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# Actions for Arctic Biodiversity 2013-2021

Implementing the recommendations of the Arctic Biodiversity Assessment

# Acknowledgements

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- Environment Canada, Ottawa, Canada
- Faroese Museum of Natural History, Tórshavn, Faroe Islands (Kingdom of Denmark)
- Finnish Ministry of the Environment, Helsinki, Finland
- Icelandic Institute of Natural History, Reykjavik, Iceland
- Ministry of Foreign Affairs, Greenland
- Russian Federation Ministry of Natural Resources, Moscow, Russia
- Swedish Environmental Protection Agency, Stockholm, Sweden
- United States Department of the Interior, Fish and Wildlife Service, Anchorage, Alaska

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- Aleut International Association (AIA)
- Arctic Athabaskan Council (AAC)
- Gwich'in Council International (GCI)
- Inuit Circumpolar Council (ICC) – Greenland, Alaska and Canada
- Russian Indigenous Peoples of the North (RAIPON)
- Saami Council

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# 1. Executive summary

The Arctic Council Ministers agreed to implement 17 recommendations articulated in the *Arctic Biodiversity Assessment, Report for Policy Makers* (CAFF 2013a). Implementing the Arctic Biodiversity Assessment (ABA) recommendations requires a combination of building on existing efforts and embarking in new directions. This document, *Actions for Biodiversity 2013-2021: implementing the recommendations of the Arctic Biodiversity Assessment*, comprises the implementation plan for the recommendations. It is a living document that will be reviewed and updated every two years. The plan is not meant to be exhaustive or to replace working group work plans; rather it is complimentary, emphasizing specific actions that address the ABA recommendations.

Actions to implement ten of these recommendations commenced during Canada's Chairmanship of the Arctic Council (2013-2015). Actions to implement all recommendations, including the seven for which actions have not yet begun, will proceed over the next four years, under both the United States and Finnish Chairmanships of the Arctic Council. The phased in plan for all actions is described in this document. This plan was developed in consultation with Arctic Council Working Groups, Task Forces, Observers, and stakeholders.



Photo: Linnea Nordström, Arctic Council

Attendees of the February 2015 CAFF Biennial meeting in Whitehorse, Canada. This meeting, the last CAFF Board meeting of the CAFF Canadian Chairmanship, was where the *Actions for Arctic Biodiversity, 2013-2021: Implementing the recommendations of the Arctic Biodiversity Assessment* document was finalized.

## Box 1: ABA recommendations

### Climate change

1. Actively support international efforts addressing climate change, both reducing stressors and implementing adaptation measures, as an urgent matter.
2. Incorporate resilience and adaptation of biodiversity to climate change into plans for development in the Arctic.

### Ecosystem-based management

3. Advance and advocate ecosystem-based management efforts in the Arctic as a framework for cooperation, planning and development.

### Mainstreaming biodiversity

4. Require the incorporation of biodiversity objectives and provisions into all Arctic Council work and encourage the same for on-going and future international standards, agreements, plans, operations and/ or other tools specific to development in the Arctic.

### Identifying and safeguarding important areas for biodiversity

5. Advance the protection of large areas of ecologically important marine, terrestrial and freshwater habitats, taking into account ecological resilience in a changing climate.
6. Develop guidelines and implement appropriate spatial and temporal measures where necessary to reduce human disturbance to areas critical for sensitive life stages of Arctic species that are outside protected areas, for example along transportation corridors.
7. Develop and implement mechanisms that best safeguard Arctic biodiversity under changing environmental conditions, such as loss of sea ice, glaciers and permafrost.

### Addressing individual stressors on biodiversity

8. Reduce stressors on migratory species range-wide, including habitat degradation and overharvesting on wintering and staging areas and along flyways and other migration routes.
9. Reduce the threat of invasive alien/non-native species to the Arctic by developing and implementing common measures for early detection and reporting, identifying and blocking pathways of introduction, and sharing best practices and techniques for monitoring, eradication and control.
10. Promote the sustainable management of the Arctic's living resources and their habitat.
11. Reduce the threat of pollutants to Arctic biodiversity.

### Improving knowledge and public awareness

12. Evaluate the range of services provided by Arctic biodiversity in order to determine the costs associated with biodiversity loss and the value of effective conservation in order to assess change and support improved decision making.
13. Increase and focus inventory, long-term monitoring and research efforts to address key gaps in scientific knowledge identified in this assessment to better facilitate the development and implementation of conservation and management strategies.
14. Recognize the value of traditional ecological knowledge and work to further integrate it into the assessment, planning and management of Arctic biodiversity.
15. Promote public training, education and community-based monitoring, where appropriate, as integral elements in conservation and management.
16. Research and monitor individual and cumulative effects of stressors and drivers of relevance to biodiversity, with a focus on stressors that are expected to have rapid and significant impacts and issues where knowledge is lacking.
17. Develop communication and outreach tools and methodologies to better convey the importance and value of Arctic biodiversity and the changes it is undergoing.

## 2. Introduction

The Conservation of Arctic Flora and Fauna working group of the Arctic Council (CAFF) released the Arctic Biodiversity Assessment (ABA) at the Kiruna Ministerial Meeting in May 2013.

The ABA consists of five components:

1. *Arctic Biodiversity Trends 2010: selected indicators of change* (CAFF 2010b);
2. *Arctic Biodiversity Assessment: status and trends in Arctic biodiversity* (CAFF 2013c);
3. *Arctic Biodiversity Assessment: synthesis* (CAFF 2013d);
4. *Arctic Biodiversity Assessment: report for policy makers* (CAFF 2013a); and
5. *Life Linked to Ice: a guide to sea-ice-associated biodiversity in this time of rapid change* (CAFF 2013e).

The Report for Policy Makers presents 17 recommendations (**Box 1**) for addressing the nine key findings of the ABA (**Box 2**). In the Kiruna Declaration, the Arctic Council Ministers noted:

*"... with concern that Arctic biodiversity is being degraded and that climate change is the most serious threat, welcomes the Arctic Biodiversity Assessment, the first Arctic-wide comprehensive assessment of status and emerging trends in Arctic biodiversity, approves its recommendations and encourages Arctic States to follow up on its recommendations, and instructs Senior Arctic Officials to ensure that a plan for further work under the Arctic Council to support and implement its recommendations is developed, and that a progress report is delivered to the next ministerial meeting." (Arctic Council 2013)*

This eight-year implementation plan, which has been informed by the results of the Arctic Biodiversity Congress (**Box 3**) and discussions with Arctic Council countries, Permanent Participants, Working Groups, Task Forces, and Observers, is in response to this directive. This plan can also be considered the progress report on 2013-2015, as this Chairmanship period comes to a close.

### Box 2: Key findings of the Arctic Biodiversity Assessment

1. Arctic biodiversity is being degraded, but decisive action taken now can help sustain vast, relatively undisturbed ecosystems of tundra, mountains, fresh water and seas and the valuable services they provide.
2. Climate change is by far the most serious threat to Arctic biodiversity and exacerbates all other threats
3. Many Arctic migratory species are threatened by overharvest and habitat alteration outside the Arctic, especially birds along the East Asian flyway
4. Disturbance and habitat degradation can diminish Arctic biodiversity and the opportunities for Arctic residents and visitors to enjoy the benefits of ecosystem services.
5. Pollution from both long-range transport and local sources threatens the health of Arctic species and ecosystems.
6. There are currently few invasive alien species in the Arctic, but more are expected with climate change and increased human activity.
7. Overharvest was historically the primary human impact on many Arctic species, but sound management has successfully addressed this problem in most, but not all, cases.
8. Current knowledge of many Arctic species, ecosystems and their stressors is fragmentary, making detection and assessment of trends and their implications difficult for many aspects of Arctic biodiversity.
9. The challenges facing Arctic biodiversity are interconnected, requiring comprehensive solutions and international cooperation.

### Box 3: Arctic Biodiversity Congress

The Arctic Biodiversity Congress was the largest gathering of people in the history of the Arctic Council. It brought together 450 Arctic scientists, policy-makers, government officials, indigenous peoples, students and industry and civil society representatives to discuss the challenges facing Arctic biodiversity and the most appropriate actions for conservation and sustainable use of the Arctic's living resources.

The Congress highlighted the work of CAFF and the Arctic Council in circumpolar biodiversity conservation and sustainable use, provided an opportunity to discuss the findings of the ABA, and served as a forum for mainstreaming biodiversity — for ensuring that the 17 recommendations arising from the ABA are implemented, not just by governments, but by many organizations and people across sectors. Participants had opportunities to advise CAFF on the development of “Actions for Arctic Biodiversity: Implementation of the Arctic Biodiversity Assessment Recommendations 2013-2021”, including both short term and long term actions. An overriding message was that while there is an urgency to take some actions now, all actions must be sustained over the long term.

Highlights of actions suggested at the Congress include:

- Develop binding agreements related to the conservation and/or sustainable use of biodiversity.
- Include biodiversity as a fundamental component of Environmental Impact Assessments, Strategic Environmental Assessments and risk assessments in the Arctic.
- Expand both the marine and terrestrial protected areas network and monitor its effectiveness at safeguarding biodiversity.
- Map biodiversity hot spots and biologically and ecologically sensitive areas at a scale appropriate for industry to use in their planning.
- Include biodiversity in national accounting so that the true value of healthy Arctic ecosystems is understood, and the true costs of biodiversity loss are considered.
- Develop tools for data sharing in order that data collected can be used by a wide range of people engaged in Arctic biodiversity science, policy, and management.
- Develop targets to stimulate actions and against which progress can be measured.
- Mainstream biodiversity -- build partnerships with a wide range of stakeholders to seek innovative solutions and expand the responsibility for taking care of biodiversity.
- Develop realistic scenarios to help predict what could happen, given different policy options, in the short term (10 to 15 years) and the long term (over 50 years).
- Implement Ecosystem Based Management in marine, terrestrial, freshwater, and coastal ecosystems.

The full suite of reporting and outcomes from the Congress, including the Congress Co-Chairs statement and the report from the IISD and Earth Negotiations Bulletin, can be found here [www.arcticbiodiversity.is/reporting](http://www.arcticbiodiversity.is/reporting).





### 3. Plan structure

The ABA recommendations are directed to the Arctic Council as a whole. While some are intended to be implemented through CAFF, others are intended to be led in full, or in part, by other Arctic Council working groups and other subsidiary bodies. Some recommendations will require action by national authorities, stakeholders, and international organizations.

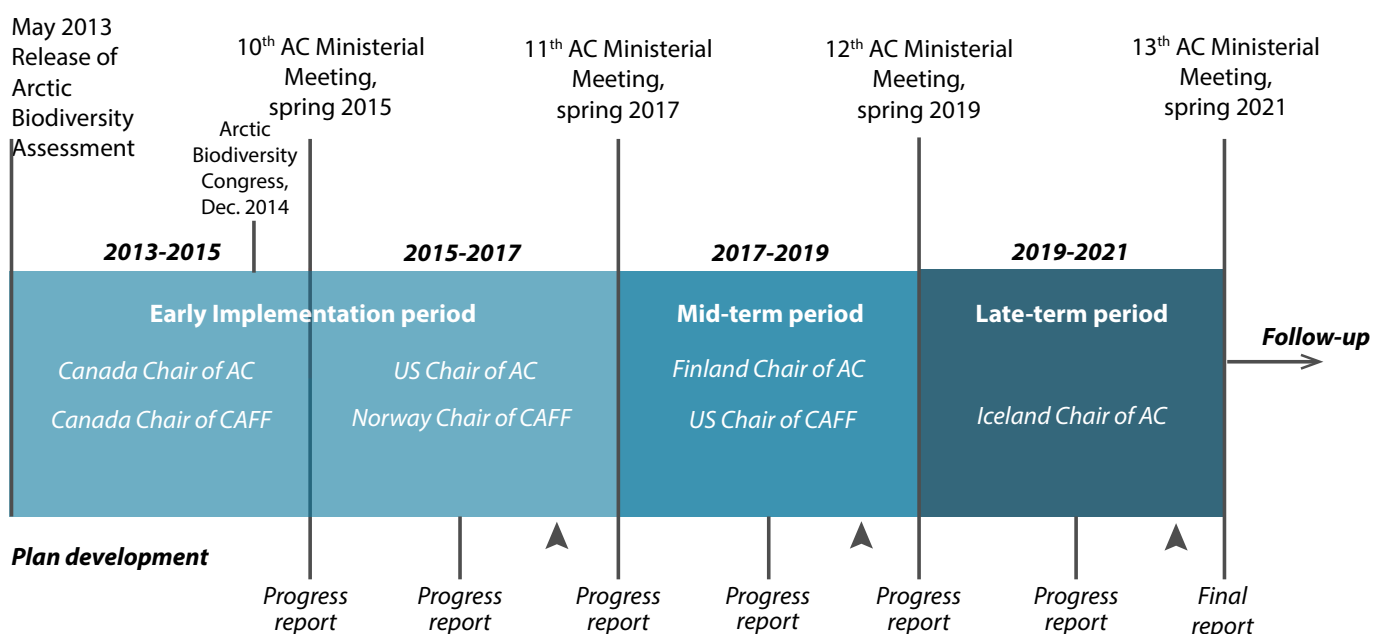
Implementing the ABA recommendations requires a combination of building on existing efforts, embarking in new directions, and developing specific projects to fill gaps. Implementation will build on a solid framework of established CAFF activities, including the **Circumpolar Biodiversity Monitoring Program** (CBMP, [www.cbmp.is](http://www.cbmp.is)) and the **Arctic Biodiversity Data Service** (ABDS, [www.abds.is](http://www.abds.is)). It also builds on relevant initiatives led by other Arctic Council working groups and processes and initiatives of international biodiversity conventions and organizations, in particular the Convention on Biological Diversity (CBD). The ABA provides, through its recommendations, specific directions for focusing and enhancing work through these programs and activities.

New directions and initiatives, for example strengthening the focus on, and inclusion of, biodiversity in all Arctic Council work, will be phased into work plans. Some recommendations call for action to remedy gaps and deficiencies in knowledge and in biodiversity conservation. The specific activities outlined in this implementation plan are designed to meet these calls for action. The 2014 Arctic Biodiversity Congress played a significant role in the design of priorities and the selection of the most effective actions.

**This implementation plan is a living document.** The CAFF Working Group will evaluate progress and reflect changing Arctic Council priorities on a regular basis. The plan is not meant to be exhaustive or to replace Arctic Council Subsidiary Body work plans; rather it informs them, emphasizing specific actions that address the ABA recommendations. The process of developing this plan is explained in **Box 4**.

The plan is organized in two-year implementation periods, corresponding to the cycle of rotation of the chairmanship of the Arctic Council. Each period finishes at a Ministerial Meeting where the focus and deliverables for the next phase will be reviewed. The delineation of phases was selected to assist with aligning priorities, resource allocation, and reporting within the Arctic Council. The plan allows for the opportunity to consider ABA recommendations that have received less attention and develop actions accordingly. Priorities identified in previous phases will continue to be acted upon where relevant and new actions will be added based on strategies and plans developed in the previous implementation periods. The “focus” section below highlights new concerted efforts associated with the relevant recommendation. Lack of mention of a recommendation in the “focus” section does not mean that no actions will be implemented for that recommendation.

#### Actions for Arctic Biodiversity timeline

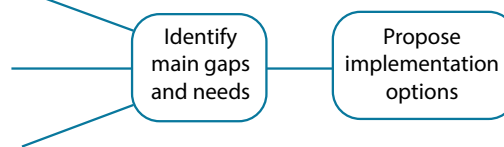


## Box 4: Process for plan development

1. Each recommendation was analysed to identify gaps and propose implementation options.

### For each recommendation, ask:

- What is CAFF doing now that addresses this recommendation?
- What recent and ongoing Arctic Council work is related?
- What work external to the Arctic Council is relevant?



*Focus and enhance existing CAFF activities and initiatives*

*Seek new partners, new opportunities*

*Design specific projects to meet identified needs*

2. Options were reviewed and actions developed for each recommendation.
3. Priorities were set using the following criteria:
  - I. To what degree will implementation improve or prevent deterioration in (considering probability of success and timeframe of expected impacts):
    - A. Arctic species abundance and distribution,
    - B. sensitive ecosystems upon which Arctic species rely, or
    - C. benefits that people receive from ecosystems and biodiversity?
  - II. How well are the Arctic Council working groups and CAFF in particular, positioned to carry out this action, or to influence others to do so?
  - III. What level of resources are required to implement the action: is it doable with existing resources; moderate additional resources needed; or, high level of additional resources needed?

This process took into consideration the timeframe of results, giving higher weight to those actions likely to show benefits to Arctic biodiversity within the life of this plan, but still placing value on actions addressing longer-term, more fundamental needs to conserve biodiversity. Actions for earlier periods are generally more fully developed, as many actions in the latter periods of the plan depend upon priority-setting exercises, initial scoping projects, or groundwork to develop partnerships and secure commitments of resources. The resulting suite of implementation actions has extensive cross-linkages with many actions contributing to meeting more than one recommendation.



## Ongoing actions

Many ongoing actions are critical to successful implementation of the ABA recommendations. These actions are listed in **Section 5.1** and presented in **Annex 2** under the most relevant recommendation. If there is a specific deliverable, the action is included under the appropriate phase.

### Phase 1: 2013-2015

The focus was on the development of the implementation plan and initiating key actions directed at: short-lived climate forcers (Recommendation 1); ecosystem-based management (Recommendation 3); mainstreaming biodiversity (Recommendation 4); addressing stressors on biodiversity, in particular oil spills (Recommendation 11); stressors on migratory species (Recommendation 8); improving knowledge and public awareness, in particular, improving access to data (Recommendation 13), integrating traditional knowledge (Recommendation 14), evaluating ecosystem services (Recommendation 12) and communication and outreach tools (Recommendation 17); and safeguarding important marine areas (Recommendation 6).

### Phase 2: 2015-2017

Focus on mainstreaming biodiversity (Recommendation 4), reducing stressors on migratory birds (Recommendation 8), ecosystem services evaluation (Recommendation 12) and communications and outreach (Recommendation 17) will continue. Other focus areas will include: adaptation to climate change (Recommendation 2); addressing stressors on biodiversity, in particular, migratory species (Recommendation 8), invasive species (Recommendation 9) and pollution (Recommendation 11); safeguarding critical areas (Recommendations 5, 6, and 7); and improving knowledge and public awareness, in particular, monitoring and traditional and local knowledge (Recommendations 13, 14, and 15), and indicator development (Recommendation 16).

### Phase 3: 2017-2019

The added focus will be on safeguarding biodiversity under changing conditions (Recommendation 7); cumulative effects (Recommendation 16); and improving knowledge and public awareness (Recommendation 17), including by contributing to the Convention on Biological Diversity assessment on achievement of the United Nations' Aichi Biodiversity Targets and convening the second Arctic Biodiversity Congress.

### Phase 4: 2019-2021

The focus for the final implementation period will be on completing projects, implementing strategies and plans developed in early phases, evaluating progress, and designing follow-up.

## 4. Evaluating progress

CAFF will prepare annual reports on progress towards implementation of the ABA recommendations that will be delivered to the Senior Arctic Officials. A final report, including recommendations for follow-up, will be delivered for the 12<sup>th</sup> Arctic Council Ministerial Meeting in 2021.

In addition, ongoing evaluation of progress will guide adjustments in the suite of implementation actions over the lifetime of the plan to achieve greater impact, to meet new challenges, and to take advantage of opportunities that arise. A more in-depth evaluation of *Actions for Arctic Biodiversity, 2013-2021* will be a standing item on the CAFF agenda every second year where the Board will review progress, recommend actions, and make revisions as necessary for the following two-year period.

## 5. Implementation actions

CAFF has many ongoing initiatives that are fundamental to the success of this plan, including the CBMP and ABDS. Other Arctic Council initiatives are also critical to achieving the recommendations, for example PAME's work on implementing the recommendations of the Arctic Marine Shipping Assessment and AMAP's monitoring of contaminants and climate abiotic parameters. This section outlines the main implementation actions under each Arctic Council chairmanship period. More detail on the actions, including project leads, the timeline for implementation, and progress is presented in Annex 2, where the actions are listed according to the most relevant recommendation. Recognizing that many actions help to address several recommendations, the table in Annex 2 provides more detail on which other recommendations are addressed by each action. Annex 2 is also available at [www.caff.is/publications](http://www.caff.is/publications) as a living document and will be used to track progress and changes in implementation.

In developing the plan, CAFF asked each Arctic Council Working Group and Task Force to consider their activities and to indicate which respond to the ABA recommendations. These actions are included in this plan; however, it is not immediately clear how some incorporate biodiversity objectives. This will be addressed in Phase 2 of this plan by: a) developing a set of principles on incorporating biodiversity objectives and safeguards into Arctic Council work; b) asking Arctic Council Working Groups and Task Forces to apply these principles to their activities; and c) evaluating the extent to which their activities respond to the ABA recommendations.

The ABA identified climate change as the most serious threat to Arctic biodiversity and an underlying driver of overall change in biodiversity. The actions identified in this plan reflect these findings and the comprehensive and integrated approach needed to address the interconnected and complex challenges posed by climate change.

Biodiversity is itself a cross-cutting issue, and mainstreaming it means that biodiversity is explicit in all decision-making processes that affect or are affected by status and trends in biodiversity. This includes planning, management, governance, and development activities, such that long term conservation of biodiversity is an integral part of human interactions with the environment.

### 5.1. Ongoing actions

Many ongoing actions contribute to implementation of the ABA recommendations and continue each year. In addition, as new strategies, plans, and priorities are developed, more ongoing activities will be required for their implementation. This section lists the current main ongoing activities that are important to successful implementation of the ABA recommendations. They are also presented in Annex 2, listed under the most relevant recommendation.

- Implement the CBMP and its ecosystem-based biodiversity monitoring plans (Action Cb)<sup>1</sup>.
- Advance and sustain the Arctic Biodiversity Data Service (ABDS) (Actions Cc, 2.4 and 4.7).
- Develop and apply standards of the Arctic Spatial Data Infrastructure (SDI) and further develop use of remote sensing (Action Cd).
- Implement existing frameworks, strategies, and plans, and those developed under this plan.
- Advance ecosystem-system based management recommendations approved in the Kiruna Declaration (including Actions 3.1 to 3.4).
- Strengthen and develop new strategic partnerships, particularly with industry, to seek innovative solutions and expand responsibility for taking care of biodiversity (Action 4.1).
- Provide information, expertise, and recommendations on conservation of Arctic ecosystems to policymakers (action 4.5).
- Address monitoring and research gaps in scientific knowledge identified as priorities in the ABA and Arctic Biodiversity Congress (Action 13.3).
- Mainstream biodiversity into the climate change agenda, including adaptation and mitigation (Action 1.2).
- Implement Arctic Council recommendations on short-lived climate forcers (Action 1.1b).
- Assess trends in contaminants and resulting effects (Action 11.2).
- Identify and remove local sources of contamination and improve the environmental conditions in indigenous communities (Action 11.9).
- Increase engagement of youth and early career scientists in the activities of CAFF to train the next generation of conservation leaders (Action 15.2).
- Improve predictive capacity through increased observations, research, scenarios, and models as tools for understanding of processes governing changes in the Arctic and influencing future decisions (Action 16.4).
- Implement CAFF's *Communications Strategy* and update as needed (Action 17.1).
- Track and update biennially *Actions for Arctic Biodiversity, 2013-2021* (Action Aa).

<sup>1</sup>The references in brackets throughout this section refer to the number given to the same action in the table in Annex 2. Annex 2 facilitates tracking progress.

## 5.2. Phase 1: 2013-2015 progress report

The focus was on the development of the implementation plan and initiating key actions directed at: short-lived climate forcers (Recommendations 1); ecosystem-based management (Recommendation 3); mainstreaming biodiversity (Recommendation 4); addressing stressors on biodiversity, in particular oil spills (Recommendation 11); stressors on migratory species (Recommendation 8); improving knowledge and public awareness, in particular, improving access to data (Recommendation 13), integrating traditional knowledge (Recommendation 14), evaluating ecosystem services (Recommendation 12), and communication and outreach tools (Recommendation 17); and safeguarding important marine areas (Recommendation 6).

### Relevant for all recommendations

- Prepare an implementation plan for the ABA recommendations (Action Aa).
- Convene the first Arctic Biodiversity Congress to create dialogue on the ABA key findings and recommendations, solicit input on the draft implementation plan, establish partnerships, and advance implementation actions (Action Ba).
- Develop recommendations for the integration of traditional and local knowledge into the work of the Arctic Council (Action 14.1).

### Climate change

- Negotiate an Arctic Council Framework for Enhanced Action on Black Carbon and Methane (Action 1.1a).
- Hold a workshop on the reduction of black carbon emissions from residential wood combustion in the Arctic that identifies voluntary actions to reduce emissions (Action 1.1c)
- Prepare scientific assessments on black carbon and tropospheric ozone and on methane assessment on short-lived climate forcers including on black carbon, tropospheric ozone and methane (Action 1.1e).

### Ecosystem based management

- Revise the Arctic Marine Strategic Plan, 2015-2025 (Action 3.4).
- Initiate the coastal ecosystem monitoring program for CBMP (Action 13.4d).

### Mainstreaming biodiversity

- Prepare a reference guide for resource managers on sea-ice-associated biodiversity in times of rapid change, *Life Linked to Ice* (Action 2.1).
- Analyze the relationship between CAFF activities and international biodiversity objectives from relevant multilateral environmental agreements as a starting point for improved cooperation (Action 4.2).
- Develop best practices for vessel-based Arctic marine tourism (Action 4.6).

### Addressing stressors on biodiversity

- Establish an Arctic Migratory Birds Initiative and prepare collaborative flyway-based work plans (Action 8.1).
- Prepare a guide on oil spill response in snow and conditions in the Arctic (Action 11.5).

### Improving knowledge and public awareness

- Establish the Arctic Biodiversity Data Service (ABDS) as the supporting framework to facilitate long-term data sharing and as a source of data for modelling and ecosystem-based management (Action Cc).
- Initiate a scoping study on the potential for applying the TEEB (The Economics of Ecosystems and Biodiversity) approach to evaluate the benefits people receive from Arctic biodiversity (Action 12.1).
- Share research gaps and priorities identified in the ABA with the International Arctic Science Committee third International Conference on Arctic Research Planning to inform their research priorities (Action 13.1).
- Assess the combined effects of contaminants and climate change (Action 16.6).
- Develop tools to raise awareness of Arctic biodiversity, and the multiple challenges it faces, for example “Arctic Biodiversity Through the Lens” photography competition, and create publications, articles, films, social media, media campaigns and educational kits (Action 17.2).
- Develop an educational toolkit on Arctic ecology for children (Action 17.10a).

### Safeguarding critical areas

- Develop a framework for a pan-Arctic network of marine protected areas (MPAs) that sets out a common vision for regional cooperation in MPA network development and management, based on international best practices (Action 5.2).

### 5.3. Phase 2: 2015-2017

The focus will be on: adaptation to climate change (Recommendation 2); mainstreaming biodiversity (Recommendation 4); addressing stressors on biodiversity, in particular, migratory species (Recommendation 8), invasive species (Recommendation 9), and pollution (Recommendation 11); safeguarding critical areas (Recommendations 5, 6, and 7); and improving knowledge and public awareness, in particular, monitoring and traditional and local knowledge (Recommendations 13, 14, and 15), indicator development (Recommendation 16), and ecosystem services evaluation (Recommendation 12). The focus and deliverables will contribute to the US Chairmanship priorities.

#### Relevant for all recommendations

- Review, evaluate, and update the CBMP and its monitoring plans in accordance with the CBMP Strategy (Action Ca).
- Encourage states to develop national implementation plans consistent with this implementation plan for the ABA recommendations as an essential adaptation measure (Action Ad).
- Seek ways to enhance the integration of traditional and local knowledge, including follow-up to the recommendations from the *Iqaluit Declaration* (Action 14.1), and encourage co-production of knowledge methodologies (Action 14.7).

#### Climate Change

- Follow-up projects on reducing black carbon, including: the transport and diesel generator sectors; the Arctic Case Studies Platform; and convening a conference on best practices on contaminant reduction in Indigenous communities (Action 1.1f).
- Prepare three regional assessments with information to assist local decision-makers and stakeholders to develop adaptation tools and strategies to deal with climate change and other environmental stressors and produce an overall integrated report on adaptation actions (*AACA Part C*) (Action 2.3).

#### Ecosystem based management

- Prepare reports on Status of Setting Ecological Objectives, Work on Integrated Ecosystem Assessments of Arctic LMEs, Status of Implementation of the Ecosystem Approach to Management in the Arctic, and a scoping document on the use of information on identified areas of heightened ecological and cultural significance for assessment and management purposes within LMEs. (Action 3.2).
- Prepare an implementation plan for the *Arctic Marine Strategic Plan 2015-2025*

#### Mainstreaming biodiversity

- Review and update actions in plan by all Working Groups and Task Forces related to ABA recommendations (Action Ab).
- Develop a set of principles on incorporating biodiversity objectives and safeguards into Arctic Council work, apply these principles to the activities of Arctic Council Working Groups and other Subsidiary Bodies, and evaluate the extent to which these activities respond to the ABA recommendations (Action 4.3).
- Strengthen collaboration with industry in Arctic biodiversity monitoring (Action 4.8).
- Complete the TEEB scoping study and follow-up as appropriate (Action 12.2).

#### Addressing stressors on biodiversity

- Identify species that could benefit from, but are not covered by, range-wide adaptive management strategies or recovery plans and follow-up as appropriate (Action 8.3).
- Create an inventory ongoing seabird projects and develop a common reporting template for all seabird conservation strategies (Action 8.4).
- Investigate the impact of shipping and off-shore development on seabirds (Action 8.6).
- Develop a strategy for the prevention and management of invasive species in the Arctic, including the identification and mitigation of pathways of introduction (Action 9.1).
- Provide biodiversity and ecosystem information to the proposed US Chairmanship priority of developing a Regional Seas Program for the Arctic Ocean (Action 10.4).
- Update CAFF reports on incidental take of seabirds in commercial fisheries in the Arctic (Action 10.5).
- Maintain and further develop sustainable and resilient reindeer husbandry (Action 10.6).
- Provide information necessary for assessment of trends in contaminant levels in ecosystems, biological effects, and improve predictive capacity (Action 11.1).
- Prepare an update assessment of persistent organic pollutants and resulting biological effects (Action 11.2).
- Execute international exercises under the *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, and maintain and update the Operational Guidelines (Actions 11.4).
- Develop a guide on oil spill response in ice and snow conditions (Action 11.5).
- Demonstrate rapid assessment and clean-up of old sites and environmentally sound destruction of obsolete pesticides in northern Russia (Action 11.6).

- Organize an information conference on best practices on contaminant reduction in indigenous communities in Russia (Action 11.7).
- Develop an example of an ecosystem approach to cumulative effects from a keystone species' perspective based on current work by the CircumArctic Rangifer Monitoring and Assessment Network (CARMA), integrating effects from climate change, infrastructure and human activity over the species annual range (Action 16.8).

## Safeguarding critical areas

### Protected areas

- Follow-up on the *Framework for a Pan-Arctic Network of Marine Protected Areas* (Action 5.2).
- Analyze existing Arctic protected areas data to identify gaps and priorities, including identification of the most climate-change resilient Arctic areas, connectivity gaps, and missing buffer zones, making use of new information and new analytical tools (Action 5.3).
- Analyse the results of ICC's review of global protected areas schemes that promote indigenous management practices, strong co-management schemes and support indigenous food security for consideration by CAFF (Action 5.5).

### Safeguarding other sensitive areas outside of protected areas

- Provide technical information, including mapping areas of high species abundance, unique Arctic diversity and those important for sensitive life stages, at a scale appropriate for use in planning (Action 6.1).
- Develop, where needed, guidelines or other tools, for safeguarding sensitive areas for biodiversity and contribute to international processes developing such guidelines, including potential refugia that will maintain multi-year ice (Action 6.2 and 7.1).
- Provide input and assist with international processes underway to complete the identification of ecologically and biologically important Arctic areas and promote measures for their conservation as appropriate. (Action 5.1).
- Broker commitments by non-Arctic countries to safeguarding important Arctic migratory bird habitats outside the Arctic, as part of the Arctic Migratory Bird Initiative (Action 8.2).

## Improving knowledge and public awareness

- Complete the *Arctic Coastal Biodiversity Monitoring Plan* and begin its implementation (Action 13.2).
- Report on changes in Arctic marine species, ecosystems, and the effects of stressors through a *State of Arctic Marine Biodiversity report* (Action 13.4a, b and c).
- Complete red list for Arctic vascular plants and moss check list (Action 13.6a and b).
- Explore development of a digital elevation model for the Arctic (Action 13.5).
- Prepare a circumpolar seabird monitoring plan (Action 13.8).
- Enhance the use of both existing traditional and local knowledge and community-based monitoring approaches in the biodiversity work of the Arctic Council, including, for example, of the Community Observation Network for Adaptation and Security (Action 12.3 and Action 14.5).
- Update CAFF's strategy and guidelines for community-based monitoring, including tools and exploration of how to better integrate this type of monitoring with existing monitoring and ways to use it in early warning systems to detect changes (Action 15.1).
- Update the *Arctic Biodiversity Trends 2010; selected indicators of change* report (Action 16.3a).
- Implement the suite of CBMP indicators, including Land Cover Change, Protected Areas, Arctic Migratory Bird, and invasive species indicators (Action 16.3b, c, d, and e).
- Complete traditional knowledge component of the ABA by preparing a report on traditional knowledge on biodiversity change in the North American Arctic (Action 14.2).
- Prepare a lessons learned report on the inclusion of traditional knowledge in CAFF's activities (Action 14.3).
- Explore the potential of developing a case study centred on walrus to demonstrate the use of an Inuit food security lens and ecosystem approach (Action 14.4a).
- Explore the development of the Salmon Peoples project (Action 14.4b).
- Using traditional knowledge and a co-production of knowledge approach assess the health of Arctic salmon rivers and outline opportunities for the resilience and adaptation of indigenous peoples and salmon populations (Action 14.4b).
- Work to develop methods and techniques to survey the use of the Arctic marine ecosystem by Indigenous peoples to better assess the impact of shipping (Action 14.6).
- Update the 2011 assessment on *Arctic Ocean Acidification*, including the extent and biological effects and case studies of impacts in specific Arctic areas (Action 16.5).
- Reframe the results of the ABA as a regional biodiversity outlook for the Convention on Biological Diversity and as a contribution to the biodiversity and ecosystem services regional reports for the Americas and Europe and Central Asia being prepared for Intergovernmental Panel on Biodiversity and Ecosystem Services (Action 17.3a).

## 5.4 Phase 3: 2017-2019

The added focus will be safeguarding biodiversity under changing conditions (Recommendation 7); cumulative effects (Recommendation 16); and improving knowledge and public awareness (Recommendation 17), including by contributing to the Convention on Biological Diversity assessment on achievement of the United Nations' Aichi Biodiversity Targets and convening the second Arctic Biodiversity Congress. The actions will be further refined and reviewed for the 2017 Ministerial in consideration of the results of the strategies and plans developed in 2013-2017.

### Relevant for all recommendations

- Convene, and report on the results of, the second Arctic Biodiversity Congress to promote the conservation and sustainable use of Arctic biodiversity focusing on the results of the CBMP state of the Arctic biodiversity reports, progress on implementation of ABA recommendations and attainment of Aichi Targets (Action Ab).

### Addressing stressors on biodiversity

- Develop range-wide adaptive management strategies, in consultation of affected Arctic Indigenous Peoples, for those threatened and harvested species identified in 2017 (Action 8.3).
- Identify management actions that will enhance resilience of species in adapting to rapid change (Action 7.3).
- Assess options and recommend most effective methods to manage connectivity, in light of climate change, including identification of sub-populations, species and regions for which connectivity is most critical (including for increasing genetic resilience) (Action 7.2).
- Incorporate common protocols for early detection and reporting of non-native invasive species in the Arctic into CBMP monitoring plans (Action 9.2).

### Mainstreaming biodiversity

- Develop, as needed, binding and/or voluntary agreements/standards that work towards the harmonization of industry-specific and cross-industry standards related to the conservation and/or sustainable use of biodiversity (Action 4.4).

### Improving knowledge and public awareness

- Report to the Convention on Biological Diversity on progress of the Arctic region towards achievement of the Aichi Biodiversity Targets including new indicators (Action 17.3a).
- Report on changes in Arctic species, ecosystems and the effects of stressors through the *State of Arctic Freshwater Biodiversity Report* and *State of Arctic Terrestrial Biodiversity Report* (Action 13.4b and c).
- Analyse the state of knowledge on cumulative effects and identify priorities (Action 16.1).
- Complete the circumpolar boreal vegetation map (Action 13.7).

### Safeguarding critical areas

- Develop guidelines for including Arctic indigenous and community values into protected areas planning and management, including exploring how best to promote and facilitate "multiple values" protected areas -areas conserved and cooperatively managed based on ecological values and traditional and local knowledge (Action 5.4).

## 5.5. Phase 4: 2019-2021

The focus for the final implementation period will be on completing projects, implementing strategies and plans developed in early phases, evaluating progress, and designing follow-up. Additional actions will be added after consideration of the strategies and plans produced in 2013-19.

- Evaluate progress on implementing the ABA recommendations and produce recommendations for follow-up work (Action Ac).
- Review, evaluate and update the CBMP and its monitoring plans in accordance with the CBMP strategy (Action Ca).
- Report on changes in coastal Arctic species, ecosystems and the effects of stressors through the State of Arctic Coastal Biodiversity Report (Action 13.d).
- Consider impacts of stressors and drivers within the scheduled reviews of the CBMP ecosystem monitoring plans (Action 16.2).
- Develop and implement outreach products to communicate the outcomes of this plan (Action 17.5).
- Convene a third Arctic Biodiversity Congress (Action Ac).



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Photo: Carsten Egevang/ARC-PIC.com

## Annex 1: Acronyms

Arctic Athabaskan Council (AAC)  
Aleut International Association (AIA)  
Adaptation Actions for a Changing Arctic, part C (AACA)  
African-Eurasian Migratory Waterbird Agreement (AEWA)  
Association of Polar Early Career Scientists (APECS)  
Association of World Reindeer Herders (AWRH)  
Arctic Biodiversity Assessment (ABA)  
Arctic Biodiversity Data Service (ABDS)  
Arctic Contaminants Action Program (ACAP)  
Arctic Marine Shipping Assessment (AMSA)  
Arctic Marine Strategic Plan (AMSP)  
Arctic Monitoring and Assessment Programme (AMAP)  
Circumpolar Biodiversity Monitoring Program (CBMP)  
Arctic Spatial Data Infrastructure (SDI)  
CircumArctic Rangifer Monitoring and Assessment Network (CARMA)  
Circumpolar seabird expert group (CBird)  
Circumpolar Flora expert Group (CFG)  
Convention on Migratory Species (CMS)  
Community Observation Network for Adaptation and Security (CONAS)  
Conservation of Arctic Flora and Fauna (CAFF)  
Convention on Biological Diversity (CBD)  
Digital Elevation Model (DEM)  
East Asian-Australasian Flyway Partnership (EAAFP)  
Emergency Prevention, Preparedness and Response (EPPR)  
Gwich'in Council International (GCI)  
International Arctic Science Committee (IASC)  
Intergovernmental Platform on Biodiversity and Ecosystem Services' (IPBES)  
Inuit Circumpolar Council (ICC)  
Marine Protected Areas (MPAs)  
Permanent Participants to the Arctic Council (PP)  
Protection of the Arctic Marine Environment (PAME)  
Russian Association of Indigenous Peoples of the North (RAIPON)  
Saami Council (SC)  
Sustainable Development Working Group (SDWG)  
Task Force on Black Carbon and Methane (TFBCM)  
TEEB (The Economics of Ecosystems and Biodiversity)  
United Nations Framework Convention on Climate Change (UNFCCC)  
United Nations Environment Programme (UNEP)  
World Wide Fund for Nature (WWF)

## Annex 2: Tracking progress: Actions for Arctic Biodiversity, 2013-2021: Implementing the recommendations of the Arctic Biodiversity Assessment

This table is a living document that will be used to track progress of the Arctic Council in implementing *Actions for Arctic Biodiversity 2013-2021: Implementing the recommendations of the Arctic Biodiversity Assessment*. It includes the actions outlined in the body of this document but presents them by recommendation and includes more detail, such as the lead organization or agency, the timeline for implementation, and progress to date. The actions are presented only once under the recommendation that is the most relevant. Nevertheless, as many actions pertain to more than one recommendation, the table also indicates which other recommendations are addressed by the action. The numbering of the actions in this table is used in the body of the document for cross-referencing purposes. An “x” in this table represents the time period where an action has a major deliverable. If the action has a deliverable but continues, and “x” appears in both the relevant time period and in the “ongoing” columns. The status column indicates when a deliverable has been completed. This table is also available at [www.caff.is/publications](http://www.caff.is/publications).

These actions are for the Arctic Council. It is important to note, however, that much additional relevant work is being carried out by individual States, Permanent Participants, Observers, and organizations that are external to Arctic Council.

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status	
					2013-2015	2015-2017	2017-2019	2019-2021		
<b>Relevant for all recommendations</b>										
<b>A. Implementation plan for ABA recommendations (Actions for Arctic Biodiversity)</b>										
a. Prepare, track, and update biennially the plan	CAFF	CAFF Chair	All WGs All TFs	all	x				x	started
b. Review and update actions in plan by all Working Groups and Task Forces related to ABA recommendations.	CAFF	CAFF	All WGs All TFs	all		x			x	
c. Evaluate progress on implementing the ABA recommendations and produce recommendations for follow-up work.	CAFF	CAFF Chair	All WGs All TFs	all			x			
d. Encourage states to develop national implementation plans consistent with this implementation plan for the ABA recommendations as an essential adaptation measure.	Arctic Council	States		all		x				
<b>B. Convene Arctic Biodiversity Congress.</b>										
a. Convene, and report the results of the first Arctic Biodiversity Congress, create dialogue on ABA key findings and recommendations, solicit review and input on draft ABA action plan, establish partnerships and advance implementation actions.	CAFF	Norway CAFF Chair	All WGs All TFs	all	x					done

<sup>1</sup> “Arctic Council Body” refers to the entity within the Arctic Council structure which is responsible overall for the action. WG=Working Group, TF=Task Force

<sup>2</sup> “Leads” refers to the organization(s)/State(s)/PP(s) that is the lead for the project. This may change from time to time.

<sup>3</sup> “Others” includes other bodies that are instrumental in the success of the action. This column is not comprehensive and will be completed as project details are finalized.

<sup>4</sup> “Rec.” refers to the other recommendations from the ABA that are addressed, in part, by the action.

Actions		Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status
						2013-2015	2015-2017	2017-2019	2019-2021	
b. Convene, and report the results of, a second Arctic Biodiversity Congress to promote the conservation and sustainable use of Arctic biodiversity focusing on the results of the CBMP state of the Arctic biodiversity reports, progress on implementation of ABA recommendations, and attainment of Aichi Targets.		CAFF	CAFF Chair	All WGs All TFs	all		x			
c. Convene a third congress.		CAFF	CAFF Chair	All WGs All TFs	all				x	
<b>C. Continue to improve and make available information and data.</b>										
a. Review, evaluate, and update the CBMP and its monitoring plans, including the parameters and attributes, sampling methods, data management, and reporting in accordance with the CBMP Strategy. External review every 10 years, starting in 2020.		CAFF	CBMP		all		x		x	x
b. Continue implementation the CBMP and its ecosystem-based biodiversity monitoring plans.		CAFF	CBMP	AMAP PAME SDWG	all					started
c. Establish, develop and maintain the ABDS as the supporting framework to facilitate long-term data sharing and as a source of data for modelling and ecosystem-based management.		CAFF	CAFF Chair		all		x			started
d. Develop and apply standards of the Arctic Spatial Data Infrastructure (SDI) and further develop use of remote sensing.		CAFF	Arctic SDI <sup>6</sup>		all					started
<b>Rec. 1 Actively support international efforts addressing climate change; both reducing stressors and implementing adaptation measures, as an urgent matter</b>										
1.1. Addressing short-lived climate forcers										
a. Negotiate an Arctic Council Framework for Enhanced Action on Black Carbon and Methane.		TFBCM <sup>7</sup>	Canada Sweden	AMAP	all		x			done
b. Implement existing Arctic Council recommendations on short-lived climate forcers.		Arctic Council			all					x
c. Hold a workshop on the reduction of black carbon emissions from residential wood combustion in the Arctic that identifies voluntary actions to reduce emissions.		ACAP	Finland Norway		all		x			done
d. Diesel black carbon reduction in the Russian Arctic.		ACAP	Russia US	TFBCM	all					started
e. Prepare scientific assessments on black carbon and tropospheric ozone and on methane.		AMAP		TFBCM	13		x			done

<sup>6</sup> Arctic SDI is cooperation between the eight National Mapping Agencies of Canada, Finland, Iceland, Norway, Russia, Sweden, USA and Denmark (including the administrations of the Faroe Islands Home Rule and the Greenland Self-Government).

<sup>7</sup> Task Force on Black Carbon and Methane

Actions		Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status	
						2013-2015	2015-2017	2017-2019	2019-2021		Ongoing
f. Follow-up projects on reducing black carbon, including: the transport and diesel generator sectors; the Arctic Case Studies Platform; and convening a conference on best practices on contaminant reduction in Indigenous communities.		EPPR			all	x				x	
1.2. Mainstream biodiversity into the climate change agenda, including adaptation and mitigation, through outreach.		CAFF		UNFCCC AMAP PAME	2,4,17					x	
<b>Rec. 2 Incorporate resilience and adaptation of biodiversity to climate change into plans for development in the Arctic.</b>											
2.1. Prepare a reference guide for resource managers on sea-ice-associated biodiversity in times of rapid change ( <i>Life linked to ice</i> ).		CAFF	Canada US Russia		4,7,13	x					done
2.2. <i>Arctic Resilience Report</i> .			US Sweden	CAFF AMAP SDWG PAME	7					x	started
2.3. Prepare three regional assessments with information to assist local decision-makers and stakeholders to develop adaptation tools and strategies to deal with climate change and other environmental stressors and produce an overall integrated report on adaptation actions ( <i>Adaptation Actions for a Changing Arctic (AACA) Part C</i> ).		AMAP		CAFF PAME SDWG	1,3,4,5, 7,16		x				started
2.4. Ensure accessibility of science results relevant to maintaining and increasing resilience of biodiversity to climate change through the ABDS and outreach.		CAFF	CAFF Chair		1,4,17					x	started
2.5. Follow-up on the recommendations of the <i>Life linked to ice</i> and related research.		CAFF	US Norway		16		x				
<b>Rec. 3 Advance and advocate ecosystem-based management efforts in the Arctic as a framework for cooperation, planning and development.</b>											
3.1. Provide information (including traditional knowledge) to Arctic Council initiatives that include, or are developing, an ecosystem approach including the principles for incorporation of biodiversity (Action 4.3).		CAFF			4					x	started
3.2. Ongoing activities based on the revised Terms of Reference of the Joint Ecosystem Approach Expert Group (marine), including preparation of reports on <i>Status of Setting Ecological Objectives, Work on Integrated Ecosystem Assessments of Arctic LMEs, Status of Implementation of the Ecosystem Approach to Management in the Arctic</i> , a scoping document on the use of information on identified areas of heightened ecological and cultural significance for assessment and management purposes within LMEs.		PAME	Norway US	CAFF AMAP	4,5,6,7		x				

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status	
					2013-2015	2015-2017	2017-2019	2019-2021		Ongoing
3.3. Follow-up to the Ecosystem-Based Management Expert Group work on advancing ecosystem based management in the work of the Arctic Council.	All WGs All TFs			all					x	started
3.4. Prepare an implementation plan for the <i>Arctic Marine Strategic Plan 2015-2025</i> .	PAME		All WGs All TFs	4,5,7,9, 10,14		x				
3.5. Continue to promote collaboration among Arctic states as they implement the Polar Code (AMSA IIB).	PAME	All States	CAFF IMO						x	
<b>Rec. 4 Require the incorporation of biodiversity objectives and provisions into all Arctic Council work and encourage the same for ongoing and future international standards, agreements, plans, operations and/or other tools specific to development in the Arctic. This should include, but not be restricted to, oil and gas development, shipping, fishing, tourism and mining.</b>										
4.1. Strengthen and develop new strategic partnerships, particularly with industry, to seek innovative solutions and expand responsibility for taking care of biodiversity.	CAFF		Industry Other stakeholders	all					x	started
4.2. Analyze the relationship between CAFF activities and international biodiversity objectives from relevant multilateral environmental agreements as a starting point for improved cooperation.	CAFF	CAFF Chair			x					done
4.3. Develop a set of biodiversity principles for the Arctic Council, Observers, and stakeholders on incorporating biodiversity objectives and safeguards into their work, apply these principles to the activities of Arctic Council Working Groups and other Subsidiary Bodies, and evaluate the extent to which these activities respond to the ABA recommendations.	CAFF	CAFF	All WGs All TFs Industry NGOs	2,3		x				
4.4. Develop, as needed, binding and/or voluntary agreements/standards that work towards the harmonization of industry-specific and cross-industry standards related to the conservation and/or sustainable use of biodiversity. This should consider how to encourage the incorporation of biodiversity as a fundamental component of environmental and risk assessment work.	Arctic Council	CAFF	States PPs Industry	all			x			
4.5. Provide information, expertise, and recommendations on conservation of Arctic ecosystems to policymakers.	CAFF								x	
4.6. Develop best practices for vessel-based Arctic marine tourism ( <i>Arctic Marine Tourism Project- Best Practice Guidelines</i> ) (AMSA Recommendation IIIB).	PAME	Canada US		7		x				done
4.7. Make monitoring and research results on species, including those relevant to maintaining and increasing resilience of biodiversity to climate change, accessible to all stakeholders, through the ABDS.	CAFF	CBMP		2					x	started
4.8. Strengthen collaboration with industry in Arctic biodiversity monitoring.	CAFF	CBMP	Industry	10,13			x			

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status	
					2013-2015	2015-2017	2017-2019	2019-2021		Ongoing
<b>Rec. 5 Advance the protection of large areas of ecologically important marine, terrestrial and freshwater habitats, taking into account ecological resilience in a changing climate.</b>										
<i>a) Build upon existing and ongoing domestic and international processes to complete the identification of ecologically and biologically important marine areas and implement appropriate measures for their conservation; and</i>										
<i>b) Build upon existing networks of terrestrial protected areas, filling geographic gaps, including under-represented areas, rare or unique habitats, particularly productive areas such as large river deltas, biodiversity hotspots, and areas with large aggregations of animals such as bird breeding colonies, seal whelping areas and caribou calving grounds.</i>										
5.1. Provide input and assist with international processes underway to complete the identification of ecologically and biologically important Arctic areas and promote measures for their conservation as appropriate.	CAFF	Finland	PAME CBD	6,7	x				x	started
5.2. Develop and follow-up on a framework for a Pan-Arctic Network of Marine Protected Areas (MPAs) that sets out a common vision for regional cooperation in MPA network development and management.	PAME CAFF	US	WWF	2,3,6,8, 10	x				x	started
5.3. Analyse existing Arctic protected areas data to identify gaps and priorities, including identification of the most climate-change resilient Arctic areas, connectivity gaps, and missing buffer zones, making use of new information and new analytical tools.	CAFF	US (marine)	WWF PAME	6,7		x				
<b>c) Promote the active involvement of indigenous peoples in the management and sustainable use of protected areas</b>										
5.4. Develop guidelines for including Arctic indigenous and community values into protected areas planning and management, including exploring how best to promote and facilitate “multiple values” protected areas -- areas conserved and cooperatively managed based on ecological values and traditional and local knowledge.	CAFF		SDWG				x			
5.5. Analyse the results of ICC's review of global protected areas schemes that promote indigenous management practices, strong co-management schemes and support indigenous food security for consideration by CAFF.	CAFF							x		
<b>Rec. 6 Develop guidelines and implement appropriate spatial and temporal measures where necessary to reduce human disturbance to areas critical for sensitive life stages of Arctic species that are outside protected areas, for example along transportation corridors. Such areas include calving grounds, den sites, feeding grounds, migration routes and moulting areas. This also means safeguarding important habitats such as wetlands and polynyas.</b>										
6.1. Provide technical information, including mapping areas of high species abundance, unique Arctic diversity and those important for sensitive life stages, at a scale appropriate for use in planning.	CAFF	US	WWF	2,4,5,7				x		
6.2. Develop, where needed, guidelines or other tools, for safeguarding sensitive areas for biodiversity (outside protected areas) that are vulnerable to human activity and/or contribute to international processes developing such guidelines, including potential refugia that will maintain multi-year ice.	CAFF		WWF	4,5,7					x	

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status
					2013-2015	2015-2017	2017-2019	2019-2021	
<b>Rec. 7 Develop and implement mechanisms that best safeguard Arctic biodiversity under changing environmental conditions, such as loss of sea ice, glaciers and permafrost.</b>									
<b>a) Safeguard areas in the northern parts of the Arctic where high Arctic species have a relatively greater chance to survive for climatic or geographical reasons, such as certain islands and mountainous areas, which can act as a refuge for unique biodiversity.</b>									
7.1. Develop options for safeguarding potential marine and terrestrial refuge areas, including areas that will maintain multi-year ice (related to AMSA IID).	CAFF		SDWG PAME WWF	5,6	x				
<b>b) Maintain functional connectivity within and between protected areas in order to protect ecosystem resilience and facilitate adaptation to climate change.</b>									
7.2. Assess options and recommend most effective methods to manage connectivity, in light of climate change, including identification of sub-populations, species and regions for which connectivity is most critical (including for increasing genetic resilience).	CAFF			2,5,6		x			
7.3. Identify management actions that will enhance resilience of species in adapting to rapid change.	CAFF		WWF	2		x			
<b>Rec. 8 Reduce stressors on migratory species range-wide, including habitat degradation and overharvesting on wintering and staging areas and along flyways and other migration routes.</b>									
<b>a) Pursue or strengthen formal migratory bird cooperation agreements and other specific actions on a flyway level between Arctic and non-Arctic states with first priority given to the East Asian flyway.</b>									
<b>b) Collaborate with relevant international commissions, conventions, networks and other organizations sharing an interest in the conservation of Arctic migratory species to identify and implement appropriate conservation actions.</b>									
<b>d) Identify and advance the conservation of key wintering and staging habitats for migratory birds, particularly wetlands.</b>									
8.1. Establish an Arctic Migratory Bird Initiative (AMBI) to cooperate on the conservation of migratory Arctic birds and prepare collaborative flyway based work plans.	CAFF	Canada Russia Norway	AEWA CMS EAAFP BirdLife Non-Arctic countries		x				started
8.2. Broker commitments by non-Arctic countries to safeguarding important Arctic migratory bird habitats outside the Arctic, as part of the AMBI.	CAFF	AMBI	Non-Arctic countries	5		x			x
<b>c) Develop and implement joint management and recovery plans for threatened species with relevant non-Arctic states and entities</b>									
8.3. Identify species that could benefit from, but are not covered by, range-wide adaptive management strategies and follow-up as appropriate.	CAFF			5,8,10		x			x



Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status	
					2013-2015	2015-2017	2017-2019	2019-2021		Ongoing
8.4. Inventory on-going seabird projects and develop a common reporting template for all seabird conservation strategies.	CAFF	CBird		10,13,16	x					
8.5. Continue implementation of existing species conservation strategies and develop others as appropriate (Black-legged Kittiwakes, caribou).	CAFF	CBird CARMA						x	started	
8.6. Investigate the impact of shipping and off-shore development on seabirds.	CAFF	CBird	PAME		x					
<b>Rec. 9 Reduce the threat of invasive alien/non-native species to the Arctic by developing and implementing common measures for early detection and reporting, identifying and blocking pathways of introduction, and sharing best practices and techniques for monitoring, eradication and control. This includes supporting international efforts currently underway, for example those of the International Maritime Organization to effectively treat ballast water to clean and treat ship hulls and drilling rigs.</b>										
9.1. Develop a strategy for the prevention and management of invasive species across the Arctic, including the identification and mitigation of pathways of introduction invasions. Include involvement of indigenous observing networks, which include invasive and new species reporting, to assist with early detection.	CAFF	US Norway	PAME	3,13,16						
9.2. Incorporate common protocols for early detection and reporting of non-native invasive species in the Arctic into CBMP monitoring plans.	CAFF	CBMP				x	x			
<b>Rec. 10 Promote the sustainable management of the Arctic's living resources and their habitat.</b>										
<b>a) Improve circumpolar cooperation in data gathering and assessment of populations and harvest and in the development of improved harvest methods, planning, and management. This includes improving the use and integration of traditional ecological knowledge and science in managing harvests and in improving the development and use of community-based monitoring as an important information source.</b>										
10.1. Improve data and assessments on populations, harvest and harvest management, including both traditional knowledge and science, as foundation for harvest management (e.g., Arctic Geese).	CAFF	Kingdom of Denmark (geese)		8,13	x	x			x	started
10.2. Further develop community-based monitoring as a tool to aid in tracking populations, harvest and harvest management.	CAFF			15			x			
<b>b) Develop pan-Arctic conservation and management plans for shared species that are, or will potentially be, harvested or commercially exploited that incorporate common monitoring objectives, population assessments, harvesting regimes, guidelines for best practices in harvest methodology and consider maintenance of genetic viability and adaptation to climate change as guiding principles.</b>										
10.3. Develop range-wide adaptive management strategies for those harvested species identified under Action 8.3.	CAFF			8				x		
<b>c) Support efforts to plan and manage commercial fisheries in international waters under common international objectives that ensure long-term sustainability of species and ecosystems. Encourage precautionary, science-based management of fisheries in areas beyond national jurisdiction in accordance with international law to ensure the long-term sustainability of species and ecosystems.</b>										

Actions		Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status
						2013-2015	2015-2017	2017-2019	2019-2021	
10.4. Provide biodiversity and ecosystem information to the proposed US Chairmanship priority of developing a Regional Seas Program for the Arctic Ocean.		CAFF			3,4	x				
No agreement currently exists to manage commercial fish species in the international waters of the Arctic. There is an agreement among Arctic Ocean coastal states for a ban on commercial fisheries in international Arctic waters until adequate data exist and it is determined if international fisheries agreements are needed. Policy options are currently being addressed by Arctic Ocean Coastal States and will need to be addressed by a broader group of States. As commercial fisheries are not within the mandate of the Arctic Council, this plan does not contain activities directly addressing commercial fisheries.										
<b>d) Support efforts to develop, improve and employ fishing technologies and practices that reduce by-catch of marine mammals, seabirds and non-target fish and avoid significant adverse impact to the seabed.</b>										
10.5. Update CAFF reports on incidental take of seabirds in commercial fisheries in the Arctic.		CAFF	CBird		8	x				
<b>e) Develop and implement, in cooperation with reindeer herders, management plans that ensure the sustainability of reindeer herding and the quality of habitat for grazing and calving.</b>										
10.6. Maintain and further develop sustainable and resilient reindeer husbandry (EALLU Arctic Indigenous Youth Climate Change and Food Culture).		SDWG		AWRH	14,15	x				
<b>Rec. 11 Reduce the threat of pollutants to Arctic biodiversity.</b>										
<b>a) Support and enhance international efforts and cooperation to identify, assess and reduce existing and emerging harmful contaminants.</b>										
11.1. Provide information necessary for assessment of trends in, among others, contaminant levels in ecosystems, biological effects, and improve predictive capacity (Trends and Effects Monitoring Programme).		AMAP	All States			x				x
11.2. Prepare an update assessment of Persistent Organic Pollutants and resulting biological effects.		AMAP	Canada Sweden		13	x				
11.3. Develop ecosystem models that project ecosystem response to climate change and contaminant-related factors (AACAC).		AMAP	All WGs		1,2				x	
<b>b) Support the development of appropriate prevention and clean up measures and technologies that are responsive to oil spills in the Arctic, especially in ice-filled waters, such that they are ready for implementation in advance of major oil and gas developments.</b>										
11.4. Implement the Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic, including executing international exercises and maintaining and updating the Operational Guidelines.		EPPR	Canada US	CAFF		x				started
11.5. Prepare a Guide to Oil Spill Response in Snow and Ice Conditions in the Arctic.		EPPR	Canada Norway	CAFF		x				done
<b>c) Encourage local and national action to implement best practices for local wastes, enhance efforts to clean up legacy contaminated sites and include contaminant reduction and reclamation plans in development projects.</b>										
11.6. Demonstrate rapid assessment and clean-up of old sites, and environmentally sound destruction of obsolete pesticides in northern Russia.		ACAP	Finland Russia			x				started

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status	
					2013-2015	2015-2017	2017-2019	2019-2021		Ongoing
11.7. Organize an information conference on best practices on contaminant reduction in indigenous communities.	ACAP	Russia RAIPON		14		x			x	started
<b>Rec. 12 Evaluate the range of services provided by Arctic biodiversity in order to determine the costs associated with biodiversity loss and the value of effective conservation in order to assess change and support improved decision making.</b>										
12.1. Prepare a scoping report on the potential for applying the TEEB (The Economics of Ecosystems and Biodiversity) approach to evaluate the benefits people receive from Arctic biodiversity.	CAFF	Sweden	WWF UNEP		x					done
12.2. Evaluate ecosystem services.										
a. Complete the TEEB scoping study.	CAFF		WWF		x					started
b. Follow-up as appropriate on valuation of ecosystem services.	CAFF		IPBES CBD WWF			x			x	
12.3. Enhance the use of both existing traditional and local knowledge and community-based monitoring approaches in the work of the Arctic Council.	Arctic Council								x	started
<b>Rec. 13 Increase and focus inventory, long-term monitoring and research efforts to address key gaps in scientific knowledge identified in this assessment to better facilitate the development and implementation of conservation and management strategies. Areas of particular concern identified through the ABA include components critical to ecosystem functions including important characteristics of invertebrates, microbes, parasites and pathogens.</b>										
13.1. Share research gaps and priorities identified in the ABA with the International Arctic Science Committee (IASC) third International Conference on Arctic Research Planning to inform their research priorities.	CAFF		IASC			x				done
13.2. Complete the Arctic coastal biodiversity monitoring plan and begin implementation.	CAFF	CBMP			x				x	started
13.3. Address monitoring and research gaps in scientific knowledge identified as priorities in the ABA and Arctic Biodiversity Congress, including components critical to ecosystem functions including invertebrates, microbes, parasites and pathogens.	CAFF	CBMP							x	
13.4. Report on changes in Arctic species, ecosystems, and the effects of stressors through state of Arctic biodiversity reports.										
a. Marine species and ecosystems	CAFF	CBMP (Norway Russia)				x				started

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status
					2013-2015	2015-2017	2017-2019	2019-2021	
b. Terrestrial species and ecosystems	CAFF	CBMP (Sweden)				x			started
c. Freshwater species and ecosystems	CAFF	CBMP (Sweden Canada)				x			started
d. Coastal species and ecosystems	CAFF	CBMP (US Canada)				x			started
13.5. Explore development of a Digital Elevation Model (DEM) for the Arctic.	CAFF	US Arctic SDI				x			
13.6. Develop and update taxonomic lists where there is a gap.									
a. Red List for Arctic Vascular Plants	CAFF	CFG				x			started
b. Moss check list	CAFF	CFG				x			started
13.7. Complete the circumpolar boreal vegetation map.	CAFF	US					x		started
13.8. Prepare a circumpolar seabird monitoring plan.	CAFF	US Canada					x		started
<b>Rec. 14 Recognize the value of traditional ecological knowledge and work to further integrate it into the assessment, planning and management of Arctic biodiversity. This includes involving Arctic peoples and their knowledge in the survey, monitoring and analysis of Arctic biodiversity.</b>									
14.1. Develop recommendations for the integration of traditional and local knowledge into the work of the Arctic Council.	SDWG	Canada US	All WGs All ITFs			x			started
14.2. Complete traditional knowledge component of the ABA by preparing a report on traditional knowledge on biodiversity change in the North American Arctic.	CAFF	Canada	AIA GCI AAC			x			started
14.3. Prepare a report on lessons learned on the inclusion of traditional knowledge in CAFF's activities.	CAFF	CAFF Chair				x			
14.4. Improve understanding of biodiversity change									
a. Explore the potential of developing a case study centred on walrus to demonstrate the use of an Inuit food security lens and ecosystem approach. The project would focus on walrus and bring together representatives of AMAP, SDWG, CAFF and Traditional Knowledge holders to look at indicators that cross over social and natural systems, paints a holistic picture and brings together discussion on biotic and abiotic systems.	CAFF	US	SDWG AMAP ICC	3, 10, 13, 16		x			

Actions		Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status
						2013-2015	2015-2017	2017-2019	2019-2021	
b. Explore the development of the Salmon Peoples project.		CAFF	AAC	AIA SC RAIPON GCI	3, 10, 13, 16	x				
14.5. Develop the community observation network for adaptation and security (CONAS) to increase the contribution of community-based monitoring and knowledge from Arctic peoples to existing knowledge.		CAFF	AIA		13, 15	x				started
14.6. Work to develop methods and techniques to survey the use of the Arctic marine ecosystem by Indigenous peoples to better assess the impact of shipping ( <i>Survey of Arctic Indigenous Marine Use AMSA IIA</i> ).		PAME		AIA SC		x				started
14.7. Seek ways to enhance the integration of traditional and local knowledge, including follow-up to the recommendations from the <i>Iqaluit Declaration</i> (Action 14.1), and encourage co-production of knowledge methodologies.		CAFF		All WGs		x				
<b>Rec. 15 Promote public training, education and community-based monitoring, where appropriate, as integral elements in conservation and management.</b>										
15.1. Update CAFF's strategy and guidelines for community-based monitoring, including tools and exploration of how to better integrate this type of monitoring with existing monitoring and ways to use it in early warning systems to detect changes.		CAFF	US		2, 10, 13, 14	x				
15.2. Increase engagement of youth and early career scientists in the activities of CAFF to train the next generation of conservation leaders.		CAFF	US	APECS					x	started
<b>Rec. 16 Research and monitor individual and cumulative effects of stressors and drivers of relevance to biodiversity, with a focus on stressors that are expected to have rapid and significant impacts and issues where knowledge is lacking. This should include, but not be limited to; modelling potential future species range changes as a result of these stressors; developing knowledge of and identifying tipping points, thresholds and cumulative effects for Arctic biodiversity; and developing robust quantitative indicators for stressors through the CBMP.</b>										
16.1. Analyse the state of knowledge and data on cumulative effects and identify priorities, adding the biotic parameters to abiotic work.		CAFF		AMAP			x			
16.2. Consider impacts of stressors and drivers within the scheduled reviews of the CBMP ecosystem monitoring plans.		CAFF	CBMP				x			
16.3. Continue to develop and report on key robust indicators of Arctic biodiversity, in particular ones that can be used to track and understand cumulative effects.										
a. Update the <i>Arctic Biodiversity Trends 2010</i> ; selected indicators of change report.		CAFF			2, 7, 13	x				x
b. Land cover Change Index		CAFF	CBMP		13	x				started

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status
					2013-2015	2015-2017	2017-2019	2019-2021	
c. Protected areas using data from CAFF and PAME	CAFF PAME			5	x				
d. Arctic Migratory Bird Index	CAFF	CBMP		8, 13	x				started
e. Invasive species	CAFF			9, 13	x				
16.4 Improve predictive capacity through increased observations, research, scenarios and models as tools for understanding of processes governing changes in the Arctic and influencing future decisions.	CAFF AMAP		WWF	all				x	
16.5. Update the 2011 assessment on Arctic Ocean Acidification, including the extent and biological effects and case studies of impacts in specific Arctic areas ( <i>Assessment of Arctic Ocean Acidification</i> ).	AMAP	Norway US		2, 13	x				
16.6. Assess the combined effects of contaminants and climate change.	AMAP			1, 2, 11	x				started
16.7. Assess the effects on marine mammals of ship noise, disturbance and strikes in Arctic marine waters and, where needed, develop and mitigation strategies (AMSA IIG).			CBD WWF	3, 4, 6		x			
16.8. Based on current work by the CircumArctic Rangifer Monitoring and Assessment (CARMA) Network, develop an example of an ecosystem approach to cumulative effects from a keystone species' perspective, integrating, over the species annual range, effects from climate change, infrastructure and human activity. The emphasis is on: 1) the assessment framework, 2) standardized monitoring protocols, 3) model-based assessment tools, and 4) application to ecosystem-based management and sensitive habitat protection and management.	CAFF	CARMA		2, 3, 4, 9, 17					started
<b>Rec. 17 Develop communication and outreach tools and methodologies to better convey the importance and value of Arctic biodiversity and the changes it is undergoing.</b>									
17.1. Implement CAFF's communications strategy and update as needed.	CAFF	CAFF Secretariat	Arctic Council Secretariat	all				x	
17.2. Develop tools to raise awareness of Arctic biodiversity, and the multiple challenges it faces, for example "Through the Lens" photography competition, and create publications, articles, films, social media, media campaigns and educational kits.	CAFF	CAFF Secretariat		all				x	started
17.3. Provide status and trend information to international fora and national agencies to promote the importance of Arctic biodiversity and to facilitate reporting through multilateral environmental agreements and other international processes.	CAFF	CAFF Secretariat		all				x	

Actions	Arctic Council Body <sup>1</sup>	Leads <sup>2</sup>	Others <sup>3</sup>	Rec. # <sup>4</sup>	Timeline				Status
					2013-2015	2015-2017	2017-2019	2019-2021	
a. Reframe the results of the ABA as a regional biodiversity outlook for the Convention on Biological Diversity (CBD) and as a contribution to the biodiversity and ecosystem services regional reports for the Americas and Europe and Central Asia being prepared for Intergovernmental Panel on Biodiversity and Ecosystem Services.	CAFF		CBD IPBES			x			
b. Report to the CBD on progress of the Arctic region towards achievement of the Aichi Biodiversity Targets.	CAFF	CAFF	CBD	all			x		
17.4. Develop educational materials based on the ABA (in several languages).									
a. Pilot: educational toolkit on Arctic ecology for children ages 9-11.	CAFF	CAFF Secretariat						x	started
17.5 Develop and implement outreach products to communicate the outcomes of this plan.	CAFF		WWF						





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