



PUBLISHED IN  
PARTNERSHIP  
WITH



2012

GLOBAL  
ARCTIC  
PROGRAMME

A large, thick, braided metal cable is shown underwater, extending from the bottom left towards the center. The water is dark blue with some light reflections on the surface.

# IMPORTANT MARINE AREAS IN THE ARCTIC

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#### **MAP DETAILS**

Maps created by: Selina Agbayani, WWF Global Arctic Programme.

Projection: Lambert Azimuthal Equal Area

Database: ArkGIS, WWF Global Arctic Programme

#### **ABOUT WWF**

Since 1992, WWF's Global Arctic Programme has been working with our partners across the Arctic to combat threats to the Arctic and to preserve its rich biodiversity in a sustainable way.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.



PAUL NICKLEN / NATIONAL GEOGRAPHIC STOCK / WWF-CANADA

## INTRODUCTION

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Conservation of the Arctic marine environment, its ecosystems and species is essential for keeping the Arctic alive, thus providing key ecosystem services, many of global importance, for peoples of the North and for all humanity. Current conservation efforts include various approaches to better understand the significance of Arctic marine ecosystems with regards to their biodiversity, ecological, cultural and socio-economic importance.

As the region loses its sea ice cover, it is open not only to new development opportunities but to an increased scale of existing threats, including industrial developments from the energy sector and transportation. These threats must be fully taken into account when important marine areas are described, and particularly when areas are identified for conservation purposes.



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## Multiple approaches to define important marine areas in the Arctic

The question of what constitutes an important marine area in the Arctic is being approached by several different groups.

At the regional intergovernmental level, the Arctic Council plays a lead role in identifying important marine areas in the Arctic Ocean and surrounding seas. Through its working groups (PAME, CAFF, AMAP) and number of comprehensive reports (e.g. Arctic Marine Shipping Assessment, 2009), the Arctic Council is working to describe and identify environmentally important marine areas - marine areas of heightened ecological and cultural significance.

At the same time, similar work is being done a number of international processes (e.g. CBD, OSPAR/NEAFC), by expert communities and variety of non-governmental organisations (e.g. IUCN, NRDC, WWF, TNC, Pew). There are multiple terms and criteria used for description and identification of marine important areas in the Arctic, including:

- Ecologically or biologically significant marine areas (CBD, Decisions IX/20 and X/29);
- Priority areas for biodiversity conservation (WWF);
- Marine priority area (for conservation) (WWF and TNC);



- Marine areas of heightened ecological and cultural significance (Arctic Council working groups);
- Deferral areas (Pew).

These classifications are based on similar but varied criteria, and most have no specific legal management or conservation status. Some parts of important marine areas, as defined by these groups, have already received formal protection through the establishment of marine protected areas (see page 13). But these constitute an insignificant part of the region, failing to fully represent Arctic marine ecosystems and falling below the goal set by the CBD Aichi Biodiversity Targets.

### **Compiling the available information**

WWF has compiled this document to present much of the available information on description and identification of important marine areas in the Arctic. Because the present and future impact of Arctic development should shape conservation decisions, we have also included a compilation of data on two most significant threats to the Arctic marine environment—oil and gas development and shipping.

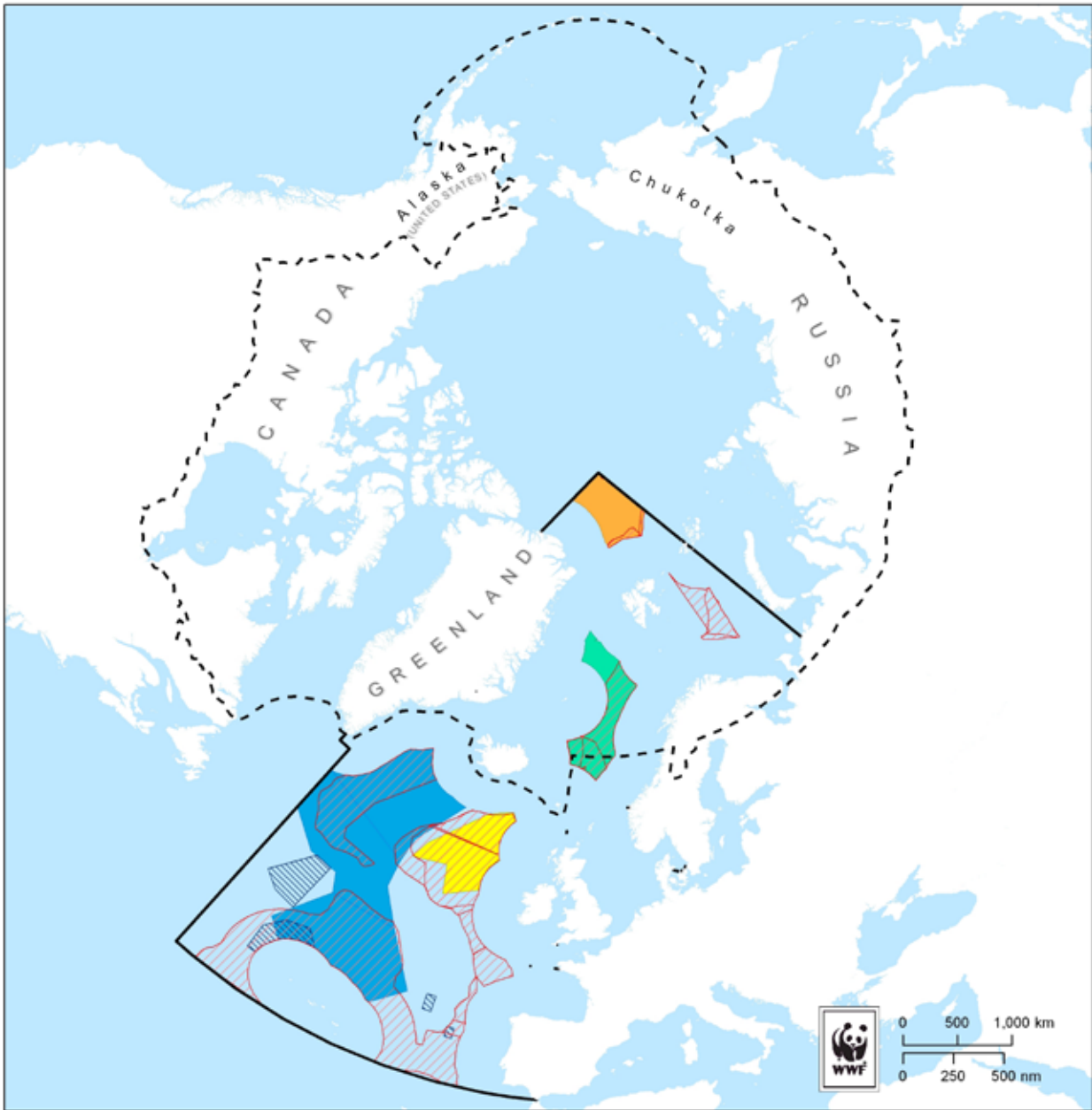
This document is intended to further facilitate discussions and work within the international community, Arctic Council and among Arctic stakeholders, provide for a full scientific description of important arctic marine areas, and help inform the CBD process for the description of EBSAs.











**Marine Arctic Ecoregions as identified in the Rapid Assessment of Circum-arctic Ecosystem Resilience (RACER).**

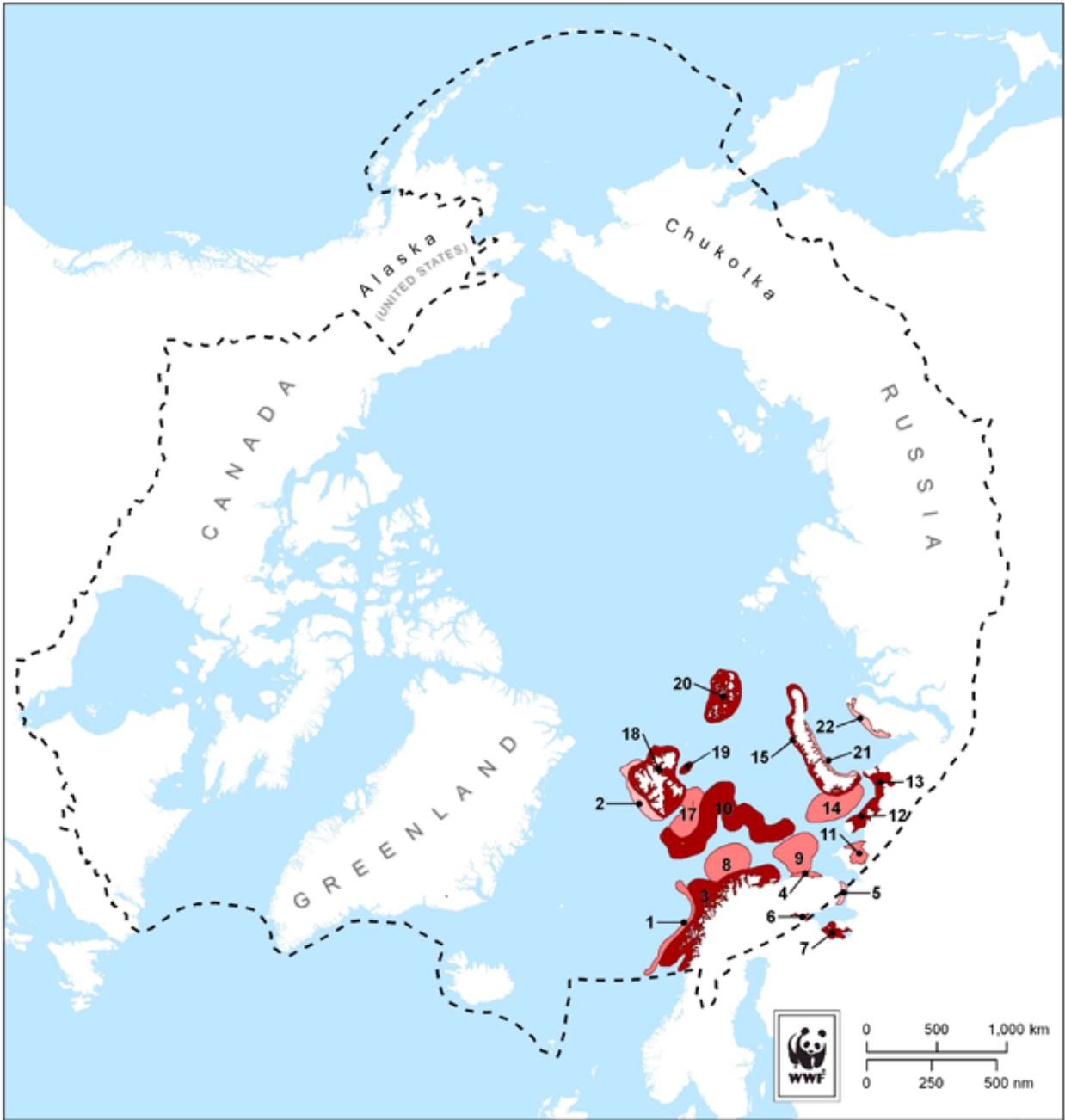
**Marine Arctic Ecoregions**

- |   |  |                                    |
|---|--|------------------------------------|
| 1. Baffin Bay - Davis Strait                  | 10. Lancaster Sound                                | 19. West Greenland Shelf           |
| 2. Beaufort Sea - continental coast and shelf | 11. Laptev Sea                                     | 20. White Sea                      |
| 3. Chukchi Sea                                | 12. North and East Barents Sea                     | 22. Fram Strait                    |
| 4. East Greenland Shelf                       | 13. Iceland Shelf                                  | 23. Arctic Ocean -- Pacific Basin  |
| 5. East Siberian Sea                          | 14. North Greenland                                | 24. Arctic Ocean -- Atlantic Basin |
| 6. Eastern Bering Sea                         | 15. Northern Grand Banks - Southern Labrador       | 25. Norwegian Sea                  |
| 7. High Arctic Archipelago                    | 16. Northern Labrador                              | 26. Labrador Sea Basin             |
| 8. Hudson Complex                             | 17. Northern Norway and Finnmark                   | 27. Davis Strait Basin             |
| 9. Kara Sea                                   | 18. Beaufort-Amundsen-Viscount Melville-Queen Maud | 28. Western Bering Sea             |
|   |  | CAFF Boundary                      |



**EBSAs Identified at the Joint OSPAR/NEAFC/CBD Scientific Workshop on the Identification of Ecologically or Biologically Significant Marine Areas (EBSAs) in the North-East Atlantic (8-9 Sept 2011, Hyères, France).**

- |  |  |
|--|--|
|  Extended Continent Shelf Submissions, OSPAR Region July 2011 |  Final Mid-Atlantic Ridge EBSAs |
|  Final Bird EBSAs   |  Final Rockall Hatton EBSA      |
|  Final Arctic Front EBSA                                      |  OSPAR Maritime Area            |
|  Final Arctic Ice Habitat EBSA                                |  CAFF Boundary                  |



**Barents Sea Priority Areas for Biodiversity Conservation**

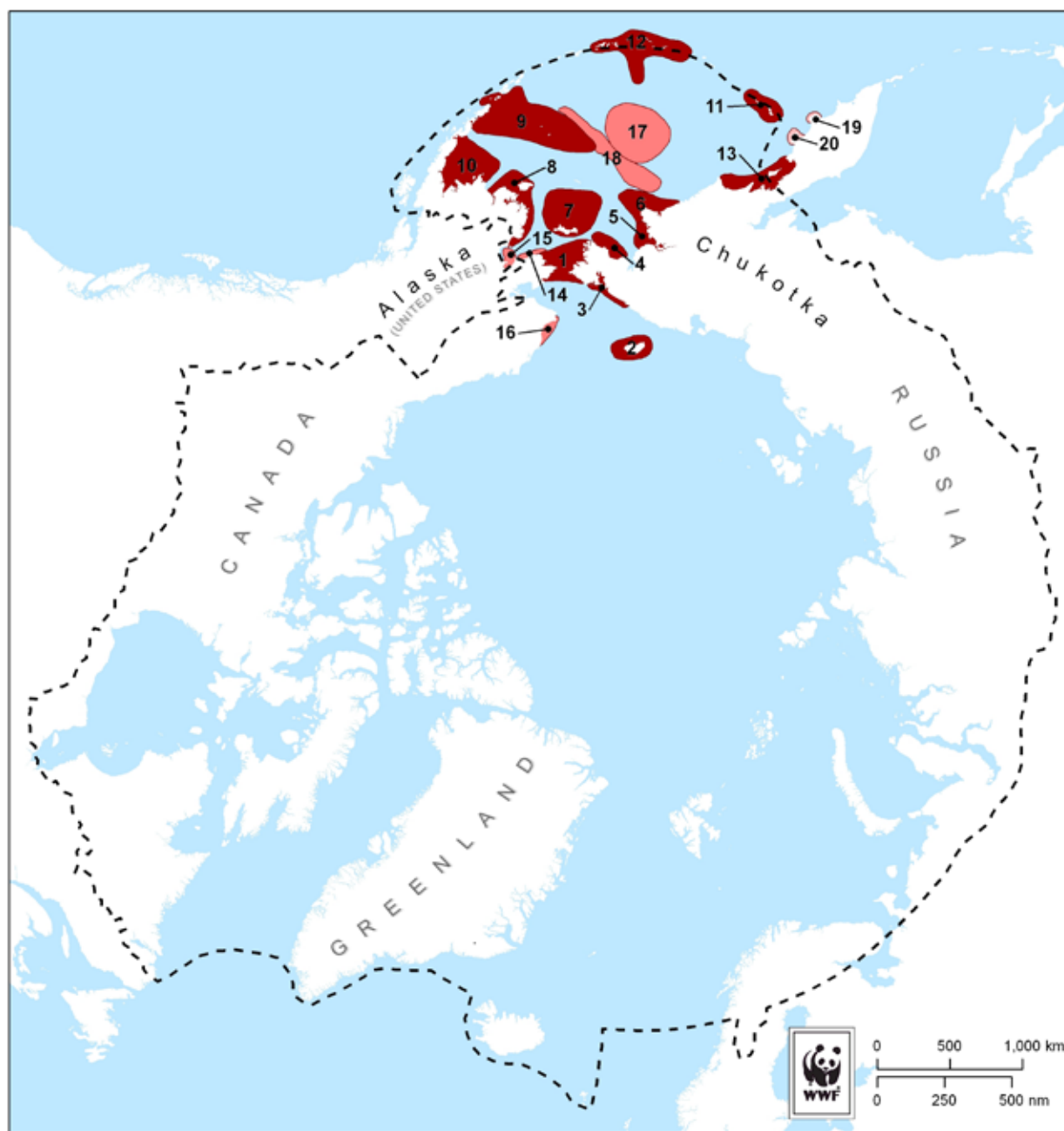
**Priority Ranking**

- Very High Priority
- High Priority
- Priority

**Priority Area**

- 1 - South-western shelf edge
- 2 - North-western shelf edge
- 3 - Norwegian coast and the Tromsø bank
- 4 - Murman coast
- 5 - The funnel
- 6 - Kandalaksha Bay
- 7 - Onega Bay
- 8 - North Cape bank
- 9 - Banks off Murman coast
- 10 - The Polar Front
- 11 - Kanin Peninsula and Cheshskaya Bay
- 12 - Western Pechora Sea
- 13 - Eastern Pechora Sea
- 14 - Southeast Barents Sea
- 15 - The coast of western and northern Novaya Zemlya
- 17 - Spitsbergen bank
- 18 - Svalbard coast
- 19 - Kong Karls Land
- 20 - Franz Josef Land
- 21 - Eastern Novaya Zemlya coast
- 22 - Eastern Kara coast
- CAFF Boundary





**Bering Sea Priority Areas**

**Priority Ranking**




- Highest Priority
- High Priority
- Priority

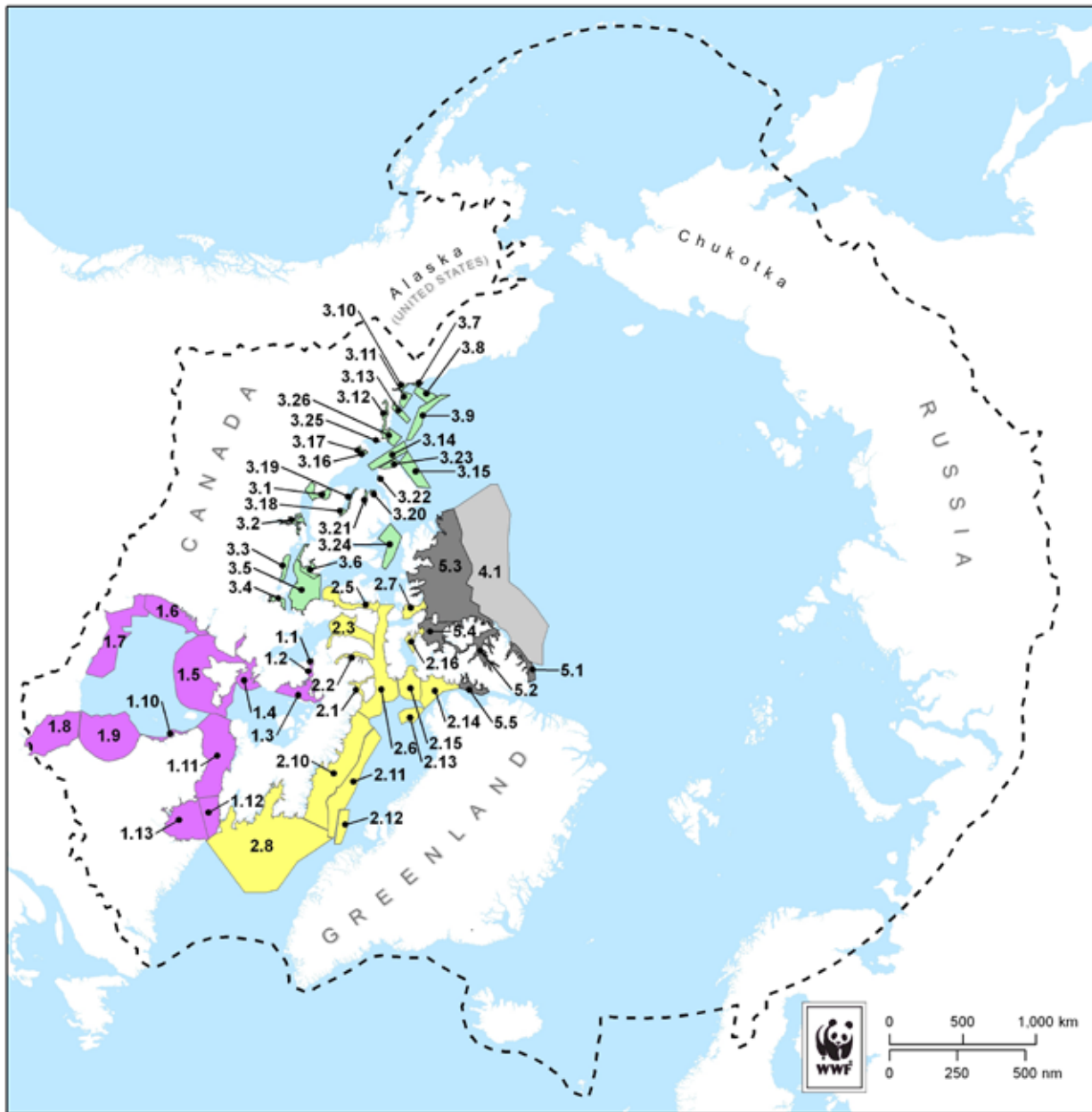
**Priority Areas**

- 1 - Bering Strait
- 2 - Wrangel and Herald Islands
- 3 - Kolyuchin Bay and Coast
- 4 - Sireniki Polynya
- 5 - Anadyr River Estuary
- 6 - Cape Navarin and Meynypil'gyno River System
- 7 - St. Lawrence Island & St Lawrence Island Polynya
- 8 - Yukon Kuskokwim Delta & Nunivak Island
- 9 - Golden Triangle: Pribilof & Bogoslof Islands; Izembek Lagoon
- 10 - Bristol Bay
- 11 - Commander Islands
- 12 - Aleutian Islands
- 13 - Karaginsky and Olyutorsky Bays
- 14 - Eastern Norton Sound
- 15 - Northern Norton Sound
- 16 - Kasegaluk Lagoon and Ledyard Bay
- 17 - Aleutian Basin
- 18 - Bering Sea Shelf Break
- 19 - Kronotsky Peninsula
- 20 - Kamchatsky Peninsula
- CAFF Boundary



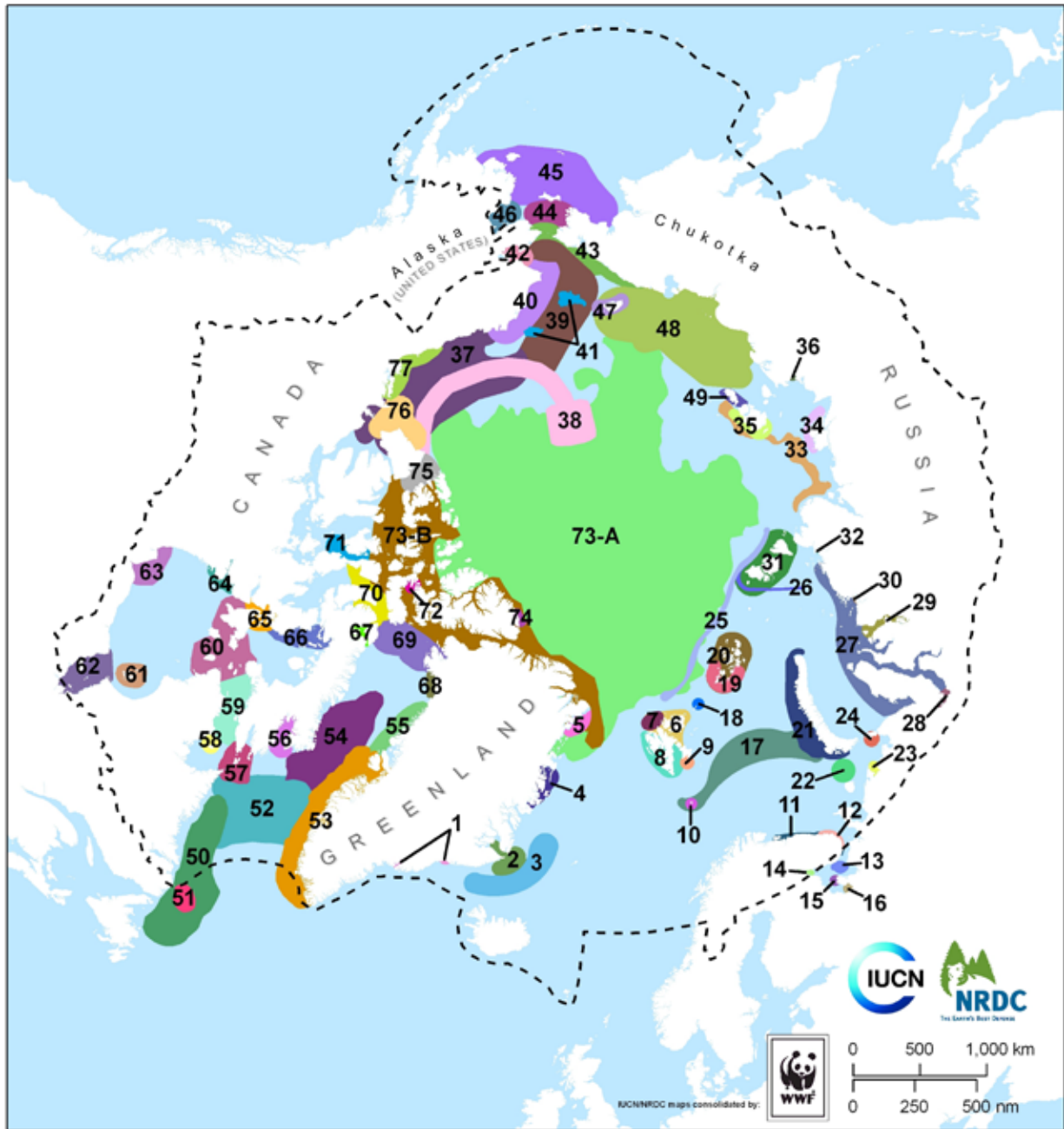
Proposed Deferral Areas and Seasonal Restrictions, as identified in the comment package presented to the Bureau of Ocean Energy Management (BOEM) by the National Audubon Society / Oceana / Ocean Conservancy / Pew Environment Group regarding the 5-year Draft Programmatic Environmental Impact Statement (PEIS). 09 January 2012.

-  Proposed Deferral Blocks
-  Proposed Seasonal Restriction Blocks
-  CAFF Boundary



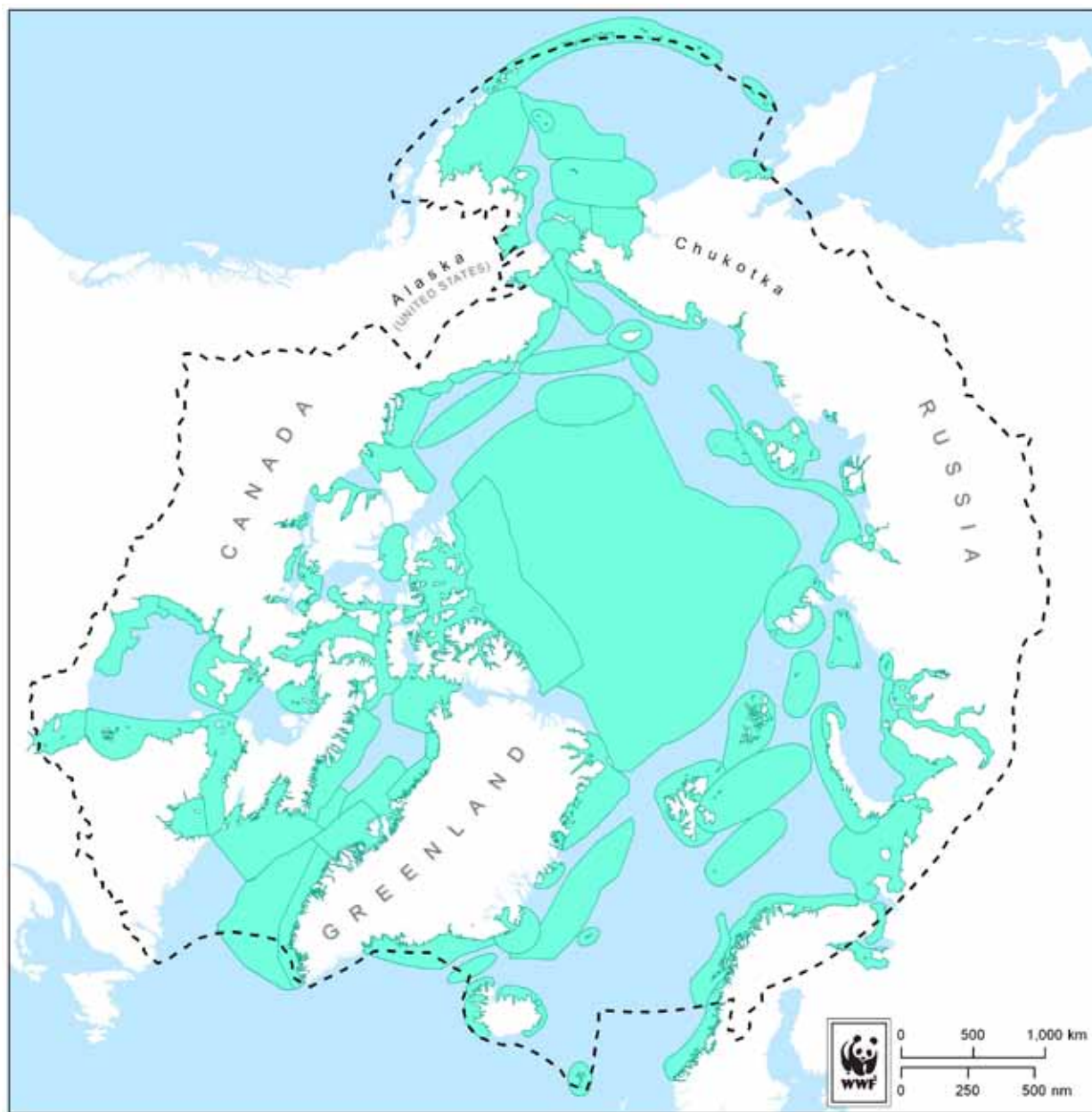
**Ecologically and Biologically Significant Areas (EBSAs) in the Canadian Arctic**

- |   |  |  |  |
|---|--|--|--|
| 1.1 - Fury and Hecla Strait             | 2.3 - Prince Regent Inlet                    | 3.4 - Chantry Inlet                      | 3.19 - Prince Albert Sound             |
| 1.2 - Igloolik Island                   | 2.5 - Peel Sound                             | 3.5 - King William Island                | 3.20 - Walker Bay                      |
| 1.3 - Rowley Island                     | 2.6 - Lancaster Sound                        | 3.6 - Southern Victoria Island Coastline | 3.21 - Minto Inlet                     |
| 1.4 - Repulse Bay/Frozen Strait         | 2.7 - Wellington Channel                     | 3.7 - Yukon North Slope                  | 3.22 - De Salis Bay                    |
| 1.5 - Southampton Island                | 2.8 - Hatton Basin-Labrador Sea-Davis Strait | 3.8 - Mackenzie Trough                   | 3.23 - Thesiger Bay                    |
| 1.6 - Western Hudson Bay Coastline      | 2.10 - Baffin Island Coastline               | 3.9 - Beaufort Shelf                     | 3.24 - Viscount Melville Sound         |
| 1.7 - Southwestern Hudson Bay Estuaries | 2.11 - Baffin Bay Shelf Break                | 3.10 - Shallow Bay                       | 3.25 - Horton River                    |
| 1.8 - James Bay                         | 2.12 - Southern Baffin Bay                   | 3.11 - Beluga Bay                        | 3.26 - Liverpool Bay                   |
| 1.9 - Belcher Islands                   | 2.13 - Northern Baffin Bay                   | 3.12 - Husky Lakes                       | 4.1 - Arctic Basin Multi-year Pack Ice |
| 1.10 - Eastern Hudson Bay Coastline     | 2.14 - Northern Water Polynya                | 3.13 - Kugmallit Corridor                | 5.1 - Ellesmere Island Ice Shelves     |
| 1.11 - Western Hudson Strait            | 2.15 - Eastern Jones Sound                   | 3.14 - Cape Bathurst Polynya             | 5.2 - Nansen-Eureka-Greely Fjord       |
| 1.12 - Eastern Hudson Strait            | 2.16 - Cardigan Strait/Hell Gate             | 3.15 - Banks Island Shoreland            | 5.3 - Archipelago Multi-year Pack Ice  |
| 1.13 - Ungava Bay                       | 3.1 - Lambert Channel                        | 3.16 - Pearce Point                      | 5.4 - Norwegian Bay                    |
| 2.1 - Eclipse Sound/Navy Board Inlet    | 3.2 - Bathurst Inlet                         | 3.17 - Hornaday River                    | 5.5 - Princess Maria Bay               |
| 2.2 - Admiralty Inlet                   | 3.3 - Queen Maud Gulf Coastline              | 3.18 - Kagloryuak River                  | --- CAFF Boundary                      |



**Ecologically and Biologically Significant Areas (EBSAs) as identified at the IUCN/NRDC Workshop to Identify Areas of Ecological and Biological Significance or Vulnerability in the Arctic Marine Environment (2010).**

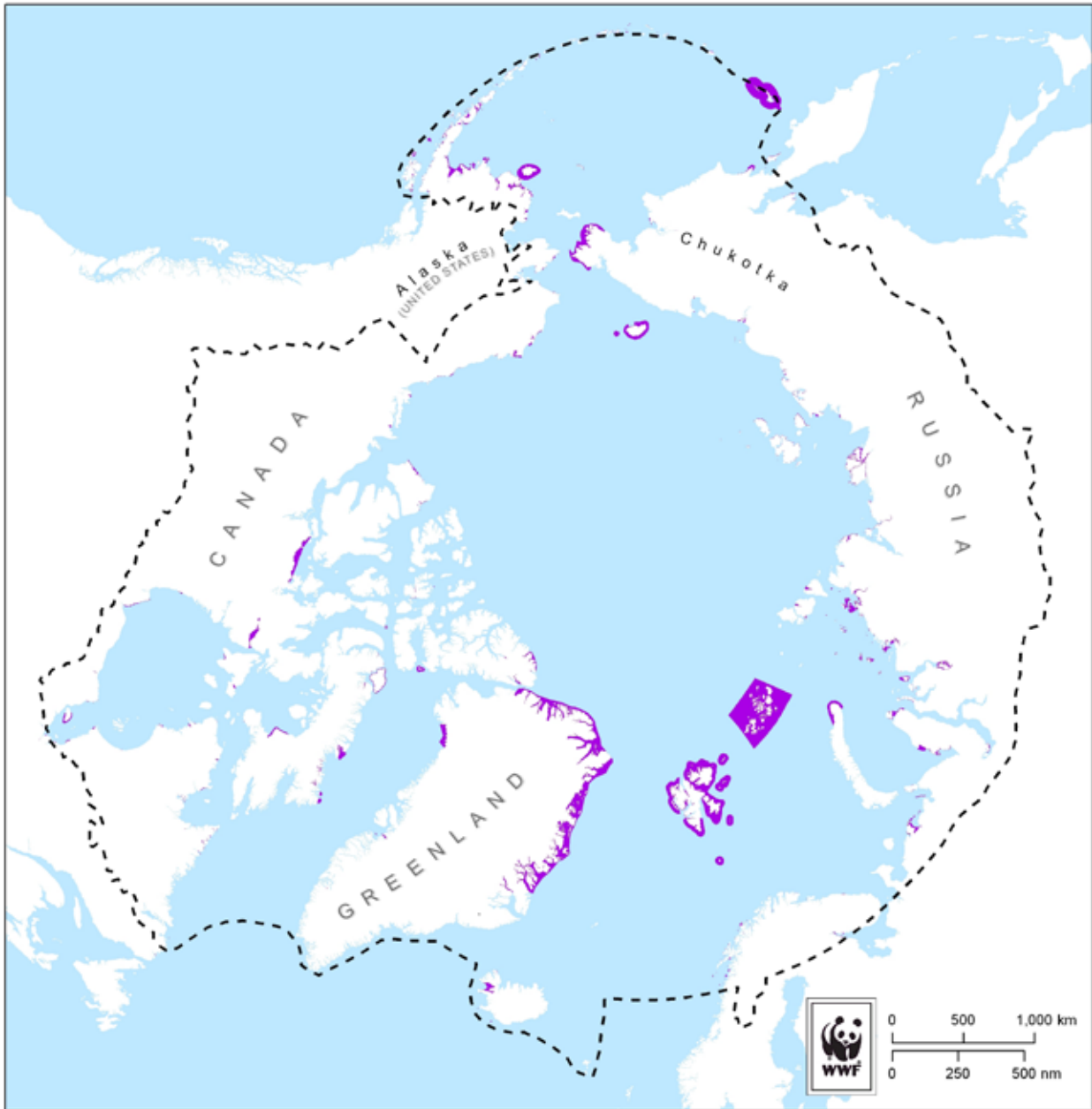
- |                                     |   |   |  |
|-------------------------------------|---|---|--|
| 1. East Greenland Southern Fjords   | 21. Severnaya Zemlya (North Land) and Shelf | 41. Hanna and Herald Shoals             | 61. Belcher Islands                        |
| 2. Scoresbysund                     | 22. Solovetsky Island Shallow               | 42. Kotzebue Sound                      | 62. James Bay                              |
| 3. Greenland Sea                    | 23. Pechora Bay                             | 43. Bering Strait                       | 63. Churchill/Nelson Rivers                |
| 4. Dove Bugt                        | 24. East Pechora Sea                        | 44. Chirkov Basin                       | 64. Chesterfield Inlet                     |
| 5. Northeast Water Greenland Polyna | 25. Shelf break off Barents                 | 45. Bering Sea                          | 65. Repulse Bay                            |
| 6. Svalbard Northeast waters        | 26. Severnaya Zemlya Polyna                 | 46. Norton Sound                        | 66. Northwest Foxe Basin                   |
| 7. Whalers Bay North Svalbard       | 27. Kara Sea Polynas                        | 47. Wrangel and Herald Island           | 67. Navy Board Inlet                       |
| 8. Svalbard West waters             | 28. Ob Bay                                  | 48. East Siberian Sea                   | 68. Melville Bay                           |
| 9. Southeast Svalbard Polyna        | 29. Enisei Bay (Gulf of Enisei)             | 49. New Siberian Islands                | 69. North Water Polynya                    |
| 10. Bear Island waters              | 30. Pyasina Delta                           | 50. Labrador Shelf Edge                 | 70. Lancaster Sound                        |
| 11. Kola Peninsula coastal waters   | 31. High Arctic archipelagos                | 51. The Front                           | 71. Peel Channel                           |
| 12. Tersky Coast                    | 32. Taymyra Delta                           | 52. Southern Davis Strait               | 72. Western Jones Sound                    |
| 13. White Sea pack ice              | 33. Great Siberian Polynya                  | 53. West Greenland Current Area         | 73-A. Polar Pack September 2010            |
| 14. Kandalaksha Bay White Sea       | 34. Lena Delta                              | 54. Central Davis Strait                | 73-B. Polar Pack September 2040 Projection |
| 15. White Sea polyna                | 35. New Siberian Islands waters             | 55. Upernavik Migration Corridor        | 74. Ice Shelves                            |
| 16. Omega Bay White Sea             | 36. Yana Delta                              | 56. Cumberland Sound                    | 75. M'Clure Strait                         |
| 17. Polar Front MIZ                 | 37. Beaufort Sea                            | 57. Eastern Hudson Strait/Frobisher Bay | 76. Cape Bathurst Polynya                  |
| 18. Victoria Island waters          | 38. Chukchi Rise-Borderland                 | 58. Ungava Bay                          | 77. Mackenzie Estuary                      |
| 19. Franz Josef Land Polyna         | 39. Chukchi Sea                             | 59. Central Hudson Strait               | CAFF Boundary                              |
| 20. Franz Josef Land waters         | 40. Barrow Arc                              | 60. Northern Hudson Bay Narrows         |  |





Areas of Heightened Ecological Significance in the 17 Large Marine Ecosystems (LMEs), as identified within the AMSA IIC Fourth DRAFT Report (February 28, 2012).

- Areas of Heightened Ecological Significance
- CAFF Boundary

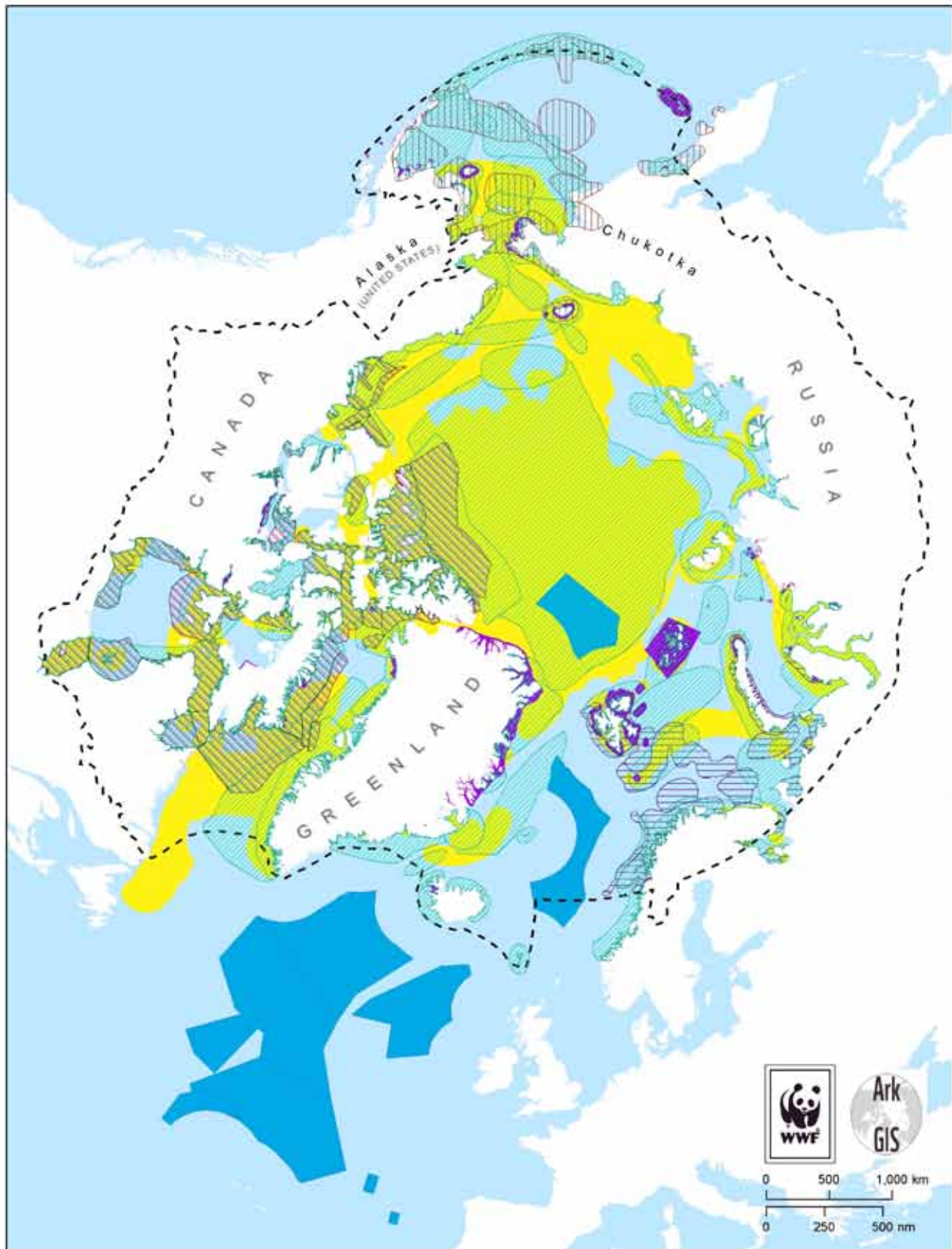
*Note: The AMSA IIC Fourth Draft Report is currently under review. Data shown here is in draft form, and should not be considered final.*



**Arctic Marine Protected Areas**

-  Arctic Marine Protected Areas
-  CAFF Boundary

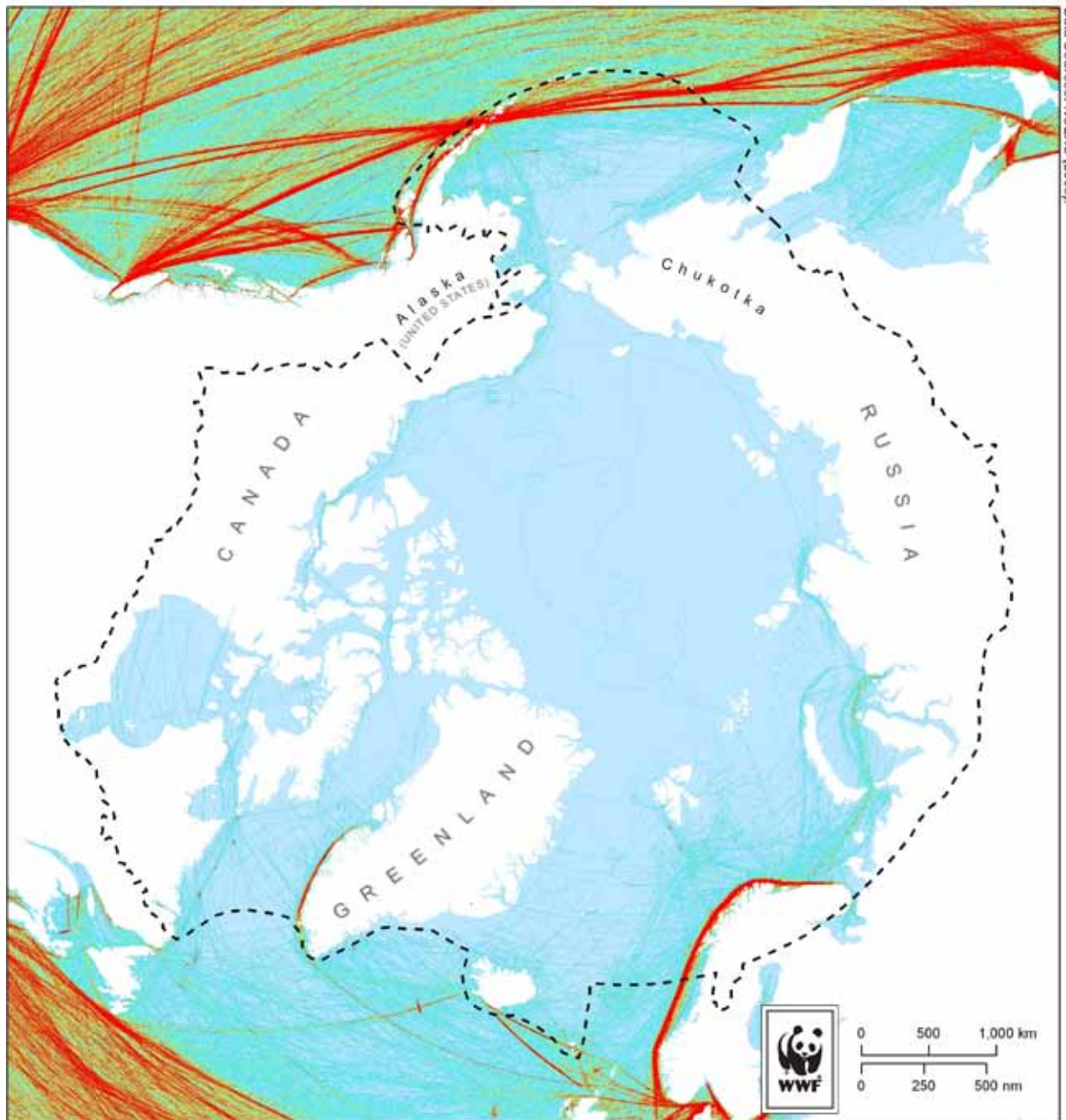
Data Sources: AMSA IIC/PAME (2012), OSPAR/NEAFC/CBD (2011), DFO (2011), CAFF (2010), IUCN/NRDC (2010), WWF (2001), WWF/TNC (1999)



**Overlap in Ecologically and Biologically Significant Areas as defined by various groups.**

- AMSA IIC/PAME - DRAFT Areas of Heightened Ecological Significance
- DFO Canada EBSAs
- WWF/TNC Bering Sea Priority Areas
- WWF Barents Sea Priority Areas
- OSPAR EBSAs
- IUCN/NRDC EBSAs
- CAFF Arctic Protected Areas (Marine component)
- CAFF Boundary

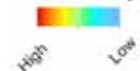
Note: The AMSA IIC Fourth Draft Report is currently under review. Data shown here is in draft form, and should not be considered final.



Commercial Shipping Activity from A Global Map of Human Impact on Marine Ecosystems (Halpern et al. 2008).

Shipping Activity (No. of Ships)

Oct 2004 - Sep 2005



--- CAFF Boundary



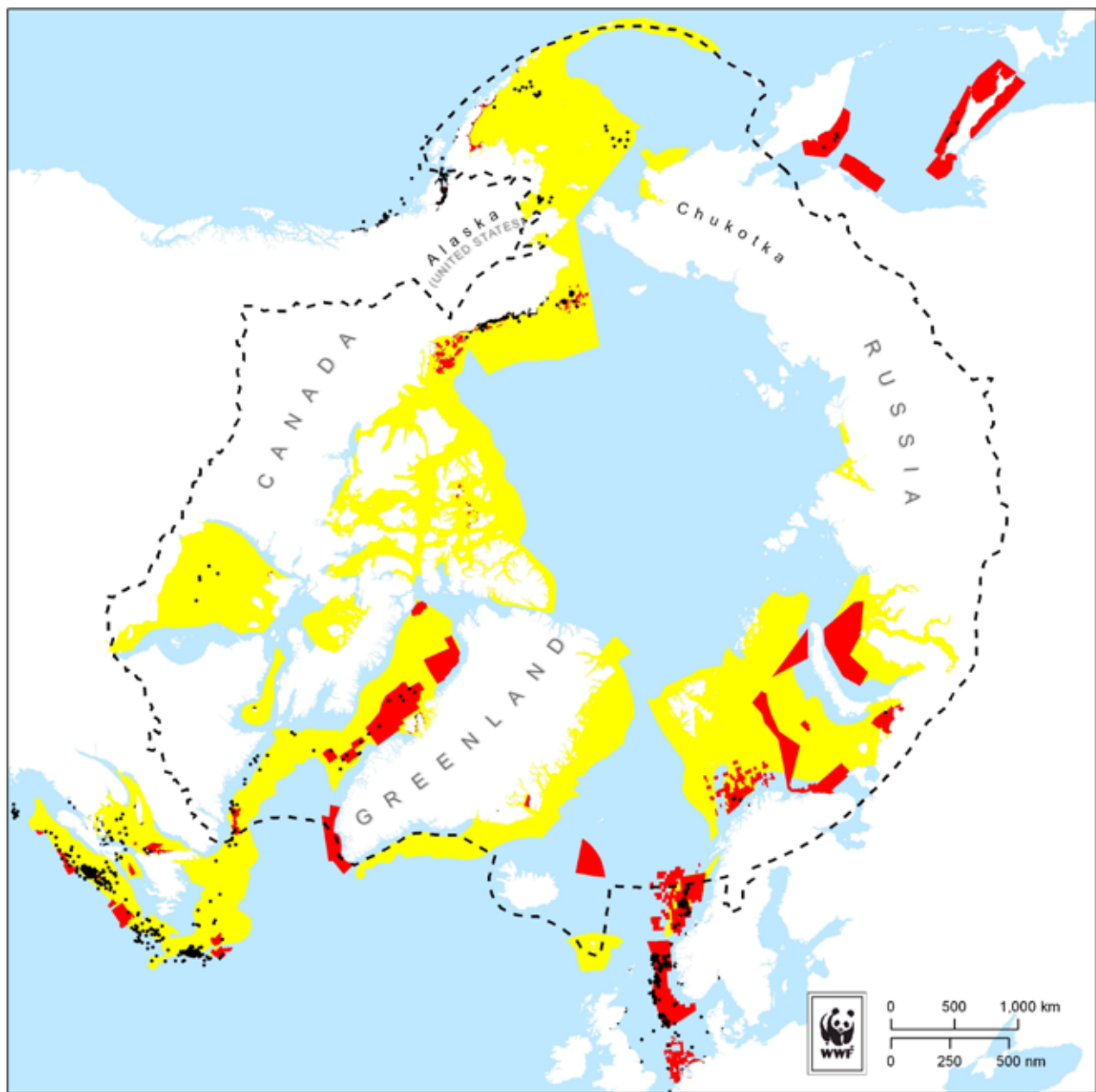


Data Sources: Norwegian Coastal Administration and WWF-Norway (2012), AMSA IIC/PAME (2012), National Audubon Society/Oceana/Ocean Conservancy/Pew Environment Group (2012), OSPAR/NEAFC/CBD (2011), DFO (2011), CAFF (2010), IUCN/IRDC (2010), WWF (2001), WWF/TNC (1999)

**Overlap in Ecologically and Biologically Significant Areas / Priority Areas / Marine Protected Areas as defined by various groups, and AIS shipping data.**

- Ecologically and Biologically Significant Areas as defined by various groups
- CAFF Boundary
- Density of ships - All ship types and sizes (2011)**
- 
- High Low

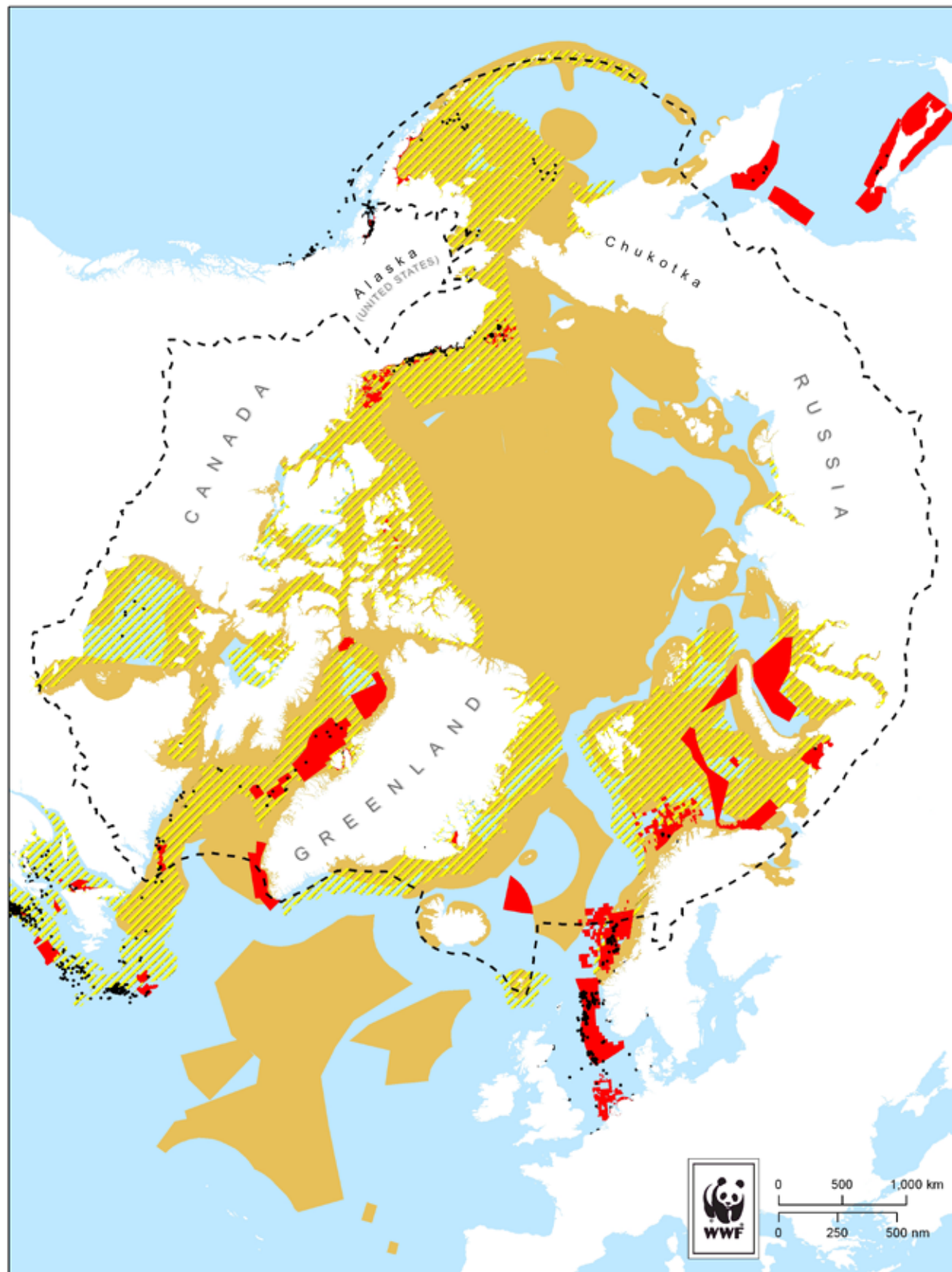
*Note: Shipping traffic density for 2011 is shown for all ship types and sizes from Automatic Identification System (AIS) data, provided by the Norwegian Coastal Administration (2012) and further processed by DNV and WWF. Data accuracy and availability is subject to signal limitations, particularly in the Bering Strait. EBSAs included: Areas of Heightened Ecological Significance from the AMSA IIC/PAME Fourth Draft Report (2012), National Audubon Society/Oceana/Ocean Conservancy/Pew Environment Group Proposed Deferral Areas and Seasonal Restrictions (2012), OSPAR/NEAFC/CBD EBSAs (2011), DFO Canadian EBSAs (2011), CAFF Marine Protected Areas (2010), IUCN/IRDC EBSAs (2010), WWF Barents Sea Priority Areas (2001), WWF/TNC Bering Sea Priority Areas (1999).*



**Oil and Gas Development in the Arctic**

- Oil and Gas Wells
- Oil and Gas Licenses
- Major Hydrocarbon Provinces/Basins/Regions
- - - CAFF Boundary

*Note: Oil and Gas Licenses and Wells were compiled by WWF Global Arctic Programme from Aboriginal Affairs and Northern Development Canada, Norwegian Petroleum Directorate, Greenland Bureau of Minerals and Petroleum, Alaska Department of Natural Resources Oil and Gas Division, Transparent World and WWF-Russia. Data is not comprehensive, and distinctions have not been made between production and exploration wells. Major Hydrocarbon Provinces/Basins/Regions were digitized and compiled by WWF Global Arctic Programme from AMAP (2007) and Bott (2007).*

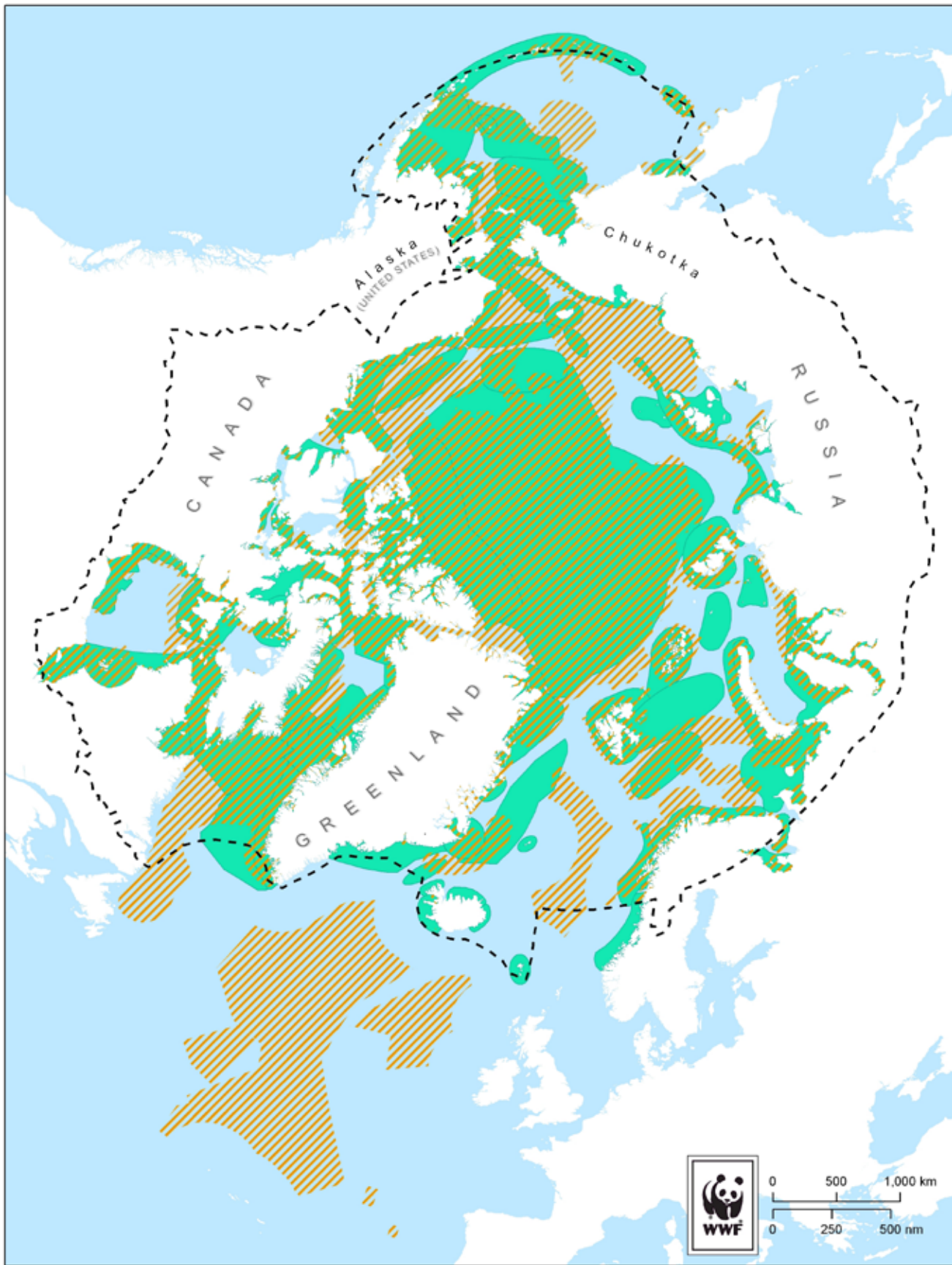


Data Sources: WWF (2012a, 2012b and 2012d), AMSA IIC/PAME (2012), National Audubon Society/Oceana/Ocean Conservancy/Pew Environment Group (2012), OSPAR/NEAFC/CBD (2011), DFO (2011), CAFF (2010), IUCN/NRDC (2010), WWF (2001), WWF/TNC (1999)

**Overlap in Ecologically and Biologically Significant Areas / Priority Areas / Marine Protected Areas as defined by various groups, and Oil and Gas Development in the Arctic**

- Arctic Oil and Gas Wells (offshore)
- Arctic Oil and Gas Licenses
- ▨ Major Hydrocarbon Provinces/Basins/Regions
- Ecologically and Biologically Significant Areas as defined by various groups
- CAFF Boundary

*Note: Oil and Gas Licenses and Wells were compiled by WWF Global Arctic Programme from Aboriginal Affairs and Northern Development Canada, Norwegian Petroleum Directorate, Greenland Bureau of Minerals and Petroleum, Alaska Department of Natural Resources Oil and Gas Division, Transparent World and WWF-Russia. Data is not comprehensive, and distinctions have not been made between production and exploration wells. Major Hydrocarbon Provinces/Basins/Regions were digitized and compiled by WWF Global Arctic Programme from AMAP (2007) and Bott (2007). EBSAs included: Areas of Heightened Ecological Significance from the AMSA IIC/PAME Fourth Draft Report (2012), National Audubon Society/Oceana/Ocean Conservancy/Pew Environment Group Proposed Deferral Areas and Seasonal Restrictions (2012), OSPAR/NEAFC/CBD EBSAs (2011), DFO Canadian EBSAs (2011), CAFF Marine Protected Areas (2010), IUCN/NRDC EBSAs (2010), WWF Barents Sea Priority Areas (2001), WWF/TNC Bering Sea Priority Areas (1999).*



**Overlap in various marine important areas in the Arctic**

- AMSA IIC/PAME - Marine Areas of Heightened Ecological Significance
- Ecologically and Biologically Significant Areas / Priority Areas / Marine Protected Areas from other groups
- CAFF Boundary

*Note: The AMSA IIC Fourth Draft Report is currently under review. Data shown here is in draft form, and should not be considered final. EBSAs included: National Audubon Society/Oceana/Ocean Conservancy/Pew Environment Group Proposed Deferral Areas and Seasonal Restrictions (2012), OSPAR/NEAFC/CBD EBSAs (2011), DFO Canadian EBSAs (2011), CAFF Marine Protected Areas (2010), IUCN/NRDC EBSAs (2010), WWF Barents Sea Priority Areas (2001), WWF/TNC Bering Sea Priority Areas (1999).*

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