Arctic

NOAA'S ARCTIC ACTION PLAN

SUPPORTING THE
NATIONAL STRATEGY FOR
THE ARCTIC REGION

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Cover: Biologist scans sea ice in the Bering Sea.
Photo: J. London, NOAA

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

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NOAA's Arctic Action Plan is available online at:
http://www.arctic.noaa.gov/NOAAarcticactionplan2014.pdf

EXECUTIVE SUMMARY

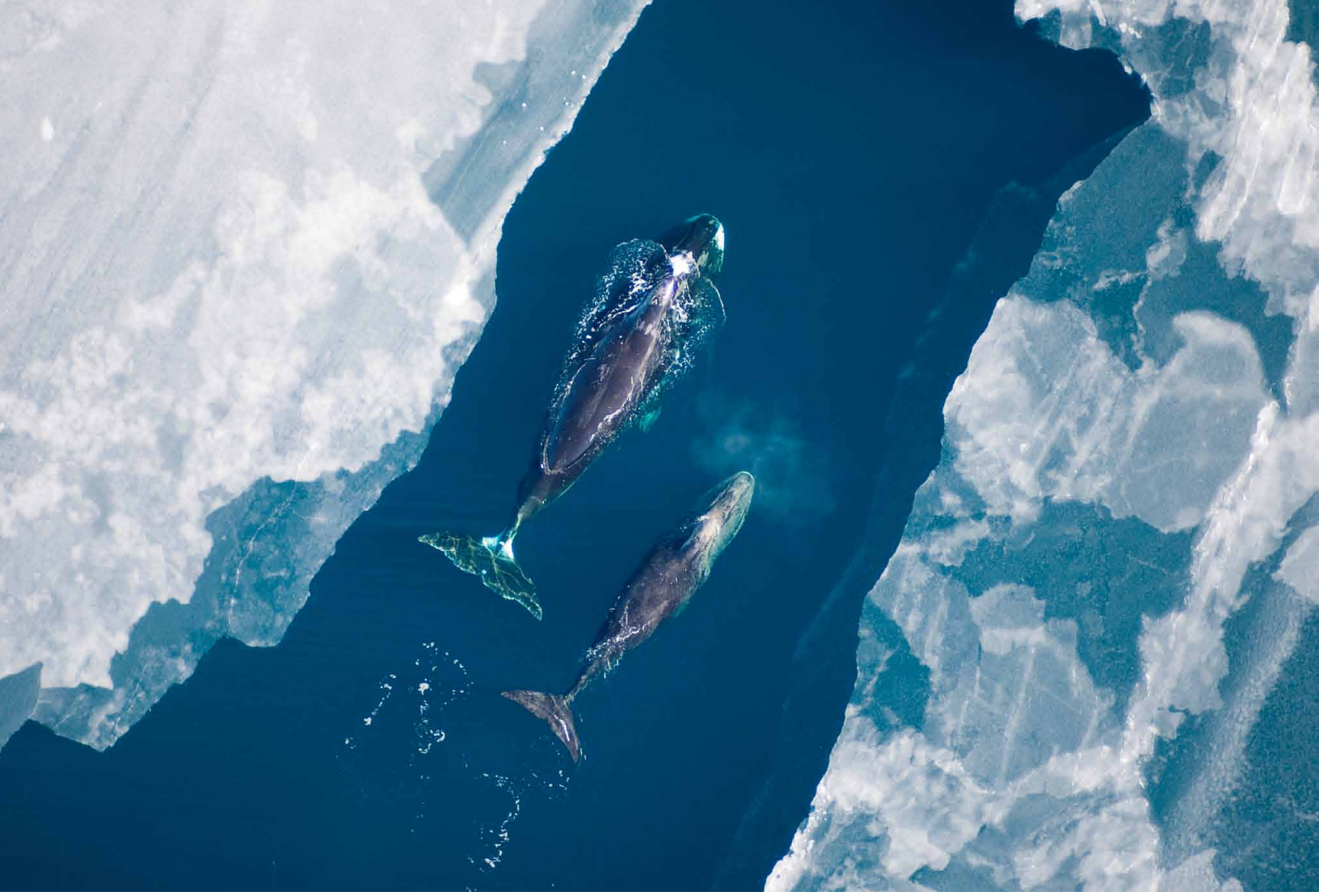
The National Oceanic and Atmospheric Administration (NOAA) is actively engaged in the Arctic, providing science, service, and stewardship to this rapidly changing region, its inhabitants, and the Nation. Through its broad range of activities, NOAA is well prepared to make significant contributions, to the extent possible within existing resources, to all three lines of effort in the recently released U.S. National Strategy for the Arctic Region (May 2013) and its subsequent Implementation Plan (January 2014). As described in its 2011 Arctic Vision and Strategy, NOAA has six strategic goals in the Arctic, each of which directly supports the National Strategy.

National Strategy for the Arctic Region — lines of effort —	NOAA's Arctic Vision and Strategy — strategic goals —
• Advance U.S. security interests	• Forecast sea ice
	• Improve weather and water forecasts and warnings
• Pursue responsible Arctic region stewardship	• Strengthen foundational science to understand and detect Arctic climate and ecosystem changes
	• Improve stewardship and management of ocean and coastal resources in the Arctic
	• Advance resilient and healthy Arctic communities and economies
• Strengthen international cooperation	• Enhance international and national partnerships

Advancing U.S. security interests in the Arctic requires improved maritime domain awareness, for which NOAA's weather and sea ice forecasts are critically important. NOAA's sea ice research strengthens forecasts of both ice and weather conditions as well as building a better understanding of the direct links between sea ice and climate. As a result of this research, the complicated linkages among melting sea ice, changing climate, and weather patterns in the Arctic and around the globe are becoming more apparent and allow better planning to cope with Arctic change.

NOAA plays a key role in **pursuing responsible Arctic region stewardship**. Foundational science enables better understanding of Arctic ecosystems, the atmosphere, climate, and their dynamic interconnections. NOAA's fisheries research and management programs are likewise vital, particularly for the economically important U.S. Bering Sea fisheries. Research and stewardship of marine ecosystems and protected species like marine mammals promote sustainable use, conservation, and protection from potential impacts of offshore development, increased shipping, and environmental degradation. NOAA provides important services to coastal communities by improving safe Arctic maritime access with mapping and charting as well as increasing preparedness and communities' resilience to intensifying weather. NOAA is also an important partner in hazard response and mitigation (e.g., providing scientific support to the U.S. Coast Guard after oil spills). Research relevant to oil spills, sea ice, and marine ecosystems will help to prepare for and to protect against potential environmental disasters in the Arctic.

All of NOAA's Arctic activities are united in one aspect: leveraging national and international partnerships and collaborating to support common Arctic goals. NOAA **strengthens international cooperation** through the Arctic Council, joint research opportunities, and provision of services. NOAA also has many successful Arctic national partnerships, within and outside the Federal Government. Existing partnerships will be strengthened and new ones developed in the coming years as NOAA continues its work to address the Nation's challenges in the Arctic.



Bowhead whales move through sea ice in the Beaufort Sea. Photo: A. Brower, NOAA.

I. INTRODUCTION

The Arctic is changing – and those changes will affect us all, no matter which country we live in or region of the world we inhabit. One dramatic change is the loss of sea ice covering the Arctic Ocean and its peripheral seas. The past 10 years have been the 10 years with the lowest Arctic sea ice coverage, and 2012 marked the all-time lowest sea ice extent ever recorded.

Since the 1980s, 75% of Arctic sea ice volume has been lost, and there are consistently more than 300 kilometers of open water north of Alaska every summer. In contrast, 30 years ago 50 kilometers of open water was typical. The ice-free season north of the Bering Strait is projected to increase from 2-3 months at present to about 5-6 months over the next few decades. By 2040, the Arctic Ocean will likely be nearly ice-free during the summer months.

Table 1. NOAA's Arctic strategic goals support the National Strategy for the Arctic Region.

National Strategy for the Arctic Region — lines of effort —	NOAA's Arctic Vision and Strategy — strategic goals —
• Advance U.S. security interests	• Forecast sea ice
	• Improve weather and water forecasts and warnings
• Pursue responsible Arctic region stewardship	• Strengthen foundational science to understand and detect Arctic climate and ecosystem changes
	• Improve stewardship and management of ocean and coastal resources in the Arctic
	• Advance resilient and healthy Arctic communities and economies
• Strengthen international cooperation	• Enhance international and national partnerships

This rapid loss of sea ice is affecting weather patterns, marine and terrestrial ecosystems, and human activities. Reductions in sea ice cover are changing polar atmospheric circulation patterns, ultimately increasing the frequency and severity of Arctic storms. Furthermore, recent evidence suggests that changes in Arctic atmospheric circulation are reflected in the weather patterns at lower latitudes as well. Weather and climate changes in the Arctic are already affecting the United States and other parts of the world, and these forces are expected to intensify in the coming years.

As Arctic waterways become ice-free and navigable for longer periods, patterns of commerce and industrial activities are also shifting. There is growing interest in oil and gas exploration and development, spurred by estimates of over 23 billion barrels of technically recoverable oil and 108 trillion cubic feet of technically recoverable natural gas within the Outer Continental Shelf of the Beaufort and Chukchi seas. There was a 118% increase in maritime transits through the Bering Strait between 2008 and 2012.[1] Furthermore, ecological shifts in Arctic marine ecosystems are likely to impact commercial fisheries, protected resources such as marine mammals and birds, and Alaska Native subsistence harvests. Arctic climate change and loss of sea ice will influence maritime safety, traditional lifestyles and livelihoods, economies, and associated ecosystems for decades to come.

National Strategy for the Arctic Region

Recognizing the growing importance of the Arctic, the White House released an overarching National Strategy for the Arctic Region in May 2013 (National Strategy).[2] This strategy establishes priorities for actions to help the United States fulfill its responsibilities as an Arctic nation and to respond effectively to the challenges and opportunities arising from increased Arctic access. It is based on three lines of effort:

- Advance U.S. security interests,
- Pursue responsible Arctic region stewardship, and
- Strengthen international cooperation.

The National Strategy's guiding principles are to safeguard peace and stability, make decisions using the best available information, pursue innovative arrangements, and consult and coordinate with Alaska Natives. An implementation plan for the National Strategy, released in January 2014, directs federal agencies – including the National Oceanic and Atmospheric Administration (NOAA) – to take action on a number of critical Arctic issues.[3]

[1] For more information, see: http://www.uscg.mil/seniorleadership/DOCS/ CG_Arctic_Strategy.pdf
[2] Available at: http://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf
[3] Available at: http://www.whitehouse.gov/sites/default/files/docs/implementation_plan_for_the_national_strategy_for_the_arctic_region_-_fi....pdf

NOAA: Ready for Action

NOAA is well prepared to support the implementation of the National Strategy. NOAA has a long history of Arctic science, service, and stewardship, ranging from biological, physical, and chemical research to weather and climate services to nautical charting, spill response, fisheries management, and marine mammal protection. NOAA issued its Arctic Vision and Strategy in 2011 to define the substantial role that it plays in the region and to provide direction for the future.[4] NOAA envisions an Arctic where decisions and actions related to conservation, management, and use are based on sound science and support healthy, productive, and resilient communities and ecosystems. The agency seeks a future where the global implications of Arctic change are better understood, predicted, and managed.

NOAA's six Arctic strategic goals are to:

- Forecast sea ice,
- Improve weather and water forecasts and warnings,
- Strengthen foundational science to understand and detect Arctic climate and ecosystem changes,
- Improve stewardship and management of ocean and coastal resources in the Arctic,
- Advance resilient and healthy Arctic communities and economies, and
- Enhance international and national partnerships.

Progress in achieving these goals since 2011 shows that NOAA is ready to implement the National Strategy in conjunction with NOAA's sister agencies and other partners. Overall, NOAA's Arctic goals align well with the National Strategy priorities, as illustrated in Table 1. NOAA played a key role in efforts leading up to the National Strategy, including development of the National Ocean Policy Implementation Plan and the Interagency Arctic Research Policy Committee's five-year plan to coordinate federal Arctic research.[5,6] NOAA also contributed significantly to the March 2013 report to

[4] Available at: http://www.arctic.noaa.gov/docs/NOAAArctic_V_S_2011.pdf
[5] Available at: http://www.whitehouse.gov//sites/default/files/national_ocean_policy_implementation_plan.pdf
[6] Available at: http://www.whitehouse.gov/sites/default/files/microsites/ostp/2013_arctic_research_plan.pdf

NOAA Ship *Fairweather* crew supports Arctic charting operations.
Photo: T. Smith, NOAA.