

Arctic Wetlands and Indigenous Peoples Study:

*An assessment of Indigenous engagement
in wetland protected areas*



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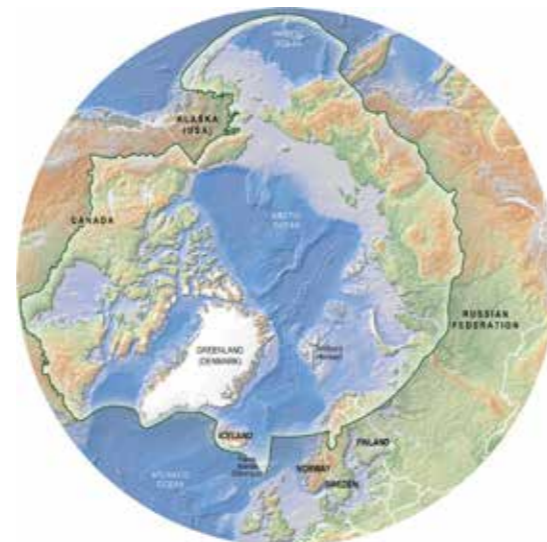
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— CAFF Designated Area

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1 Executive Summary

1.1 Project description

The *Arctic Wetlands and Indigenous Peoples Study* (AWIPS) is part the *Resilience and Management of Arctic Wetlands Initiative* (RMAWI), a project led by the Swedish Ministry of the Environment and Energy and the Stockholm Environment Institute through the Arctic Council's *Conservation of Arctic Flora and Fauna* (CAFF) working group on biodiversity. AWIPS aims to capture the fundamental role Indigenous Peoples play in biodiversity conservation through engagement in Arctic wetland protected areas management.

The intersection between Indigenous Peoples and wetlands is not well documented in the Arctic, nor are the relationships between Indigenous communities and protected area management authorities. AWIPS is the first assessment of Indigenous participation in protected area management across the Arctic. Drawing primarily from documentation of 35 protected areas in the eight Arctic States, this report provides a:

- ▶ synthesis of the information documented on Indigenous wetland resource use and conservation;
- ▶ practical framework for understanding the benefits of Indigenous participation in wetlands conservation; and a
- ▶ snapshot of current practices of engaging Indigenous Peoples in wetlands management in the Arctic States.

This study identifies challenges and suggestions for developing and facilitating participatory processes that are inclusive of Indigenous perspectives, resource needs, and knowledge within broader conservation efforts.



Rovaniemi, Finland
Photo: Victoria Buschman

1.2 Findings

1.2.1 Arctic Indigenous Peoples and Wetland Protected Areas

Formal Indigenous representation in management processes occurs in over one-fourth of the surveyed sites.

Globally, 28% of all land on earth is held or managed by Indigenous Peoples, of which 40% is formally held in protected areas (IPBES 2019). Among the surveyed protected areas in this study, Indigenous Peoples hold at least partial ownership over 25.7% of sites and have some formal management authority and responsibility among 34.2%. Many of the surveyed wetlands have complex institutional arrangements, including (1) between 0-10 nationally or internationally recognized conservation designations which may have separate planning and reporting processes, and (2) between 0-6 separate agencies and management authorities responsible for the development and implementation of management and conservation strategies. Despite this complexity, formal Indigenous representation in management processes occurs in approximately one-third of surveyed sites.

1.2.2 Arctic Indigenous Wetlands Use
Indigenous Peoples have significant ties to wetland protected areas in the Arctic and acknowledging and fostering these relationships in partnership with management authorities can strengthen outcomes.

Arctic Indigenous Peoples use wetland resources in protected areas for subsistence farming, haying, herding, and gathering, fishing, and hunting. Documentation from these 35 sites suggests that at least 82.9% of surveyed protected areas support Indigenous subsistence activities. Among all surveyed sites, Indigenous Peoples are using at least 45.7% for herding, 42.9% for gathering, 65.7% for fishing, and 74.2% for hunting.

1.2.3 Arctic Indigenous Peoples and Wetlands Management

Most management and conservation plans, as well as other official information on wetland protected areas, fail to document Indigenous resource use in a systematic or functional way and as a result, do not provide a complete picture of resource use and management within the areas.

While it is unclear which species are being subsisted, the level of reliance, and the exact terms of access, it is clear that Indigenous Peoples use and consume a wide array of species that include marine, freshwater, and anadromous fishes, migratory birds, and terrestrial

BOX 1

Indigenous Knowledge in the Arctic

Indigenous knowledge is a term that refers to knowledge held by Indigenous peoples. It is related to terms such as Traditional Knowledge, Traditional and Ecological Knowledge, and Local Knowledge, but some Indigenous groups prefer the term Indigenous knowledge to specify the unique, evolving, and holistic nature of knowledge held by Indigenous communities.

The Inuit Circumpolar Council Alaska offers the following definition:

“Indigenous Knowledge is a systematic way of thinking applied to phenomena across biological, physical, cultural and spiritual systems. It includes insights based on evidence acquired through direct and long-term experiences and extensive and multigenerational observations, lessons and skills. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation.”

“Under this definition, IK goes beyond observations and ecological knowledge, offering a unique ‘way of knowing.’ This knowledge can identify research needs and be applied to them, which will ultimately inform decision-makers. There is a need to utilize both, Indigenous and scientific Knowledge. Both ways of knowing will benefit the people, land, water, air and animals within the Arctic.” (ICC 2015).

and marine mammals. Subsistence activities on these taxa constitute the backbone of Indigenous food security in remote Arctic communities. Documentation on the consumptive and non-consumptive use of flora is even more limited. Importantly, 17% of sites claim that Indigenous activities are causing negative environmental impacts in the protected area, exposing a source of conflict between Indigenous communities and management authorities.

The lack of information on Indigenous wetland resource use is an important knowledge gap that may inhibit management authorities’ abilities to support Indigenous communities and biodiversity. Lack of information on Indigenous relationships to wetlands reduces management authorities’ ability to manage biodiversity in culturally-relevant ways.

1.2.4 Arctic Indigenous Participation in Wetlands Conservation

Engaging Indigenous leadership and communities in participatory processes can strengthen conservation strategies and contribute to forwarding conservation objectives and goals.

Participation allows conservation efforts to better capture and navigate information related to Indigenous knowledge, Indigenous resource use, and Indigenous priorities, needs, and objectives while developing and implementing conservation plans. The depth of engagement with Indigenous leadership and communities in conservation efforts varies greatly.

Participation can be described along a spectrum moving from token consultation to co-management and co-production, with more intensive methods of participation related to more developed management and conservation plans and more diverse conservation objectives. However, the method of participation is often determined by the non-Indigenous management authority or national laws rather than by Indigenous communities themselves. Despite institutional barriers to the development of participatory methods, Indigenous Peoples have been the driving force in the establishment and development of four surveyed wetland protected areas, highlighting that Indigenous communities may pursue conservation objectives when there are opportunities to align conservation and subsistence goals.

1.2.5 Suggestions for Wetlands Planning, Research, and Management

In response to the findings of this assessment, this study has identified six suggestions that may improve the management and conservation of Arctic wetland protected areas in partnership with Indigenous Peoples.

1. **Document Indigenous wetland resource use** to allow management authorities to make decisions that respect and accommodate Indigenous resource use by ensuring that subsistence activities are not unnecessarily impeded by management actions. Information may be collected on subsistence species, types of subsistence practices, levels of reliance, and legal access.

2. **Develop protected area participation plans** to specify cooperative objectives, participating entities, and terms of evaluation so that management authorities can continue to engage Indigenous Peoples when experiencing turn-over.
3. **Broaden wetland research priorities** to further the goals of biodiversity conservation and Arctic food security by (1) conducting research with Indigenous knowledge holders on wetland ecosystems, (2) examining the intersection of wetland biodiversity and Arctic food security, and (3) prioritizing species of both conservation and subsistence interest.
4. **Support community-based wetlands monitoring** to help researchers and managers partner with Indigenous knowledge holders, identify ecosystem services, monitor for rapid environmental change, support year-round sampling, support collection of current and historic observational information, and reinforce results from scientific studies.
5. **Connect beyond wetlands** so as to explore the interactions between and beyond inland and coastal wetlands and examine opportunities between CAFF projects such as RMAWI, the Salmon Peoples of the Arctic, the Seabird Working Group, and the Arctic Migratory Bird Initiative to further facilitate research on Indigenous relationships with Arctic biodiversity.
6. **Foster engagement** in wetlands management productively by (1) approaching Indigenous participation as an opportunity, (2) seeking to build partnerships with Indigenous governments, organizations, and communities, (3) engaging Indigenous leadership and communities at the beginning of the process, and (4) welcoming elders to participate while actively recruiting Indigenous youth to contribute to management and conservation decisions.



Figure 1. Map of selected wetland protected areas

2 Introduction

2.1 Resilience and Management of Arctic Wetlands Initiative

2.1.1 The Initiative

RMAWI is a multi-year, three-phase project led by the Government of Sweden that aims to enhance the engagement of various actors in understanding wetlands as a resource for supporting sustainable development and resilience in the Arctic (RMAWI 2019). The project's goal is to enhance the state of knowledge on the status of Arctic wetlands and related anthropogenic impacts and to provide policy and management actions. Indigenous communities across the Arctic are an essential focus of this initiative.

Wetlands are vitally important to maintaining Arctic ecosystems, species, and peoples and comprise 60% of the surface in the Arctic (Ramsar 2014). Between 1700 and 2000, wetlands have been reduced by 85% globally, three times faster than forests (IPBES 2019). This initiative also comes at a time in which nearly one million species face the threat of extinction, many of which occur in the Arctic (IPBES 2019). Internationally, wetlands have lost 76% of their species over the last 40 years (WWF 2014). Biodiversity loss at this magnitude and scale will challenge Indigenous communities who rely on these landscapes and species for their livelihoods.

Wetlands play an important, yet underappreciated, role in supporting biodiversity, carbon sequestration, and Indigenous livelihoods. In addition to serving a variety of ecosystem functions such as carbon storage, maintenance of permafrost, and water regulation and filtration, wetlands are often biodiversity hotspots that support seasonal distributions of migratory birds and mammals that rely on wetlands for breeding and feeding habitat (Wrona and Reist, 2013). Indigenous and local peoples in turn rely on these species and other wetland resources for their traditional and historic ways of life (Huntington 2013). Despite the role of wetlands in the Arctic landscape, very limited data exists on the biodiversity of Arctic wetland flora and fauna, their population dynamics, or their use (Wrona and Reist, 2013).

Phase 2 of RMAWI addresses a variety of research areas including the (1) complications of comparability between existing inventories, (2) identification of current policy and management actions to assess adaptability, and (3) identification of ways to address knowledge gaps (RMAWI 2018). In a rapidly

changing environment, the success of conservation and management strategies relies on access to the best available information. An important means of identifying and filling knowledge gaps is:

- ▶ improving participatory processes by including Indigenous leadership and communities in conservation planning and implementation processes;
- ▶ supporting the partnering of Indigenous knowledge and science by facilitating the inclusion of various knowledge systems in research; and
- ▶ supporting legally applicable principles of Indigenous sovereignty and governance to direct conservation efforts in more holistic directions

2.1.2 The Study

This study surveys 35 wetland protected areas in the Arctic to document how Indigenous Peoples engage with wetland ecosystems and considers the importance of including Indigenous Peoples in management and conservation efforts through inclusive and meaningful participatory processes. This study compares these cases of wetlands conservation and management in order to better understand how Indigenous Peoples are included in conservation efforts across the Arctic.

Formal documentation on participatory processes in Arctic wetlands conservation is limited, as is documentation of wetlands conservation efforts driven by Indigenous governments and communities, of which several examples exist but little information is easily accessible. In order to address relationships between protected area management, Indigenous engagement, and conservation efforts, AWIPS collected information on seven areas for each site including: (1) management authorities, (2) management actions, (3) species protection, (4) Indigenous wetlands resource use, (5) Indigenous participation, and (6) environmental concerns and change drivers. This report synthesizes these findings and suggests ways to further participation in the areas of planning, research, and management.

The conclusions presented here are not exhaustive and represent a first effort to understand the circumpolar context for Indigenous participation in conservation and management of wetlands protected areas. A list of surveyed protected areas is found in Annex A. Relevant methods can be found in Annex B.

2.2 Indigenous Participation in Arctic Conservation

2.2.1 Global Conservation and Indigenous Peoples

The relationship between Indigenous Peoples and protected areas is critical for biodiversity conservation (RRI 2015). Much of the world's protected areas are held and, or, managed by Indigenous Peoples. Given this importance, the lack of research on Indigenous participation in conservation efforts merits much greater attention. According to IPBES (2019), 28% of all land on earth is held or managed by Indigenous Peoples, of which 40% is formally held in protected areas (IPBES 2019). Lands held and managed by Indigenous Peoples also account for 37% of all remaining terrestrial areas experiencing very low human impact (IPBES 2019).

Recognition of the roles Indigenous Peoples play in conservation is due in part to attention on Indigenous sovereignty, an examination of the ethics of climate change impacts, and the recognition of increasing stress on the ecosystems on which Indigenous communities depend for their livelihoods (UNDRIP, 2007). Additionally, increasing recognition for the role that Indigenous, traditional, and local systems of knowledge have in capturing important environmental information has made community engagement in conservation efforts a compelling means for improving information and capacity to address rapid environmental change.

Many organizations, agencies, and governments involved in Arctic issues have formal policies and laws that require engagement with Indigenous communities when working on issues that could impact Indigenous livelihoods. While some of these entities recognize the need for inclusive management strategies, many conservation strategies continue to negatively impact Indigenous communities (ICC, 2015; Shackeroff and Campbell, 2007), who experience inadequate consideration of their knowledge, perspectives, needs, and concerns within the decision making process (MEMA, 2016; ICC, 2015).

Efforts to address the relationships between Indigenous Peoples and protected areas are increasingly evidenced by international reports and other publications. In part, international research attempts to address legal and moral imperatives related to the expropriation of Indigenous lands, often for the pursuit of conservation objectives. The United Nations has addressed best practices for the engagement of Indigenous Peoples in protected area management (UN 2000), and additional reports have been conducted from international legal perspectives such as the report on "Protected Areas and the Land Rights of Indigenous Peoples and Local Communities" (RRI 2015), and national legal perspectives such as the report on "Russian Indigenous Peoples and Protected Areas" (CSIPN 2017).

2.2.2 Arctic Conservation and Indigenous Peoples

Indigenous involvement in conservation planning has a long history in the Arctic. In 1986, the Inuit Circumpolar Conference General Assembly became the first forum in the world to adopt a regional conservation strategy, and the first Indigenous forum to adopt a conservation strategy of any kind. This conservation plan was self-organized and driven by Inuit community members from across Alaska and Canada in recognition that they:

"... depend completely on maintenance of the harvested resources, ecological processes and biological diversity of the Arctic for subsistence, cultural and economic survival, and sustainable development... conservation and sustainable development of these natural resources are seriously threatened..." (ICC, 1986).

Since the adoption of this conservation strategy, Indigenous participation in biodiversity conservation and protected area management has been the subject of increasing interest across the globe. Despite this interest, prior to this study there was no assessment of how Indigenous Peoples contribute to the development and management of protected areas in the Arctic.



Illulissat Icefjord, UNESCO World Heritage Site, Greenland
Photo: Victoria Buschman

2.2.3 Wetland Biodiversity and Arctic Food Security

Arctic Wetlands support numerous species of flora and fauna that are important for Indigenous livelihoods, particularly with regards to food security. Indigenous Peoples achieve food security through subsistence activities, cultural practice, and governance (ICC 2015). These activities and practices are unique to each Indigenous group and are difficult to define holistically for all Indigenous Peoples. This report uses the term subsistence as a means of addressing the methods by which Indigenous Peoples engage with biodiversity for both consumptive and non-consumptive purposes. Arctic food security refers to the consumptive uses of biodiversity by Indigenous Peoples.

Subsistence activities can be grouped into five categories: farming, herding, gathering, fishing, and hunting. In the high Arctic, wetlands are productive ecosystems with both inland and coastal wetlands supporting spawning grounds for marine, freshwater, and anadromous fishes, critical habitats for migratory waterfowl, seabirds, and shorebirds, and feeding grounds for aquatic and semi-aquatic mammals. Wetlands also supply Indigenous Peoples with plant and fungal species such as wild berries and mushrooms. Additionally, inland wetlands such as mires critically support reindeer husbandry across the Nordic countries and Russia (Inga et al. 2018).

Despite the important relationship between biodiversity and food security, the burden of conservation can be a driver of Arctic food insecurity (ICC 2015). Sanctions against the subsistence of key wildlife species can create health, economic, and cultural hardships in rural Arctic communities. Recognizing that biodiversity conservation can both support and inhibit Indigenous food security is an important consideration.

2.2.4 Science and Indigenous Knowledge

Sustainable management of Arctic biodiversity benefits from harnessing all available information to inform timely and effective decisions in the face of cumulative and accelerating change. Partnering Indigenous knowledge and science supplies management authorities with the best available information. In the millennia that Indigenous Peoples have lived in the Arctic, subsistence practices have supported Indigenous knowledge in capturing two bodies of information that are of particular interest in the context of conservation:

- ▶ an understanding of place-based natural histories, and
- ▶ an understanding of landscape-scale ecosystem dynamics.

While Indigenous knowledge provides many other valuable kinds of information, these two understandings are particularly relevant to the management of flora and fauna and support Indigenous Peoples' ability to inform conservation by providing critical information on species' distributions, abundances, seasonal patterns, behavioral ecology, change drivers, and threats. This allows management authorities to construct management plans that more accurately reflect information about species' important ecological areas.

Indigenous languages also capture natural ecological complexity through vocabulary that describes how the natural world functions (Barry et al. 2013). For instance, the Sámi in Sweden have unique terminology for wetland ecosystems and define differences in wetland structure and function based on humidity, shape, size, surroundings, and location, which details how and when to use the wetland (Inga et al. 2018).

In order to capture Indigenous knowledge and accurately represent it to the benefit of species and communities, Indigenous Peoples should be engaged in management and conservation efforts. The partnering of Indigenous knowledge and science is one explicit task addressed by some management authorities, although not all. In Canada, where knowledge sharing is directly supported by legally mandated co-management structures, Indigenous communities can share Indigenous knowledge to inform the conservation of lands and species in wetland protected areas. The connections between biodiversity conservation and Arctic food security are evidenced by recognition for the role of Indigenous knowledge in adaptive management:

"This article recognizes and reflects the following principles... Inuit are traditional and current users of wildlife... there is a need for an effective system of wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat... the wildlife management system and the exercise of Inuit harvesting rights are governed by and subject to the principles of conservation... there is a need for an effective role for Inuit in all aspects of wildlife management, including research..." (Article 5.1.2, Nunavut Land Claim Agreement, 1993).

3 Study Findings

3.1 Status of Conservation Efforts

3.1.1 Overview of Surveyed of Protected Areas

A diverse group of 35 protected areas encompassing inland or coastal wetlands were selected in order to assess trends in conservation that transcend any particular type of designation and to provide a snapshot of Indigenous relationships with wetland resources, allowing for cross-national comparison (Figure 1 and Annex A). A diversity of protected areas was selected to account for the limitations of comparing areas with either different designations or different national definitions of the same designation. The degree of management and protection of protected areas varies across the Arctic and the IUCN protected area categories provide useful references for international standards of biodiversity protections (Table 1). However, neither national nor international designations are fully descriptive of the degree of biodiversity protections, typical management activities, or degree of use by resource users at these sites. These protected areas vary greatly in size, from 58

(ha) to 7,805,000 (ha), with a median of over 100,000 (ha) (Annex A). Size is an important consideration for feasibility and required capacity to actively manage and conduct research at informative and functional scales.

3.1.2 Designations and Managing Authorities

Legal designations for protected areas are complicated by additional layers of designations at local, regional, and international scales. International designations include Ramsar Wetlands of Importance which have some guidelines and legally binding management requirements. Many of the surveyed wetlands have complex institutional arrangements, including (1) more than one nationally or internationally recognized conservation designations which may have separate planning and reporting processes, and (2) more than one management authority responsible for the development and implementation of management and conservation strategies (Table 2 and Annex A). Even among this complexity, formal Indigenous representation in management processes occurs in 34.2% of the surveyed sites.

Table 1. Distribution of case protected area designations by state

Country ¹	National Park	Nature Area	Wildlife Area	World Heritage	Conservation Easements	Proposed Areas	IUCN Protected Area Categories				
							Ia	Ib	II	IV	Unreported
Iceland	1	-	1	-	-	-	-	-	1	-	1
Norway	-	2	-	-	-	-	1	-	-	1	0
Sweden	-	4	-	1	-	-	1	1	-	-	3
Finland	1	2	-	-	-	-	-	1-	-	-	2
Russia	1	4	1	-	-	1	1	4	1	-	1
USA	-	-	2	-	1	-	-	-	-	2	1
Canada	3	0	3	-	-	1	-	2	2	1	2
Greenland	2	-	3	-	-	-	-	-	2	1	2
Faroes	-	-	-	-	-	1	-	-	-	-	1
Subtotal	8	12	10	1	1	3	3	8	6	5	13
Total				35					35		

¹ Of note, while no Indigenous peoples reside in Iceland or the Faroe Islands, the people of these nations also have deep connections to nature and have historically subsisted off the land. Indigenous participation at these three sites has been changed to 'local participation' and this study considers the citizens of these places to exist on one end of a spectrum of cultural adherence to subsistence practices, although reliance on subsistence resources in these places is very low.

Tables 2. Represented protected area designations at surveyed sites

National Designations	International Designations
National Park (8)	Ramsar Wetland (25)
Nature Area (12)	World Heritage Site (1)
Wildlife Area (10)	EU Natura 2000 (5)
World Heritage Site (1)	EU Natura 2000 SPA (5)
Conservation Easement (1)	EU Natura 2000 SCI (3)
Proposed Protected Area (3)	EU Natura 2000 SAC (2)
	Transboundary Designation (2) ²

² Transboundary management includes cooperation between multiple countries. While management plans found at sites in Norway and Finland reference transboundary cooperation, these cross-national relationships were not considered in this study.

Land ownership is an important issue among Indigenous populations in the Arctic due to contention over subsistence rights. Among the surveyed sites in this study, Indigenous Peoples hold at least partial ownership over 25.7% (Table 3) of sites and have some formal management authority over 34.2% (Table 5). This can be compared to the global average of 28% of protected areas owned or managed by Indigenous Peoples (IPBES 2019). Sites with shared management exist across the North American Arctic and the Nordic countries, however, sites with shared ownership in this study are unique to Canada. The conservation easement³ in Alaska is the sole example of a protected areas entirely owned and managed by an Indigenous community. The majority of sites in this study are owned by the national government and managed primarily between national and regional management authorities.

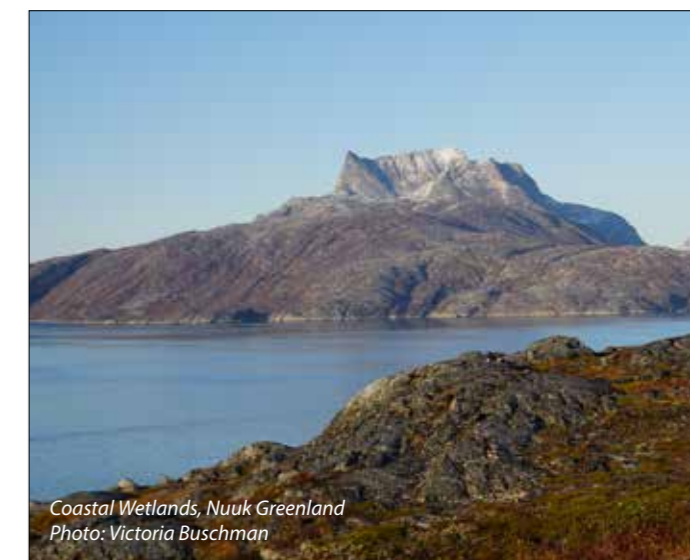
Additionally, with the exception of Alaska, many surveyed sites share management authority between national and regional agencies (Table 4). In these instances, the national management authority often oversees the general management while the regional management authorities make more localized decisions regarding wildlife and execute implementation processes.

3.1.3 Conservation of Priority Species

As few regional and long-term monitoring efforts exist on the biodiversity of Arctic flora and fauna (Wrona and Reist, 2013), identification of priority species within Arctic protected areas is lacking. At the surveyed sites, many management authorities keep track of vulnerable species of fauna that are recognized by the IUCN and their individual country's Red Lists, but often information on local abundances, population dynamics, and trends are limited. It is unclear exactly how many of these nationally or globally threatened species are important to subsistence activities and the health and wellbeing of local Indigenous communities. Additional information on whether local management authorities have the legal right or capacity to restrict subsistence hunting of vulnerable species within the protected area is often not addressed in management plans.

The context for management authority varies cross-nationally e.g.:

- ▶ In Russia, Indigenous Peoples have limited rights to resource use and are not often invited to share management authority in protected areas.
- ▶ In Sweden, shared management authority is partial and primarily present in legal rights to manage reindeer herding in protected areas.
- ▶ In Canada, management authority is intended to be shared equally between the national and regional governments and Indigenous leadership and organizations.
- ▶ In Greenland, 90% of the population is Indigenous and distinguishing an authority as Indigenous or non-Indigenous makes little sense in their management contexts. Here, management authorities are staffed by, and work directly with, Indigenous People.



Coastal Wetlands, Nuuk Greenland
Photo: Victoria Buschman

³ A conservation easement is a legally binding contract specifying land use terms and rights held by the landowner, often in perpetuity.

Table 3. Ownership of surveyed protected areas

Land ownership	National	National & Indigenous	Regional	National & Private	Regional & Private	Indigenous & Private	Private
% Distribution	51.4%	22.9%	14.3%	2.8%	2.8%	2.8%	2.8%

Table 4. Distribution of management authority at surveyed protected areas

Management Authority Shares	Federal	Regional	Indigenous	Uncertain & Not Reporting
% Reporting	57.1%	60.0%	34.2%	22.8%

3.2 Status of Indigenous Resource Use

3.2.1 Indigenous Cultural Contexts

Arctic Indigenous Peoples rely on subsistence activities for nutritional and cultural sustenance. The five types of subsistence practiced in the Arctic include (1) farming, (2) herding, (3) gathering, (4) fishing, and (5) hunting, dependent upon the cultural contexts of the Indigenous communities. Gathering, fishing, and hunting are collectively referred to as subsistence harvesting. Coastal and inland wetlands support all five types of subsistence.

Subsistence activities are culturally diverse across the Arctic. Indigenous activities such as the farming of food crops, the haying of wetlands, and the herding of reindeer and sheep are primarily practiced in the Eurasian Arctic. Of an approximate 2.2 million reindeer in the circumpolar Arctic, most are found in Russia (1.5 million), some are found in the Nordic countries (<650,000), and few are found in North America and Greenland (<20,000) (Huntington 2013). Reindeer herding can also be broken down into four cultural groups that determine how herds are pastured, transported, and housed (Huntington 2013) which influences the ways in which wetlands are used, altered, and managed. Sámi⁴ Wetland ecosystems are critical habitat for reindeer, and the Sámi people use wetlands for pasturing, migrating, resting, gathering, corralling, milking, calving, and sheltering their herds (Inga et al. 2018). Additionally, there is evidence that reindeer herding promotes biodiversity by trampling and grazing, thus maintaining species diversity (Linkowski 2017). Research from two decades ago suggests that approximately half of all reindeer foraging species in Scandinavia are found in wetlands (Warenberg 1997; Inga et al. 2018). Loss of pasture is the main threat to the reindeer industry in the Nordic countries, including issues of new infrastructure and forestry development (Huntington 2013). These issues are tied to the loss of critical wetland ecosystems that reindeer rely on for grazing while they free-pasture.

⁴ See Inga et al. 2013 for further characterization of Sámi use of wetland ecosystems in Sweden.

Arctic Indigenous Peoples also rely on gathering activities in wetlands to support the collection of food and materials. Consumed species include numerous species of berries and mushrooms. Non-consumptive species are not well documented but are known to include wetland species from the genus *Carex* and *Eriophorum*. In Scandinavia, Sámi people collect various species of the genus *Carex* for insulation (Inga et al. 2018). The Inuit of Alaska also collect species from the genus *Eriophorum*, the tundra cottons, for insulation and children's clothing. Additionally, muskox hair is collected in North America and Greenland for a variety of clothing and crafts.

Subsistence fishing and hunting are of special interest within the context of biodiversity conservation. A key area of conflict in Arctic wildlife management lies at the intersection of species of both conservation and subsistence interest. These charismatic species include salmonids, migratory birds such as eiders and puffins, and various species of seal and whale.

Subsistence hunting occurs in every Arctic country, though the degree of reliance is most notable in more rural Arctic communities where alternative foods are less available. Migratory birds are hunted in every Arctic country, including waterfowl from inland wetlands and seabirds from coastal wetlands. Many Arctic species of birds and mammals are migratory, exposing many species to subsistence and recreational hunting in multiple countries including those beyond the Arctic.

In North America and Greenland, subsistence activities are actively managed separately from sport hunting and fishing. Subsistence activities in Greenland are managed differently than in Alaska and Canada regarding whether hunters are able to sell their products in local markets (Huntington 2013). In Alaska and Canada, subsistence hunting and fishing is often licensed but operates on a relatively open access basis with the exception of certain national or regional limitations placed on vulnerable species or managed by international commissions established through international law. These include limitations on the hunting of certain species of migratory birds and marine mammals.



Figure 2. Types of arctic subsistence practices

3.2.2 Site Trends in Wetland Resource Use

Documentation of subsistence practices in the Arctic is inconsistent (Huntington 2013). AWIPS examined documentation of the surveyed protected areas' management and conservation plans for references to Indigenous resource use within the areas. Indigenous use of wetlands was documented at 82.9% of the surveyed protected area sites in this study (Table 5). Findings illustrate that most management and conservation plans, as well as other official documentation on protected areas, fail to document Indigenous resource use in any systematic way. As a result, documentation does not provide a complete picture of resource use and management within the protected areas.

Surveyed protected areas may be used for all five types of subsistence, though most are used for only several of these categories. By far, the highest reported prevalence of Indigenous uses of wetlands are for herding, gathering, fishing, and hunting. The species herded, gathered, fished, and hunted in each protected area are dependent on the cultural practices of the local Indigenous People, the local species composition, and the laws in place governing subsistence activities. While it is unclear which species are being subsisted upon, the level of reliance, and the exact terms of access, it is clear that Indigenous Peoples currently use and consume a

wide array of species that include marine, freshwater, and anadromous fishes, migratory birds, and terrestrial and marine mammals.

For those protected areas reporting on reindeer herding, between an average of 150 to 8000 reindeer are grazed within areas from 1910(ha) to 1400000(ha). Exact numbers were not available in any of the management or conservation plans. Rising or declining trends in the number of reindeer herded within surveyed protected areas were occasionally documented.

Overall, the prevalence of Indigenous use of wetland resources among these protected areas is most likely underreported. Reasons for this include perceptions that Indigenous use may be minimal enough to be negligible, that Indigenous use may be illegal and thus not appropriate to report on, and that Indigenous use is not mainstream enough to warrant consideration in an official plan or report. The lack of information on Indigenous wetland resource use therefore represents an important knowledge gap that may inhibit management authorities' abilities to support Indigenous communities and biodiversity. Addressing Indigenous resource use could further the dual goals of biodiversity conservation and Arctic food security and provide for more diverse and inclusive conservation efforts.

Table 5: prevalence of indigenous wetland resource use across surveyed protected areas

	Indigenous Use	Farming	Haying ⁵	Herding	Gathering	Fishing ⁶	Hunting
% Occurring	82.9%	5.7%	14.2%	45.7%	42.9%	65.7%	74.2%
% Not occurring	5.7% ⁷	57.2%	42.9%	25.7%	5.7%	5.7%	8.6%
% Not reporting	11.4%	37.1%	42.9%	28.6%	51.4%	28.6%	17.1%

⁵ Haying has been separated from farming for its special use of wetland ecosystems for reindeer fodder.

⁶ Fishing may be overinflated due to plans failing to specify the difference between Indigenous, local, and tourist sport fishing. "Indigenous use" is also difficult to specify in the Eurasian Arctic where "local" often encompasses both Indigenous and non-Indigenous populations.

⁷ The two sites reporting that Indigenous use is not occurring are in remote parts of Greenland where Indigenous Peoples are not currently living.



Making Labrador tea, Greenland
Photo: Victoria Buschman

3.2.3 Noteworthy Environmental Impacts

Non-Indigenous management authorities may have different understandings of the drivers of negative impacts to wetland protected areas. Indigenous activities were cited as negative impacts to management and conservation efforts at 17% of the surveyed protected areas, with 45% of sites not reporting on environmental concerns or change drivers at all (Table 6). Management and conservation plans produced in the Eurasian Arctic referenced or affirmed the rights of Indigenous Peoples less often than documents produced in the North American Arctic. Indigenous activities are cited as negative impacts to wetlands only in documentation provided on wetland protected areas in the Eurasian Arctic. Concerns about Indigenous activities in wetlands are not found in reports that were co-produced with Indigenous leadership and communities. These results may be indicative that understanding Indigenous needs, perspectives, and relationships with the land require meaningful engagement with the Indigenous communities using resources within the protected areas. Further examination of the circumstances at these sites could illuminate important sources of conflict between some Indigenous communities and management authorities.



Glacial Wetlands, Sirmilik National Park Canada
Photo: Victoria Buschman

3.3 Status of Indigenous Participation

3.3.1 Indigenous Participation in Management

Ecosystems are dynamic and benefit from diverse cultural foundations of management and governance (Folke, 2004). Engagement of Indigenous Peoples in wetland protected area management supports Indigenous visions of responsible conservation and sustainability. However, support for the inclusion of Indigenous Peoples varies cross-nationally with regards to their legal status, claims to their traditional lands and resources, and their rights to be included in governance decisions.

From a global perspective, it is recognized that involvement of Indigenous Peoples in management efforts contributes to positive conservation and socioeconomic outcomes, while protected areas that exclude local communities and anthropogenic influences are less likely to achieve these goals (Oldekop et al. 2015). One important aspect of assessing only Arctic protected areas is the very different circumstances between Indigenous Peoples in developing countries and Arctic Indigenous Peoples who exist within developed countries. Arctic Indigenous involvement in protected area management has less to do with achieving socioeconomic development, and more to do with biodiversity conservation and food security.

While many Indigenous Peoples participate in wetland protected area management, the depth of this participation varies. AWIPS focuses on the practical applications of participatory processes including a consideration of participatory processes employed in Arctic conservation planning. It also considers the unique cultural, political, and legal implications of engaging Indigenous Peoples cross-nationally.

3.3.2 Conservation Approaches to Participation

The participatory approaches that management authorities use to engage Indigenous Peoples are varied. Among surveyed sites, the six common categories of approaches include (1) 'token' consultation, (2) information sharing, (3) community-based monitoring, (4) knowledge exchange, (5) co-management, and (6) co-production (Table 7). Many of the management authorities at surveyed protected areas pursued more than one approach at different stages of development and implementation of management strategies. Each of these approaches can be summarized by how management authorities interact with Indigenous communities and whether

Table 6. Prevalence of references to negative environmental impacts

	Indigenous Activities	Extractives	Forestry	Infrastructure Development	Hydro-Engineering	Not Reporting
% Reporting Concern	17.1%	28.6%	5.7%	17.1%	8.6%	45%

knowledge is exchanged unidirectionally or bidirectionally. Each of these categories of participation is further described and discussed below.

'Token' Consultation (Authority to Indigenous Leadership, One-Way)

Consultation of Indigenous Peoples in the planning and implementation of management and conservation actions is required by law in many Arctic States. Often, management authorities make only a symbolic effort to be inclusive of Indigenous Peoples within participatory processes, here described as 'token' consultation. This mechanism is not considered a true participatory approach as it is a one-way effort to inform an Indigenous government or authority of actions pre-determined and being taken without consideration given to Indigenous needs or perspectives. Consultation may occur at any point in the planning or implementation phase. Specific 'token' consultation activities include:

- ▶ Informing Indigenous leadership of new federal, provincial, or regional management and conservation efforts that may impact (restrict) access, availability, stability, or use of plant and wildlife resources. These efforts may include predetermined management actions such as reductions of quotas, bag-takes, hunting and fishing seasons, and hunting and fishing areas.
- ▶ Informing Indigenous leadership of new research projects by federal, regional, or local governments that may restrict or impede access, availability, stability, or use of plants and wildlife resources.

Information Sharing (Authority to Indigenous Community, One-Way)

Some management authorities engage Indigenous communities that exist within or near protected areas about management and research efforts within the sites. Sharing information is intended to ensure that Indigenous communities are informed of interesting and applicable happenings but do not provide a space in which the community can contribute to the body of information or project. Information sharing may include:

- ▶ Informing Indigenous communities of research and projects that may be of interest through local communication channels (newspaper, radio, television).
- ▶ Establishing community-information sessions in which community members can learn and ask questions about research, projects, or management impacts occurring in the protected area or related region.
- ▶ Establishing lecture series so that community members can be informed on the latest scientific developments and findings occurring in the protected area or related region.

Community-Based Monitoring (Indigenous Community to Authority, One-Way)

Community-based monitoring is an emerging method for engaging rural communities in citizen science-based data collection. It may take the form of biological inventories, local point observations, capture-recapture efforts during subsistence activities, and even the collection of oral histories for the construction of baseline

Table 7. commonly employed mechanisms for engaging indigenous peoples in conservation

Engagement Activity	Route of Information	Direction of Engagement	Example
'Token' consultation	Authority to Indigenous leadership	One-way	Government informing Indigenous leadership of pre-approved project
Information sharing	Authority to Indigenous community	One-way	Researchers providing information sessions at community meetings
Community-based monitoring	Indigenous community to authority	One-way	Community members contributing to year-round biodiversity sampling
Knowledge exchange	Between authority and Indigenous community	Two-way	Managers and community members discussing potential change drivers
Co-management	Authority sharing with Indigenous leadership	Two-way	Joint committees collaborating on wildlife management plans
Co-production	Authority sharing with Indigenous community	Two-way	Indigenous communities shaping new conservation efforts in collaboration with managing authorities (both co-production of knowledge and co-production of service)

data. Data collection may take the forms of journal entries, surveys, audio and video recordings, and interaction with online data repositories. Community-based monitoring does not necessarily make conservation efforts more inclusive nor does it necessarily capture important information supported by Indigenous knowledge. It is however, a critical tool for scientists and Indigenous communities to collectively engage in biodiversity issues. Indigenous Peoples are sometimes included in interpretation of data and identification of how to use the knowledge to affect change. Community-based monitoring efforts include:

- ▶ *Participating* in biodiversity inventories such as species counts.
- ▶ *Participating* in research projects occurring in protected areas by providing labor and Indigenous knowledge alongside scientific processes.

Knowledge Exchange (Authority to Indigenous Community, Two-Way)

A knowledge exchange is similar to an information sharing approach with the important difference of providing a forum where the Indigenous community can actively shape and direct management and research efforts within a protected area. The flow of information is bidirectional and provides a space in which Indigenous knowledge and science can begin to interact. It may include:

- ▶ *Collectively* discussing biodiversity issues and potential change drivers in community meetings.
- ▶ *Facilitating* discussions between scientists and Indigenous knowledge holders to address management and conservation strategies.

Co-Management (Authority Sharing with Indigenous Leadership, Two-Way)

Co-management is a unique concept in biodiversity conservation that emerged several decades ago through legal cases in Canada and the U.S. that specified Indigenous rights to inclusion in the management of lands and species. Co-management is a common participatory approach in Alaska and Canada, although the laws supporting the sharing of management authority and degree of effort towards co-management varies. Some co-management efforts also exist in the Nordic countries, where Indigenous Sámi have some legal rights to co-manage reindeer husbandry in protected areas. Overall, the sharing of management authority in the Eurasian Arctic is uncommon. For instance, management of protected areas in Russia is almost entirely dependent on the leadership of each individual protected area, and while some may be receptive to Indigenous involvement in management efforts, others are more restrictive. Co-management can be characterized by:

- ▶ *Collaboration* between national, regional, and Indigenous management authorities to specify management actions appropriate to ensure the conservation of lands and species.
- ▶ *Sharing* of management authority in the creation and implementation of joint management committees for the conservation of lands and species.

Co-Production (Authority Sharing with Indigenous Communities, Two-Way)

Co-production in natural resource management originated in in the Canadian Arctic (Kofinas 2002) and can be described as encompassing co-management

activities while also supporting the co-creation of ideas, objectives, and shared responsibility in achieving conservation goals. Within the realm of protected area management, co-production encompasses both a co-production of knowledge and a co-production of services. While the co-production of knowledge broadens the base of information from which management authorities can base decisions, the co-production of services supports the development of shared management responsibilities and the implementation of chosen conservation strategies.

Among surveyed protected areas, Canadian sites exhibit the most inclusive participatory approaches to achieving conservation objectives. Participatory activities in Canada are generally trending towards co-production. While co-management

is federally mandated in Canada through unique land-claim agreements, development of additional protected areas such as the recently designated Tallarutiup Imanga National Marine Conservation Area exhibit the potential of this approach (Box 1). Co-production activities include:

- ▶ *Co-planning* to identify important areas for scoping and funding of potential research and management projects.
- ▶ *Co-prioritizing* between management authorities to develop shared vision, purpose, common goals, ownership, and mutual responsibility.
- ▶ *Co-management* of lands and species through adaptive and reflexive processes.
- ▶ *Co-creation* of management plans and other deliverables and ensuring their execution in an adaptive and flexible way.

BOX 2

Tallarutiup Imanga

Also known as the Lancaster Sound National Marine Conservation Area, this newly designated Canadian protected area illustrates how Indigenous communities can drive and shape Arctic conservation efforts (FASC 2017). Tallarutiup Imanga is an internationally recognized area of conservation interest for its natural and cultural seascape and is an area previously addressed by IUCN, the Natural Resource Defense Fund, the Arctic Council, and UNESCO.

The establishment process began in 2009 when the governments of Canada and Nunavut and the Qikiqtani Inuit Association signed an MOU to begin a feasibility assessment. From there, research, scoping, and reporting responsibilities have been shared between Indigenous leadership and Canadian management authorities. The feasibility assessment reads... "In the course of our work, we were struck by the strong support by Inuit for the conservation and protection of Lancaster Sound. We came to learn both the ecological importance of the Lancaster Sound area to marine wildlife that resides and migrates through this area, as well as the very direct reliance of Inuit communities on this region for sustaining life and culture," (p.ii, FASC 2017).

It also reads... "all five communities expressed significant support for the protection of the entire Landcaster Sound region and the establishment of an NMCA... [and] Inuit Qaujimajatuqangit [Indigenous knowledge] proved to be fundamental in understanding and illustrating the Inuit perspective of the region, leading to a more universal ecological and social outlook..." (p. 4). The feasibility assessment explicitly addresses the use of Indigenous knowledge alongside scientific knowledge and its obligations given Canadian laws under the Canada National Marine Areas Act, the Nunavut Wildlife Act, and the Nunavut Land Claim Agreement. The steering committee openly recognized that the use of Indigenous knowledge "helps identify community values and sense of connection to place; provides relevant current and historical data that is not readily available to scientists (baseline data); allows for communities members to be involved in decision-making through the use of IQ; and empowers community based monitoring to identify parts of the ecosystem that are stressed or undergoing change," (p.26, FASC 2017).

Tallarutiup Imanga was designated by Prime Minister Justin Trudeau on August 1st, 2019 in Arctic Bay, Nunavut. The conservation area comes with CAD \$55 million in funding to support Inuit-led initiatives, training programs for Inuit to take on conservation, management, and research jobs, and critical infrastructure.



Devon Island, Canada
Photo: Victoria Buschman

3.3.3 Conservation Participation Spectrum

Many management authorities engage Indigenous Peoples in participatory processes but the degree of engagement in these processes can vary greatly. Participation can be understood to exist along a spectrum with three dimensions of engagement including (1) participation, (2) authority and power, and (3) communication and decision mode – different degrees of engagement in these dimensions determines how a group of people shares authority, fosters legitimacy, and builds trust (Fung 2006). This study focuses on common participatory processes within conservation efforts to model a simple spectrum of approaches to Indigenous engagement in protected areas (Figure 3).

Findings from this study suggest that the degree of Indigenous participation is nearly always determined by the management authority based on national laws, policies, and agency histories – Indigenous Peoples are rarely invited to specify the terms of engagement in management and conservation efforts. This finding is critical as more common approaches to Indigenous engagement do not support communication, trust, and legitimacy which may degrade the ability to build lasting partnerships with Indigenous leadership and communities. When management authorities choose to pursue primarily surface-level engagement such as ‘token’ consultation, the process may fail to establish communication and trust.

Management authorities in surveyed wetland protected areas that engaged Indigenous Peoples in more inclusive and complex participatory processes appeared to benefit from greater access to Indigenous knowledge, more diverse understandings of ecosystem processes, and better partnerships. The findings of this study suggest that management authorities should move towards more inclusive and complex

participatory processes to better further conservation objectives and goals.

3.3.4 Indigenous-Led Conservation Efforts

Documentation from several of the surveyed protected areas illustrate that Indigenous Peoples can be major drivers to establishing and maintaining protected areas and achieving the dual goals of biodiversity conservation and cultural survival. By identifying lands important to Indigenous livelihoods and making explicit the goals of provisioning for subsistence activities, management authorities and Indigenous communities can achieve conservation objectives together.

The Eklutna Native Conservation Easement is one example of an innovative, private, community-owned protected area. While being the smallest site in this study at 58(ha), it is actively managed to improve endemic biodiversity and sustain the Eklutna Native community’s subsistence practices (Box 2). This unique blending of private land use and Native land use rights in the U.S. establishes this site as the world’s first Indigenous conservation easement. In Canada, the establishment of marine protected areas such as Tallurutiup Imanga is often advocated for by Indigenous communities as mechanisms to provide for the long-term protection of key subsistence species such as beluga and narwhal at critical life cycle stages.

The finding that Indigenous communities can be the primary force behind establishing new protected areas challenges the idea that Indigenous and conservation priorities are necessarily in conflict or that Indigenous Peoples are passive players in local, national, and international conservation efforts. It also suggests room for additional partnerships that recognize the role of subsistence and Indigenous livelihoods as a foundation for the establishment of additional protected areas.

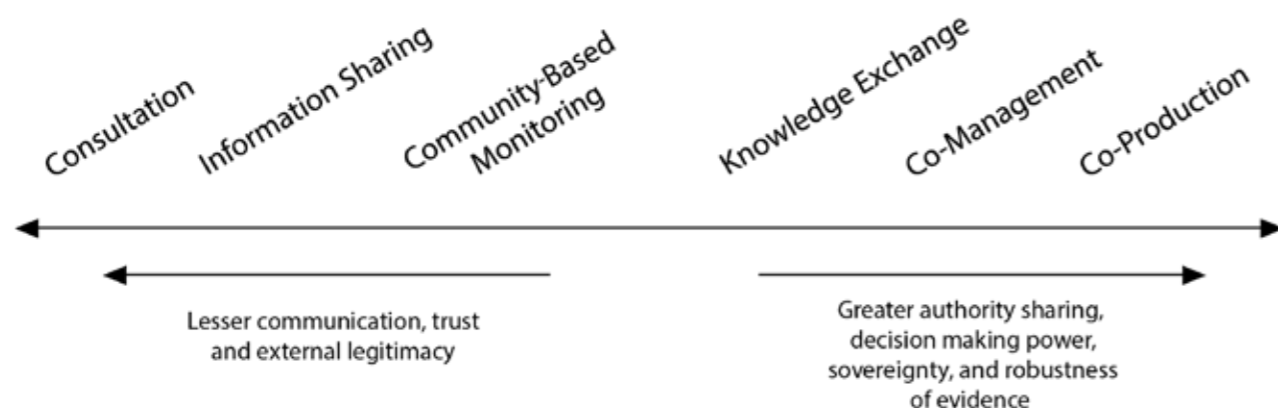


Figure 3. The Conservation Participation Spectrum

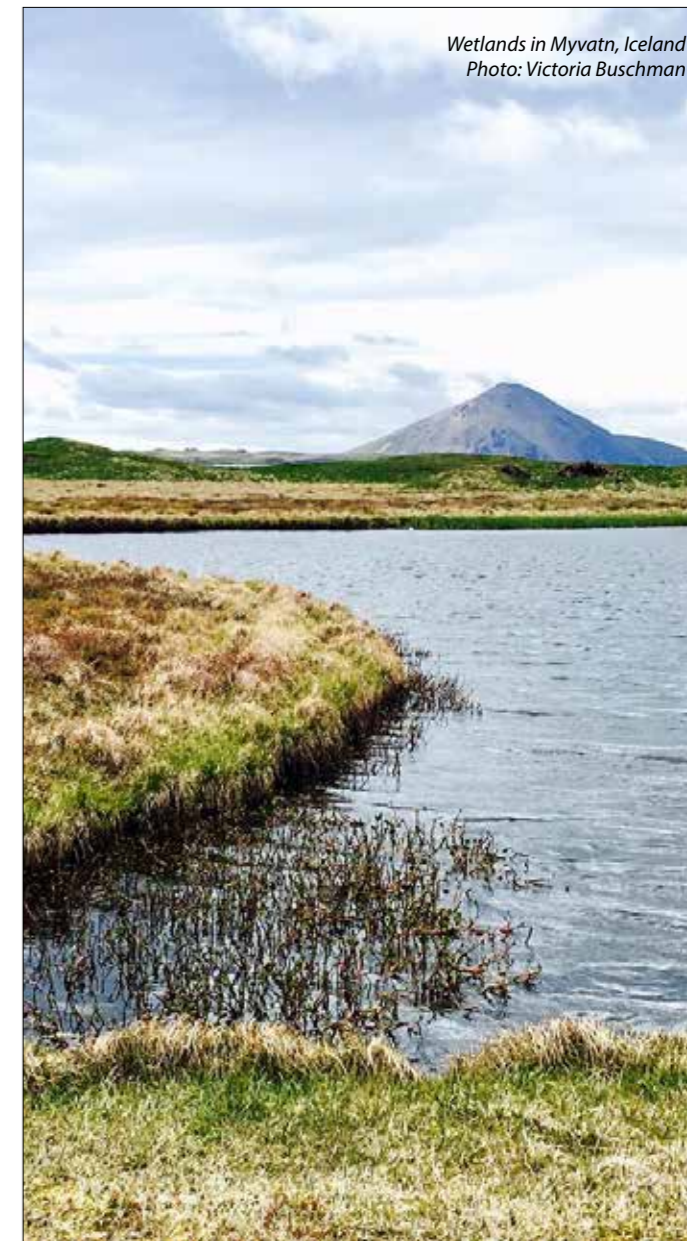
3.4 Status of Information Gaps

AWIPS used written documentation of conservation and management efforts within protected areas as its primary source of information. However, some surveyed protected areas do not have published management or conservation plans, and those that do may be somewhat outdated. Under these conditions, it is unclear what management actions are currently being taken in several of the surveyed protected areas.

Additionally, written documentation can only accurately capture the perspectives of the management authorities and additional authors involved. The quantity, quality, and robustness of the information that management authorities choose to include in protected area plans, reports, and publications may not fully capture the work and cooperation required of planning and implementing conservation efforts, especially where Indigenous leadership and communities are not invited to engaged in management and conservation efforts.

While much can be learned from what is documented within management and conservation plans, much can also be learned from what is absent. It is clear through review of management and conservation plans that there are inconsistencies in quality and quantity of information provided cross-nationally, and plans are often structured to address national priorities rather than international conservation objectives. Information that may be absent includes past management legacies, information about current Indigenous use of wetland resources, and information about specific management and conservation targets and goals.

Wetlands in Myvatn, Iceland
Photo: Victoria Buschman



BOX 3

Eklutna Native Conservation Easement

The Eklutna Native Conservation Easement is the first conservation easement in the world to be conserved and managed for the benefit of the Indigenous community. The Native Village of Eklutna has produced over 20 resolutions supporting conservation efforts, including the development of a Wetland Program Plan for their community, lands, and surrounding areas (Eklutna 2014). This conservation easement is one 58(ha) site within more than 22,500(ha) of land owned by the tribe.

The explicit goal of the tribe’s wetlands plan is to “protect and manage traditional wetlands for the benefit of Eklutna peoples and [their] way of life... [by]... coordinating the preservation, restoration, enhancements, and creation of important wetlands within the Upper Knik Arm of the Cook Inlet Watershed in Southcentral Alaska,” (p.4, Eklutna 2014). The wetlands plan identifies several objectives including the:

- ▶ voluntary restoration and protection of additional wetlands;
- ▶ development of partnerships in wetland planning and management;
- ▶ direct habitat restoration of fish and moose habitat;
- ▶ invasive species investigations and removal;
- ▶ wetland functional and water quality assessments;
- ▶ incorporation of Indigenous knowledge

4 Challenges and Suggested Responses

4.1 Advice for Planning

1 – Documenting Indigenous Resource Use

Improving documentation of Indigenous resource use may allow management authorities to make decisions that respect and accommodate Indigenous resource use by ensuring that subsistence activities are not unnecessarily impeded by management actions.

The recommendation to improve documentation on Indigenous uses is not intended to facilitate increased oversight, but to aid in more accurately managing non-subsistence resource uses that may impact subsistence activities. While documentation of certain subsistence species and the total abundances consumed is surveyed in some locations, these data are often collected inconsistently, may be underreported, and may not capture the extent to which Indigenous Peoples rely on these species.

It may be beneficial for protected area management and conservation plans to support clear documentation of both past and current Indigenous resource use in the areas, including detailed information on the following:

- ▶ **Uses:** hunting, fishing, trapping, husbandry, haymaking, and agriculture.
- ▶ **Resource types:** birds (waterfowl, shorebirds, seabirds), mammals (terrestrial, marine), fish (freshwater, marine, anadromous), plants (particular taxa).
- ▶ **Reliance:** local (regardless of ethnic identity) recreational (local, national, and international tourism), commercial, and subsistence, presence or absence of subsistence alternatives, and estimates of total number of subsistence users and dependents using protected area.
- ▶ **Access:** licenses, quotas, hunting seasons, other mechanisms (Indigenous Peoples are good at alternating resource use as a conservation method, perhaps good idea to talk about developing conservation portfolios that allow us to choose methods that help us achieve our conservation goals).

Access is especially important in the context of Indigenous Peoples because laws governing Indigenous resource use vary across Arctic States. Management and conservation plans often fail to point towards these laws and policies, which undermines the ability of management authorities, governments, organizations, and communities to accurately assess the balance of resource use and protection.

2 – Developing Participation Plans

Developing participation plans alongside management and conservation plans may aid in navigating long-term Indigenous engagement in management efforts.

Participation plans specify cooperative objectives, participating entities, and terms of evaluation so that management authorities can continue to engage Indigenous Peoples even when authorities and other interested parties experience turn-over. The Ramsar Arctic to Africa Program recently developed an exemplary plan that may give management authorities ideas for direction (Wetlands International, 2016).

Participation plans can help management authorities:

- ▶ Further understand Indigenous resource use
- ▶ Understand the needs and perspectives of communities
- ▶ Understand how these needs and perspectives shape management
- ▶ Allow for other to learn from participatory methods
- ▶ Provide transparency of information where often invisible



Sirmilik National Park, Canada
Photo: Victoria Buschman

4.2 Advice for Research

3 – Broadening Research Priorities

Pursuing critical knowledge gaps may bridge both Indigenous and conservation priorities.

Each of these priorities could aid in furthering the dual goals of biodiversity conservation and Arctic food security.

Conduct Research on Indigenous Knowledge of Wetland Ecosystems

Research focusing on Indigenous knowledge of wetland ecosystems, including community ecology, environmental changes, shifts in species' distributions, and impacts on migratory species could be beneficial to both Indigenous communities and researchers. Including Indigenous communities in developing the research priorities and questions ensures the research is relevant and applicable both for conservation and Indigenous activities.

Examine the Intersection of Wetland Biodiversity and Arctic Food Security

ICC Alaska details six dimensions of Inuit food security including access, availability, stability, health and wellness, Inuit culture, and decision-making power (ICC 2015). Research on how wetland species and dynamics support Arctic food security in these areas could inform management practices and related change drivers.

Prioritize Species of Conservation and Subsistence Interest

Additional research on species that are both conservation and subsistence interest in the Arctic could improve understandings of conflict and provide resolutions. Many species of conservation and subsistence interest are present in coastal and inland wetlands. Examples of how some management authorities engage Indigenous Peoples over the most controversial species may help other management authorities learn from their experiences and develop best practices for partnership.

4 – Supporting Indigenous Community-Based Monitoring

Supporting community-based monitoring as an approach to active participation in biodiversity research and management of protected area is beneficial for conservation efforts.

Supporting the engagement of Indigenous Peoples in monitoring efforts may benefit the following areas:

- ▶ Help researchers and managers partner with Indigenous knowledge (for ie. data collection)
- ▶ Help identify ecosystem services (for ie. medicinal plants)
- ▶ Help monitor for rapid changes (for ie. avian cholera emergence)
- ▶ Support year-round sampling in remote locations (for ie. annual inventories)
- ▶ Support collection of current and historic observational information (for ie. baseline construction)
- ▶ Help review results from scientific studies (for ie. improving ground-truthing and predictive capacity of population modelling)

5 – Connecting Beyond Wetlands

Exploring the interactions between inland and coastal wetlands broadens focus.

Arctic ecosystems are deeply connected, and a focus on wetlands must almost necessarily consider interactions with additional ecosystems across the land- and seascapes. For instance, freshwater systems moving through coastal wetlands and estuaries significantly contribute to nutrient cycling within the Arctic ocean, which in turn contributes to food and prey availability for marine species.

Examining the opportunities between CAFF projects such as RMAWI, the Salmon Peoples of the Arctic, the Seabird Working Group, and the Arctic Migratory Bird Initiative may further facilitate research on Indigenous relationships with Arctic biodiversity, particularly as they relate to subsistence activities.

Inventories of key species critical to Indigenous subsistence activities could foster future partnerships for the development of additional conservation plans and protected areas. Answering simple questions such as 'Which species are Arctic Peoples eating?' could inform management and conservation efforts at the global scale. Facilitating the development of community-based monitoring partnerships for avian species between Indigenous communities within the Arctic and along international flyways could also benefit these projects.

4.3 Advice for Management

6 – Approaching Engagement

Much can be learned from each Arctic State, their protected areas, their management authorities, and their Indigenous communities.

Canadian approaches to co-management and Indigenous engagement in protected areas and conservation planning are worth considering and replicating in other national contexts. Important lessons learned from documentation on all surveyed protected areas include:

Approach Indigenous participation as an opportunity

Leaving aside legal and moral imperatives, Indigenous engagement in conservation efforts enables management authorities to address collective conservation targets and goals. Approaching Indigenous participation as an opportunity rather than as an obligation may foster stronger partnerships and build trust, which may in turn ensure the collection of more robust biodiversity data, facilitate culturally-relevant conservation efforts, and provide for innovative conservation strategies.

Seek to build partnerships with Indigenous governments, organizations, and communities

Improving relationships between management authorities and local Indigenous communities could reduce

conflict in protected areas by ensuring that Indigenous Peoples have a voice in the development and implementation of conservation efforts that affect their lands, waters, and resources.

Engage Indigenous leadership and communities at the beginning of the process

Engaging Indigenous Peoples in conservation and management efforts from the beginning ensures communities can help create a vision for the protected area and meaningfully contribute to its development. In circumstances where management authorities have yet to include Indigenous Peoples in the process, developing an inclusive and meaningful forum for the engagement of local Indigenous communities is likely beneficial.

Welcome elders, recruit youth

While elders are often valued for their Indigenous knowledge, Indigenous youth should also be engaged in conservation efforts to support the voices and concerns of those that must live with management and conservation decisions in the foreseeable future. Recruiting young community members and Indigenous scholars also aids in ensuring that Indigenous culture and traditional practices are carried on as the world changes.



Ilulissat, Greenland
Photo: Victoria Buschman

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Annex A

Protected Area	Designation	Country	Year Est.	Area (ha)	Number Formal Designations	Number Management Authorities
Lataseno-Hietajoki	Nature Area	FIN	2004	43367	6	4
Lemmenjoki	National Park	FIN	2004	285990	4	4
Sammuttijanka	Nature Area	FIN	2004	51749	4	4
Myvatn-Laxa	Wildlife Area	ISL	1977	20000	2	1
Snaefell & Eyjabakkur	National Park	ISL	2013	26450	2	1
Tanamunningen	Nature Area	NOR	2002	3409	2	1
Pasvik	Nature Area	NOR	1996	1910	3	1
Brekhovskiy Islands	Proposed Area	RUS	1994	1400000	1	2
Ob Estuary	Nature Area	RUS	1994	128000	2	2
Parapolsky Dol	Wildlife Area	RUS	1994	1200000	2	6
Karaginski	Nature Area	RUS	1994	193597	2	6
Utkholok	Nature Area	RUS	1994	220000	2	3
Moroshechnaya	Nature Area	RUS	1994	219000	2	3
Numto NR	National Park	RUS	1997	721797	1	3
Pirttimysvuoma	Nature Area	SWE	2013	2586	5	3
Sjaunja	World Her.	SWE	1974	181333	10	4
Tarnasjon	Nature Area	SWE	1974	23236	3	1
Paivasvuoma	Nature Area	SWE	2013	2759	3	2
Blaikfjallet	Nature Area	SWE	2013	43487	8	1
Kilen	National Park	GRE	1988	51280	2	1
Hochstetter Forland	National Park	GRE	1988	184820	2	1
Heden	Wildlife Area	GRE	1988	252390	1	1
Kuannersuit	Wildlife Area	GRE	1988	5190	1	1
Kitsissunnguit	Wildlife Area	GRE	1988	6910	3	1
Mykines	Proposed Area	FAR	2012	2300	1	0
Yukon NWR	Wildlife Area	USA	1980	7750000	1	1
Arctic NWR	Wildlife Area	USA	1960	7805000	1	1
Eklutna Easement	Easement	USA	2014	58	1	0
East Bay Sanctuary	Wildlife Area	CAN	1959	113800	1	4
Auyuittuq NP	National Park	CAN	1972	2147000	1	4
Sirmilik NP	National Park	CAN	2001	2200000	1	4
Tallurutiup Imanga	Wildlife Area	CAN	.	4430000	1	3
Ahiak	Wildlife Area	CAN	1982	6292818	2	4
Edehzhie	Proposed Area	CAN	.	1420000	1	2
Old Crow	National Park	CAN	1982	617000	2	3
Median				181333	2	2

Annex B

Study Objectives

AWIPS aims to identify Indigenous uses of wetland resources and illustrate how participatory processes facilitate the engagement of Indigenous Peoples in Arctic conservation efforts. It also aims to further the discussion on how the inclusion of Indigenous Peoples in conservation efforts aids in capturing Indigenous knowledge, perspectives, and resource needs that are critical to the practical application of conservation efforts in the Arctic context.

It asks the question:

How are Indigenous Peoples participating in Arctic wetland resource use and conservation efforts across the circumpolar Arctic and what knowledge gaps may be identified?

Case Study Selection

Study Design

This comparative assessment relies on a site-specific case study approach to exploring common themes among Indigenous participatory processes within Arctic

wetland protected area management. This approach has been pursued by various organizations conducting research on Indigenous relationships to protected areas across the globe, including the IUCN's report Indigenous and Traditional Peoples and Protected Areas (WCPA 2000) and the MacArthur Foundation's report Indigenous Peoples and Conservation (MacArthur 2010).

Site Selection

AWIPS selected 35 protected areas as case studies in the Arctic and sub-Arctic that met a diverse list of criteria. Among this number are 8 national parks, 12 nature area, 10 wildlife areas, 1 world heritage site, 1 conservation easement, and 3 proposed protected areas, categorized primarily based on the purpose of their designation rather than the common English translations for their respective legal designations. Of the 35 cases, 25 are Ramsar sites (71.4%), several occurring within national parks, while the others represent protected areas encompassing large areas of coastal or inland wetland ecosystems. Non-Ramsar sites included in this study are primarily found in Alaska and Canada where Ramsar sites occurring within the Arctic are much fewer.

This study only includes protected areas containing wetland ecosystems which are either actively managed or support species that are actively managed. Among many protected areas that met these criteria, sites were further selected to maintain diversity across ownership, management structure, stages of establishment, intensity of management, degree of Indigenous engagement, spatial geographies, and scales across the eight Arctic States. The cases themselves are bounded by definition, context, time, and activity. The intent of accounting for the diversity of characteristics and political, legal, and cultural contexts is to ensure that no two cases exhibit the same combination of attributes.

Selection Criteria

- ▶ Sites containing large areas of inland or coastal wetlands
- ▶ Sites overlapping or adjacent to Indigenous lands or communities
- ▶ Sites actively managed or conserved, or proposed for active management or conservation
- ▶ Sites with sufficient written documentation or with access to other forms of communication

Relative importance of diversity criteria

1. Diversity in types of Indigenous engagement (consultation, co-management, etc).
2. Diversity in management authorities (government, agency, organization)
3. Diversity in geography (location in spatial relation to other selected sites)

4. Diversity in scale (spatial extent of individual sites)

Case Study Analysis

Data Collection and Analysis

AWIPS pursued a mixed methods approach by collecting as much documentation as possible on the surveyed protected areas, drawing primarily from official management and conservation plans, reports, and evaluation while supplementing with information from correspondence with management authorities and Indigenous organizations as necessary. Several sources of information were considered for assessment (Table 8). In circumstances where information was outdated or missing, this study supplemented with additional documentation from other official sources, although not all information came from an acting management authority. Information on protected areas in Russia and Greenland was also supplemented with reports from reputable external sources such as publications from universities and national organizations. Of note, often the full experiences of Indigenous Peoples are not captured in formal documentation released by management authorities, especially in countries in which federal governance structures do not recognize Indigenous rights to protected areas. AWIPS used case study analysis to identify important relationships between seven foci of interest including (1) management authorities, (2) management actions, (3) conservation actions, (4) species protections, (5) Indigenous resource use, (6) Indigenous participation, and (7) environmental concerns (Table 9). This data was primarily used to produce descriptive statistics on these relationships.

Table 8: Sources for data collection

Data Collection
- Management plans
- Conservation plans
- Official reports
- Official publications
- Correspondence with management authorities
- Correspondence with Indigenous organizations

Table 9: Categories for assessment

Data Analysis
- Management authorities
- Management actions
- Conservation actions
- Species protections
- Indigenous use
- Indigenous participation
- Environmental concerns



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