

Patterns of Species Richness and Species Distribution in Coastal Alaska: a baseline for detecting change

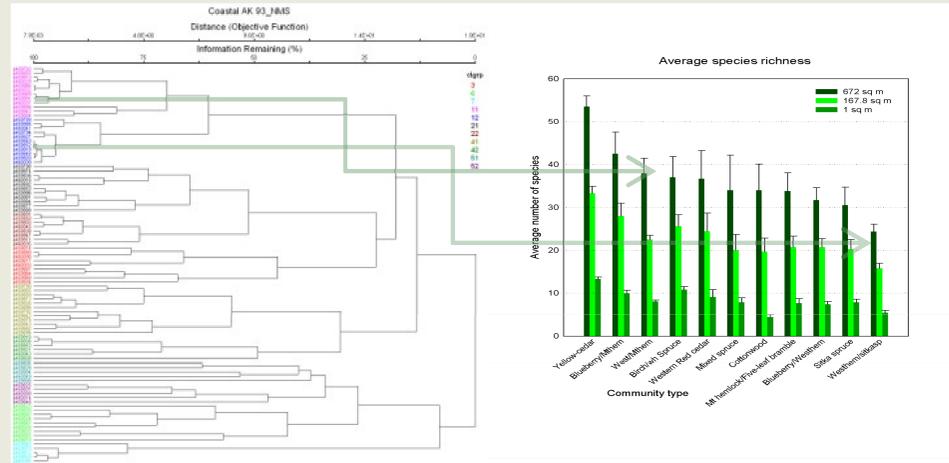
Beth Schulz PNW Research Station



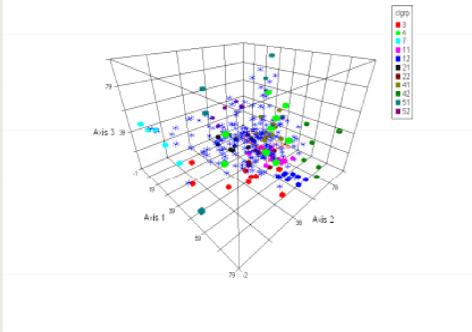
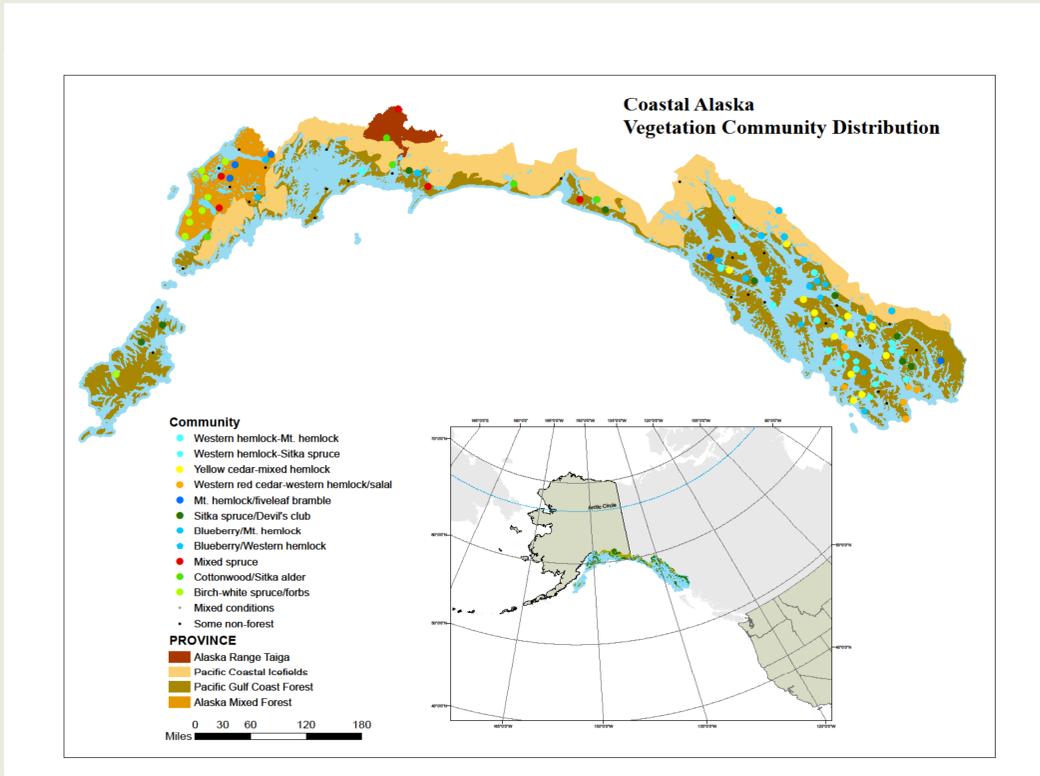
Ecosystems in high latitudes are thought to be a greater risk for impacts of global climate change. Quantified measures of existing biodiversity and species distribution with known confidence are required to reliably assess changing conditions in an era of shifting conservation priorities and climatic conditions.

The FIA inventory of forested lands in coastal Alaska includes an inventory of vascular plants on 135 permanently established Forest Health Monitoring plots.

Plots grouped into community types defined by cluster analysis of species composition data. Estimates of mean species richness of the plant communities are compiled for plot, subplot, and quadrat areas. While some species are ubiquitous throughout the area, some are at the limits of their range. Changes in their distribution over time can be assessed as plots are remeasured. The frequency of several of the most common species encountered are displayed by community type.



Yellow-cedar (*Cupressus nootkatensis*) stands have the highest species richness. Although some community types have many species in common, they display very different patterns in species richness.



Plots arranged in "species space" in non-metric multidimensional scaling analysis. Latitude, longitude, and elevation are highly influential.



Bunchberry (*Cornus canadensis*) is the most common species recorded. For ubiquitous species, its more interesting to see where they *don't* occur. In this case, bunchberry is missing from the cottonwood dominated forests.



Devil's club (*Oplopanax horridus*) was recorded on over 60% of the plots. Because it is a bigger plant, quadrat frequency is much lower than for bunchberry.



Pure stands of Sitka spruce (*Picea sitchensis*) are relatively uncommon, but Sitka spruce is the tree species most often recorded.

We have established a baseline for species richness and species distributions that can be monitored for changes in the future.



Beth Schulz bschulz@fs.fed.us
National Vegetation Indicator Advisor
PNW Research Station
Anchorage Forestry Sciences Lab

