

Alaska - Yukon Arctic Ecoregional Assessment Update #1: Project Description

Project Description

The Alaska-Yukon Arctic is the focus of an ecoregional assessment underway by The Nature Conservancy and its partners. The goal of the project is to integrate the best available information about the ecology of the region to identify the lands and waters most necessary for the maintenance of the ecoregion's biodiversity. The result will be a working answer, to be improved on and refined over time. The results, as well as the integrated information inputs, will be available to all parties interested in the stewardship of the Alaska-Yukon Arctic.



Grounded in conservation science, the assessment follows methods outlined in *Designing a Geography of Hope: A Practitioner's Handbook to Ecoregional Conservation Planning* (Groves et al., 2000), although certain modifications will be required to adapt the framework to the unique characteristics of the Alaska-Yukon Arctic.

This is the first in a series of milestone reports that will be distributed to keep partners and interested parties aware of the progress of the assessment project. Another purpose of the milestone reports will be to solicit feedback on methods and results. Please send any comments to contacts listed on the last page.

Following are the major components of the Alaska-Yukon Arctic ecoregional assessment:

1. Communication

Over the past two years, staff of The Nature Conservancy have met with over two hundred people knowledgeable about the ecology of the Alaska-Yukon Arctic. We have received important guidance from scientists, managers and communities. With these periodic updates, we hope to continue communication about our progress. We will send updates to representatives from state and federal agencies, industry, NGOs, regional associations, and others interested in the Alaska-Yukon Arctic ecoregional assessment. The updates will provide opportunities to review methods and interim results; we hope they will also generate feedback and suggestions for improvement.

2. Project Area

Covering 85 million acres, the Alaska-Yukon Arctic ecoregion is composed of three distinct regions: the Beaufort coastal plain, Brooks foothills, and Brooks Range/British-Richardson Mountains (Nowacki et al., 2001). In addition to terrestrial and freshwater areas, the assessment will cover the nearshore environments along the Chukchi and Beaufort coasts.

3. Ecological Backdrop

Terrestrial Predictive Ecosystem Model

A terrestrial predictive ecosystem model has been developed for this project based on physiography, topography, hydrology and vegetation structure. The terrestrial ecosystem model will be used, in part, to predict the distribution of certain species within the ecoregion.

Freshwater Predictive Ecosystem Model

A freshwater predictive ecosystem model is under development to provide a classification that describes and maps physical characteristics of freshwater systems. Combinations of physical characteristics distributed across the landscape will be used to represent aquatic habitats.

Coastal and Marine Ecosystems

Existing shoreline data (NOAA's Environmental Sensitivity Index) will be used in this project as a surrogate for more detailed mapping and modeling of coastal systems. This information will be augmented with information on species distributions and concentrations.

Gap Analysis

A 'gap' analysis will identify how much of each ecosystem type is within landscapes already managed for conservation purposes, and conversely, which ecosystem types are currently under-represented in conservation areas.

4. Elements of Biodiversity

Species

Certain species will be selected from major taxonomic groups (i.e., mammals, birds, plants, fishes) to represent the native biodiversity of the ecoregion. These species will include rare and vulnerable species, as well as common species that represent different habitats, have unique life history requirements, or tie landscape features together due to their functions or movements across the landscape.

5. Data Management

Spatial data relating to the ecology and management of the Alaska-Yukon Arctic ecoregion will be compiled and mapped. Tabular data will be maintained in the Conservation Planning Tool (CPT), an Access database developed by The Nature Conservancy for use in conservation planning. The Nature Conservancy will freely distribute data it develops (such as terrestrial and freshwater system models and FGDC compliant metadata) but will not release data sets restricted by data sharing agreements.

6. Stresses

Current and potential stresses to biodiversity in the Alaska-Yukon Arctic will be described and mapped. From the map, a "cost suitability index" will be created. To the greatest extent possible, the index will be used to guide conservation actions away from areas already, or likely to be, affected by human-caused stresses, including climate change impacts.

7. Conservation Goals

Benchmarks for representation will be set for each selected species and system to facilitate the efficient delineation of areas of biological significance and provide a framework for measuring

conservation progress. Goal setting will require input from biologists and ecologists in order to capture the best available thinking in species population theory and Arctic ecology.

8. Conservation Area Design

Core and buffer areas will be selected that comprise a suite of areas of biological significance. The number and extent of these areas will be limited by quantitative representation goals set for selected species and systems. A selection algorithm called SITES (Andelman et al., 1999) will be used to analyze various options for conservation area design.

9. Subsistence

In recognition that humans are part of the landscape, the assessment will incorporate subsistence information. Subsequent iterations of the assessment will be encouraged to incorporate traditional ecological knowledge in addition to subsistence information.

10. Climate Change

Climate change analyses will describe predicted shifts in climatic variables across terrestrial ecosystem units and will identify potential refugia in the region – areas that are likely to remain climatically stable despite surrounding climate changes.

11. Peer Input and Review

Input will be solicited from partners through the review of periodic project reports, as well as through experts workshops.

12. Final Products

The final products of the ecoregional assessment will consist of a report describing the ecoregion, areas of biological significance, and potential threats. Methods will be profiled in a series of technical reports. Other products will include a map book and data CD.

13. Timeline

June 2004 is the anticipated completion date for the ecoregional analysis, followed by final reports, map books, and data CDs.

14. Contacts

Please contact Amalie Couvillion or Abby Wyers at The Nature Conservancy for further information or to offer feedback on the Alaska-Yukon Arctic ecoregional assessment project.

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References

- Andelman, S., I. Ball, F. Davis, and D. Stoms. 1999. SITES v1.0: An analytical toolbox for designing ecoregional conservation portfolios, a manual prepared for The Nature Conservancy.
- Coppolillo, P., G. Humberto, F. Maisels, and R. Wallace. In review. Selection criteria for suites of landscape species as a basis for site-based conservation. Draft Manuscript submitted to Biological Conservation.
- Groves, C., L. Valutis, D. Vosick, B. Neely, K. Wheaton, J. Touval, and B. Runnels. 2000. Designing a geography of hope: a practitioner's handbook for ecoregional conservation planning. Arlington: The Nature Conservancy. Available from www.consci.org.
- Nowacki, G., P. Spencer, T. Brock, M. Fleming, and T. Jorgenson. 2001. Ecoregions of Alaska and neighboring territory (map). U.S. Geological Survey, Reston, VA.
<http://agdc.usgs.gov/data/projects/fhm/akecoregions.jpeg>
- Sanderson, E.W., K.H. Redford, A. Vedder, P.B. Coppolillo, and S.E. Ward. 2001. A conceptual model for conservation planning based on landscape species requirements. Landscape and Urban Planning 878: 1-16.
- Smith, C.S. K. Hammond, A. Wyers, and A. Couvillion. 2002. Draft Target selection in Alaska – Yukon Arctic Ecoregion. The Nature Conservancy in Alaska.