.6 Joint Conservation Committee-Scientific Committee Working Group

The Joint WG of the Conservation and Scientific Committees first met in 2015 with an overall aim to collaborate by collating and prioritizing the conservation recommendations of both groups and developing effective strategies to communicate and implement them. Meeting reports of the WG are available on the IWC website. The WG [Terms of Reference](#)²² were revised in 2021 and subsequently endorsed at IWC68 (IWC, 2022b, Item 9.3).

A key output of the WG is the Database of Recommendations (DoR). The DoR was initially developed to improve collaboration between the two committees, but its potential wider benefits were quickly realised. The database now holds recommendations of the Commission and all its sub-groups, including legally binding Schedule Amendments, Resolutions and recommendations agreed at sub-group meetings and workshops.

The most recent [CC/SC meeting](#)²³ was held in July 2022 (IWC, 2022e), during which an update was presented by the small intersessional group formed in 2021 to design a process to help the Commission to prioritise conservation issues. This group proposed using output from the DoR to help identify priorities by theme. The group will continue to identify conservation priorities and provide a report at IWC69. This year's joint CC/SC meeting will be held on 7 May, immediately after SC69A.

26. PUBLICATIONS

The *Journal of Cetacean Research and Management* (JCRM) is the IWC peer-reviewed scientific journal, which publishes original scientific papers on the conservation and management of cetaceans as well as the annual supplement which contains the report of the Scientific Committee meeting. The Head of Science, Conservation and Management acts as Editor and the Editorial Board is comprised of members of the Scientific Committee who volunteer their time and expertise. Within the Secretariat, Jess Rowley, an editorial assistant, has moved to a new role outside the IWC. This position has now been filled by Patrick Naylor who was warmly welcomed.

Volume 23 was published at the end of 2022 with 12 scientific papers, which to date have achieved almost 10,000 total views and 3,000 downloads. At the start of SC69A, Volume 24 contained six published articles with two more in production,

²⁰<https://iwc.int/scientific-research/data-availability>.

²¹<https://iwc.int/scientific-research/scientific-committee-handbook>.

²²<https://archive.iwc.int/pages/view.php?ref=19616&k=618996f8c5>.

²³<https://archive.iwc.int/pages/view.php?ref=19616&k=41afb45c8f>.

in addition to the report of the 2022 SC meeting. New guidelines for short communications have been developed to facilitate the publication of articles less than 2,500 words. These have proved to be a great success with two short communications already published. The journal is open access which makes it an ideal platform to freely disseminate both the scientific work of the IWC and other research relevant to cetacean management and conservation.

Progress on the IDCR/SOWER Cruises Special Issue has been slower than anticipated, so to ensure that the papers that are already completed are circulated in a timely manner, the Editorial Board agreed to publish these papers now and others as they become ready. It is hoped that by circulating these Special Issue papers, other authors will complete their submissions sooner.

Work continues to raise the profile of JCRM, via the use of DOI numbers, membership of Journal organisations, the IWC website and social media. There are plans to increase submissions by promoting JCRM as the first choice and natural destination for SC primary papers. Naylor will contact all Convenors to compile a list of recommended submissions.

The Secretariat is in the process of moving regular issues from the IWC Archive to the JCRM website, with a plan to do the same for all reports of SC meetings and workshops since 1998. This involves assigning DOI numbers and live links to archived papers which will help increase the visibility and discoverability of the IWC's work.

The Secretariat recently completed the migration of the journal management software to a cloud-based server - thus enabling automatic updates and remote support.

The Editorial Board was sad to announce that Greg Donovan and Karen Stockin have stepped down as section editors. The Committee **thanks** them both for their hard work. The Board hopes to invite new members and has identified a range of candidates. As always, tremendous thanks are given to the editorial team for its tireless work and to all the expert reviewers who have helped ensure the journal maintains its rigorous scientific standards. An appeal is also made for SC members to consider reviewing manuscripts and/or nominate early career scientists within their institutions.

27. ADOPTION OF REPORT

The Committee adopted this report on 6 May 2023. The Chair thanked all participants for their time and expertise. The Chair voiced special thanks to the vice-Chair, Convenors and rapporteurs for their support and hard work throughout the meeting and its preparation. The Secretariat staff were thanked for their tireless efforts to make the meeting a success. On behalf of the Committee, the vice-Chair and Head of Science, Conservation and Management thanked the Chair for his leadership and dedication.

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