

Biogeographical Distributions

actual observations

derived choropleth map

FIGURE 13.7 A 2001 map based on recorded collections for black spruce (Picea mariana) in North America (after Pritchard and Dyer, 1992) and a choropleth map based on the same data. The map based on actual observations and appears to show that the density of spruce decreases significantly near the northern limit. The actual northern boundary is relatively diffuse and composed of fragmented, isolated individuals and small stands.

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Finer resolution mapping reveals discontinuous populations or individuals that are hidden by coarse-resolution maps

FIGURE 13.8 The biogeographical distribution of a plant species. The distribution appears as a single unit on a coarse-resolution map, but when viewed at a finer resolution, the unit can be broken into discrete, discrete biogeographical units. When viewed at an even smaller scale, the unit can be broken into individual individuals.

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What is the typical range size of a species (not an individual)?

For reference:

US: $9 \times 10^6 \text{ km}^2$
 Alaska: $1.5 \times 10^6 \text{ km}^2$
 Idaho: $0.2 \times 10^6 \text{ km}^2$

FIGURE 13.9 Size of the geographic ranges of North and Central American bird birds (after Brown, 1995).

Similar patterns for mammals, other organisms

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Relative range size

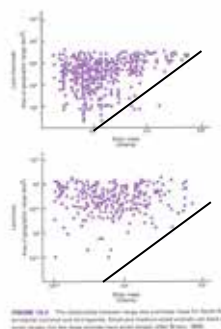
amphibians/fish < mammals < birds
(why?)

herbivores < predators
(why?)

smaller animals < larger animals
(why?)

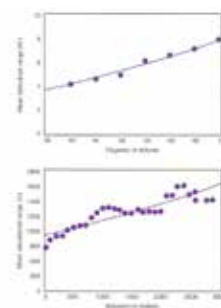
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Rapoport's Rule

More northern species have larger ranges

Higher elevation species have larger ranges

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