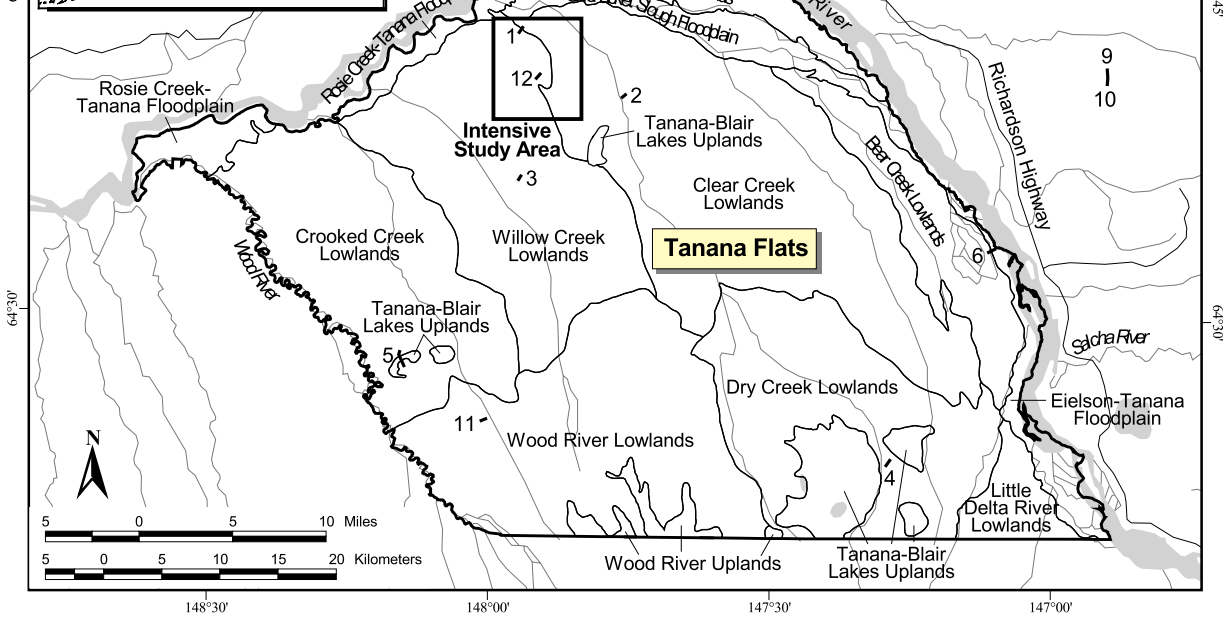

Figure 1. Map of the Tanana Flats in central Alaska showing the limits of the overall study area and the intensive study area. Subdivisions within Tanana Flats indicate ecosubdistricts with repeating associations of geomorphology and vegetation. Numbers indicate intensive sampling transects.

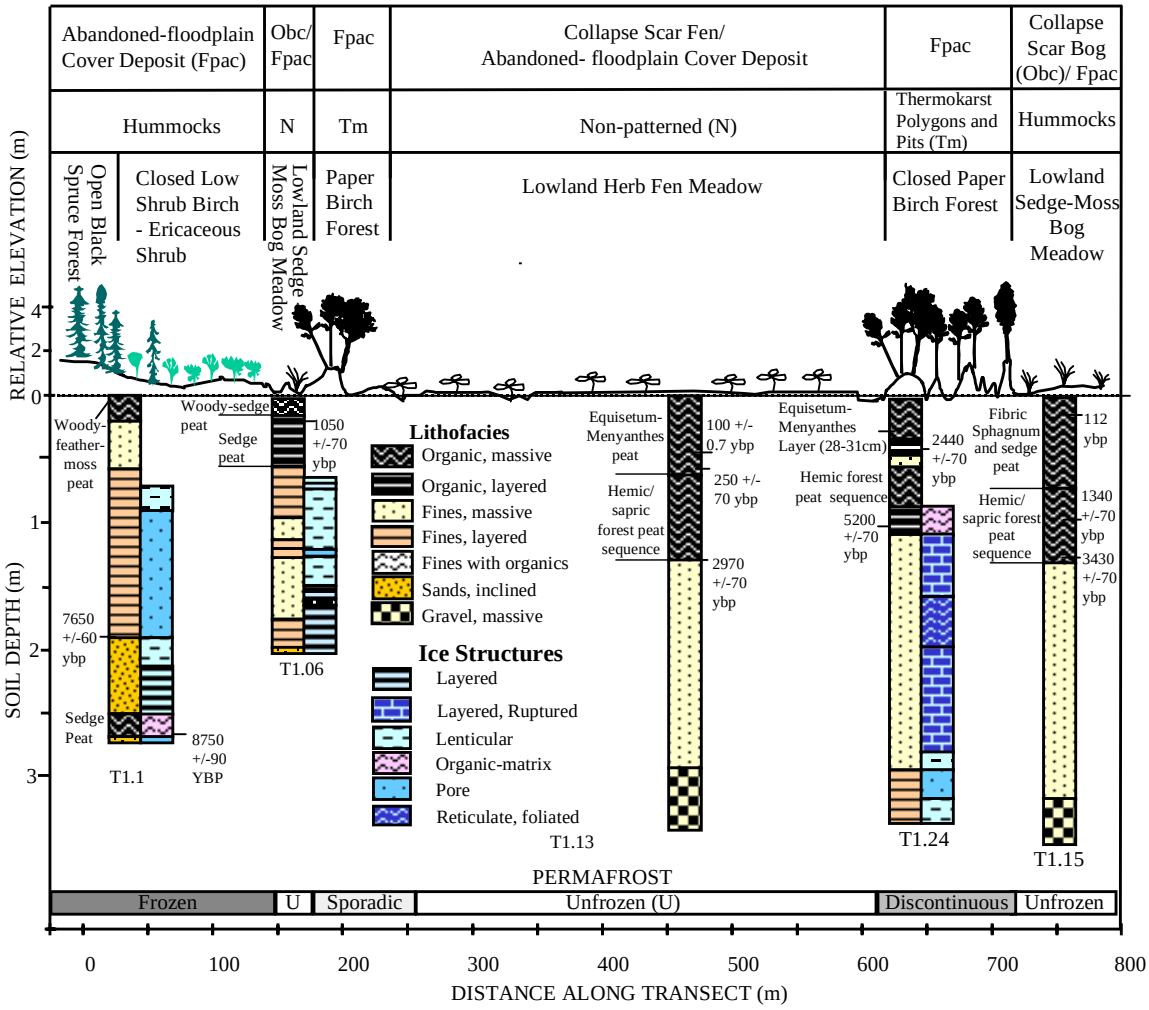

Figure 2. Toposequence at Transect 1 illustrating relationships among topography, geomorphology, surface form, vegetation, soil stratigraphy, and permafrost. For each core, lithofacies are portrayed in left soil column and ice structure in right column when present.

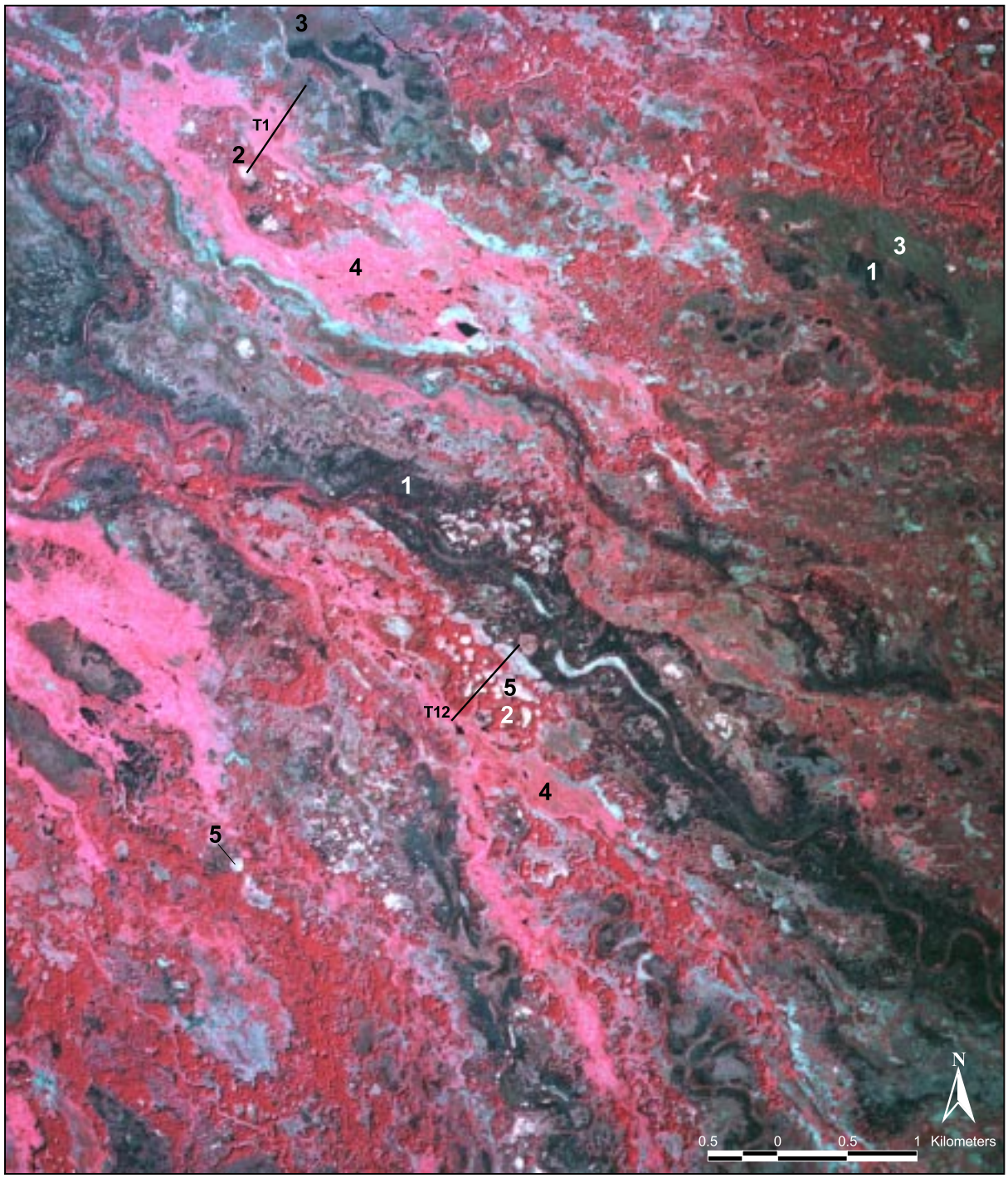

Figure 3. Aerial photograph (1978, color-infrared) of the intensive study area within the Willow Creek lowlands portion of the Tanana Flats, central Alaska. Numbers indicate dominant lowland ecosystem types: (1) black spruce forest, (2) birch forest, (3) low scrub, (4) fen meadow, and (5) bog meadow. Sampling transects T1 and T12 also shown.

Figure 4. Aerial view of dying trees along the margins of lowland birch forests resulting from rapid permafrost degradation on the Tanana Flats, central Alaska.

Figure 5. View of thermokarst pit with dead birch trees and aquatic vegetation in the water-filled center. Live trees on the margins were ~50–60 years old, while dead trees in the center were frequently ~30–40 years old.

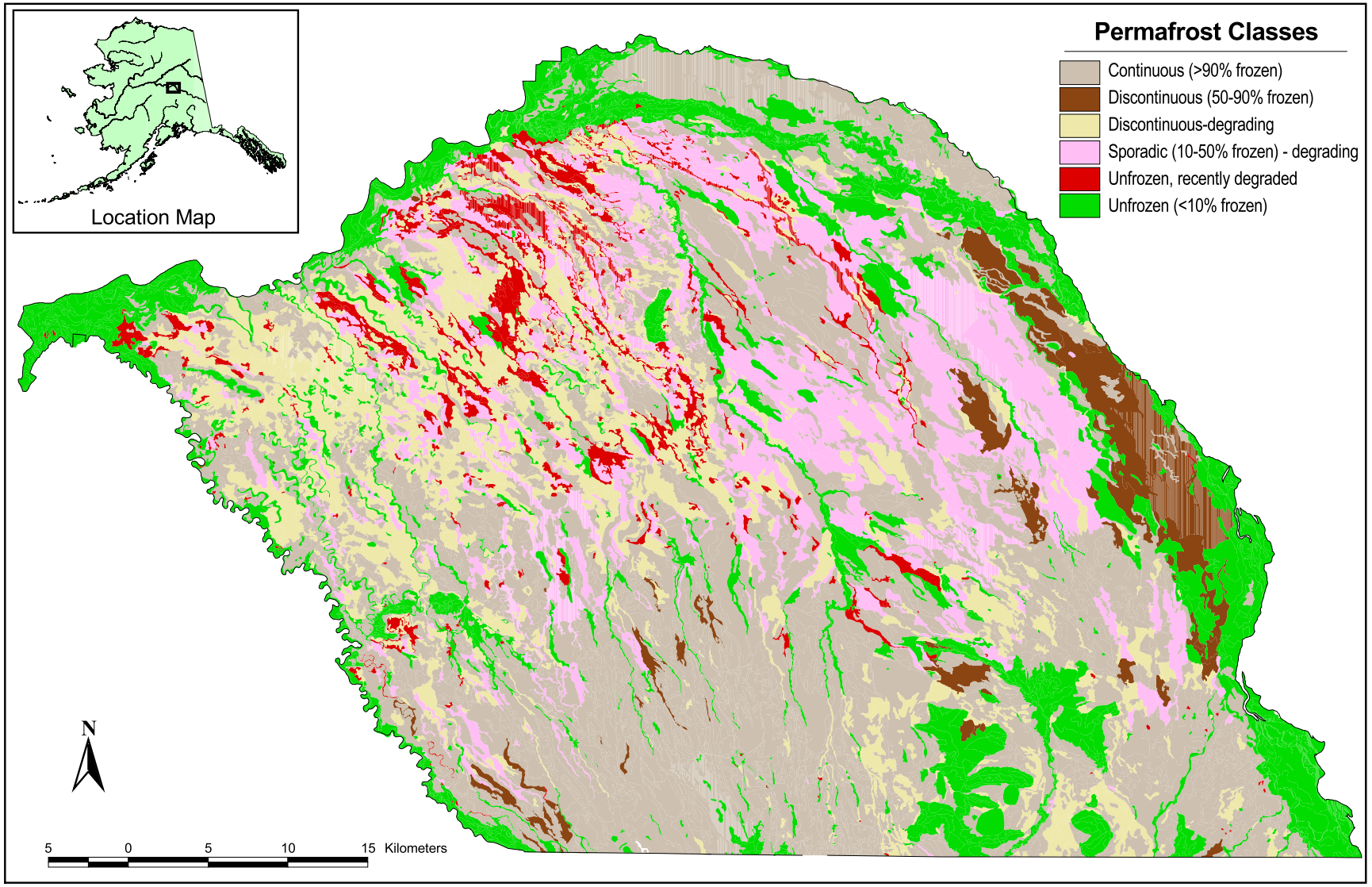

Figure 6. Map of permafrost distribution on the Tanana Flats, central Alaska, based on association of permafrost characteristis with other ecosystem properties.

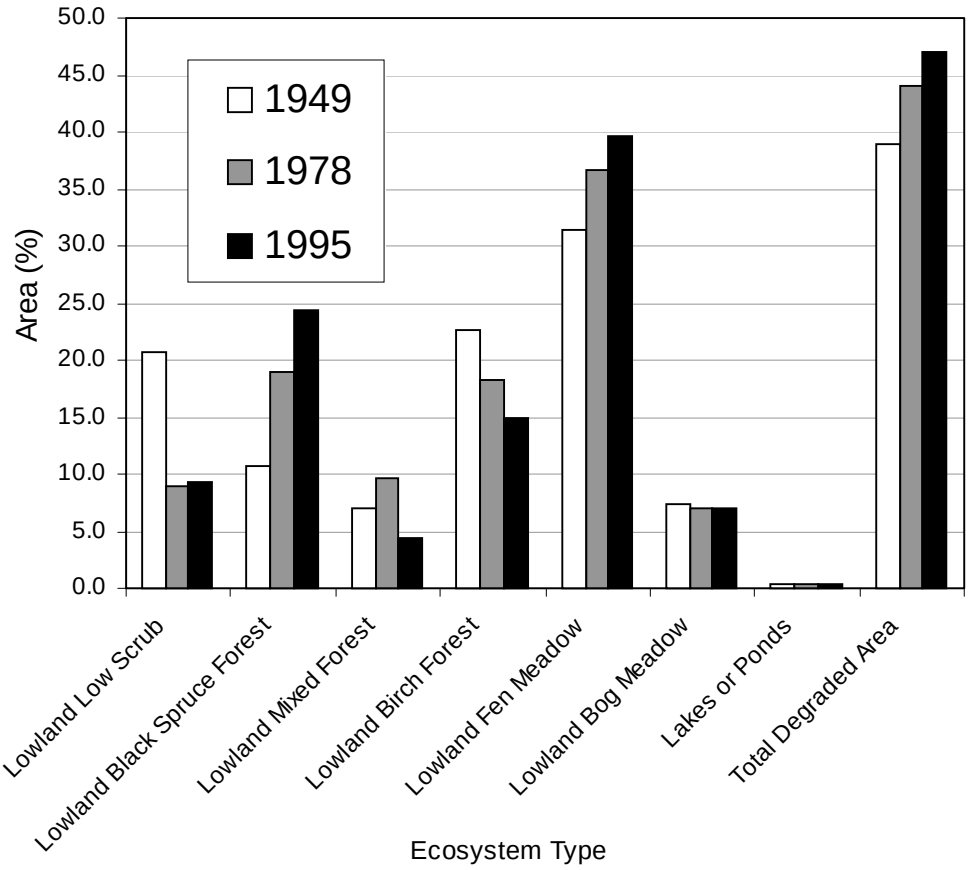

Figure 7. Changes in areal extent of ecosystems on the Tanana Flats based on photointerpretation of aerial photography taken in 1949, 1978, and 1995.

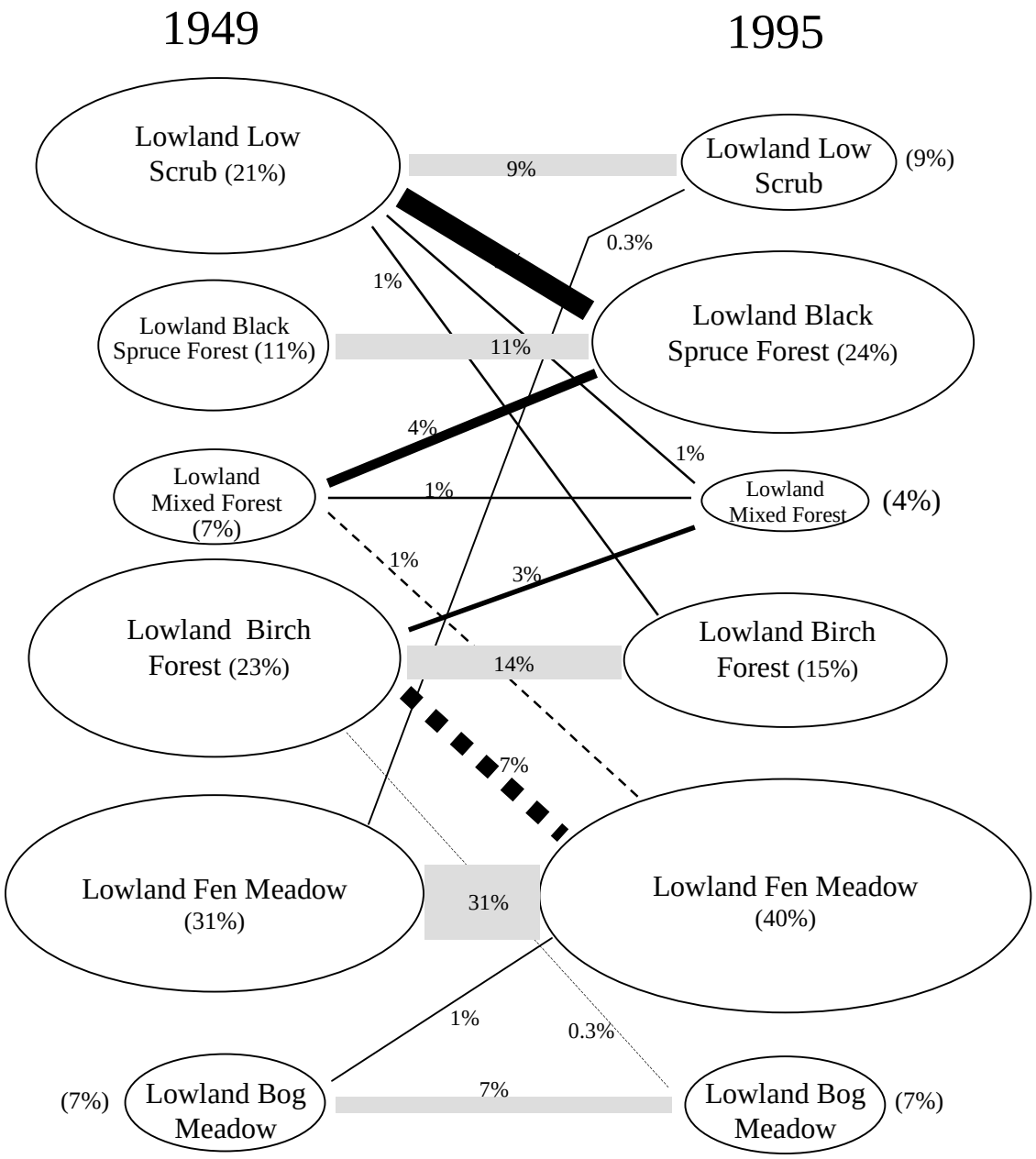

Figure 8. Pathways of change in areal extent of ecosystems on the Tanana Flats from 1949 to 1995. Sizes of ellipses and lines are proportional to percent of area, and values are for percent area. Gray lines indicate no change, solid black lines indicate succession of canopy species, and dashed lines indicate permafrost degradation.

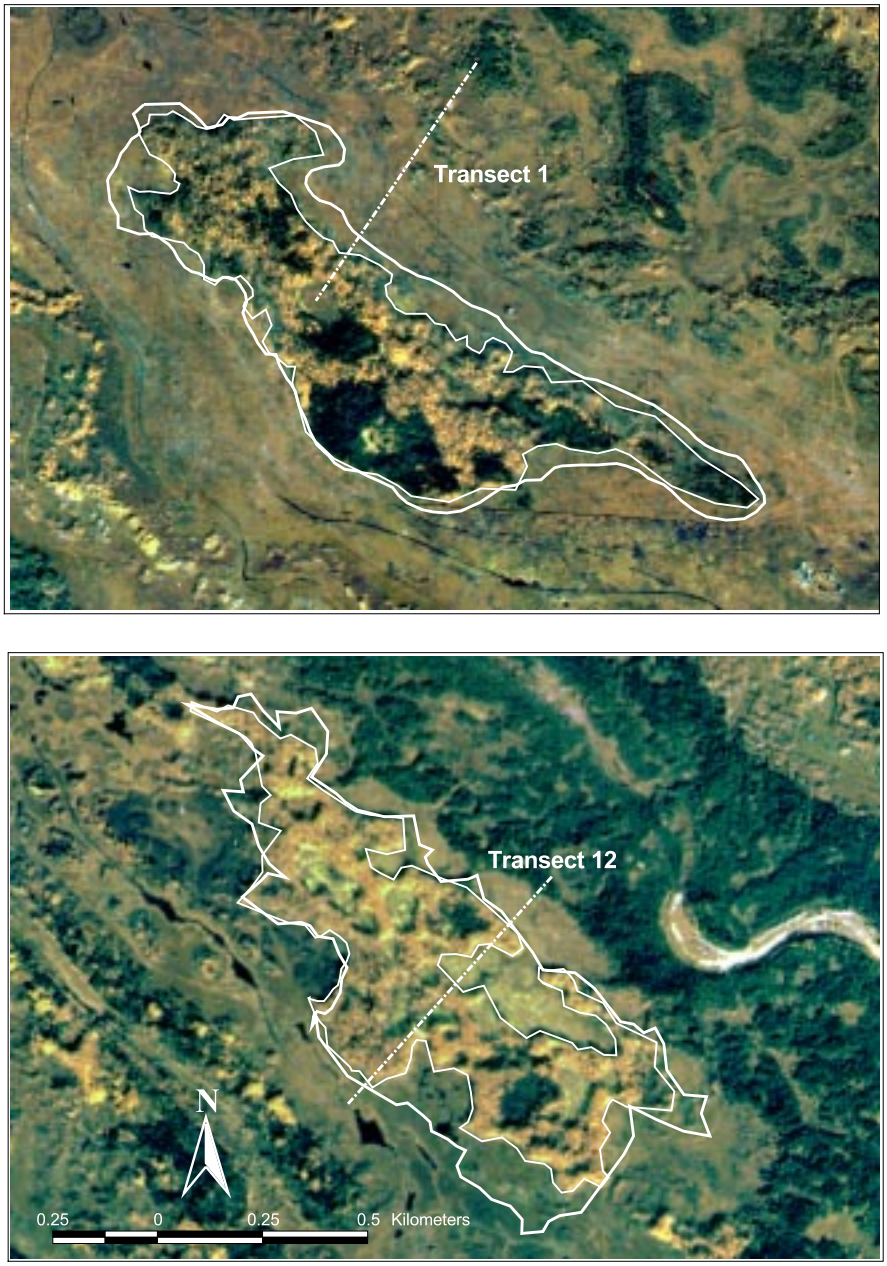

Figure 9. Changes in boundaries of two permafrost plateaus (birch "islands") from 1949 (thick white line) to 1995 (thin white line) near transects 1 and 12 on the Tanana Flats, central Alaska.

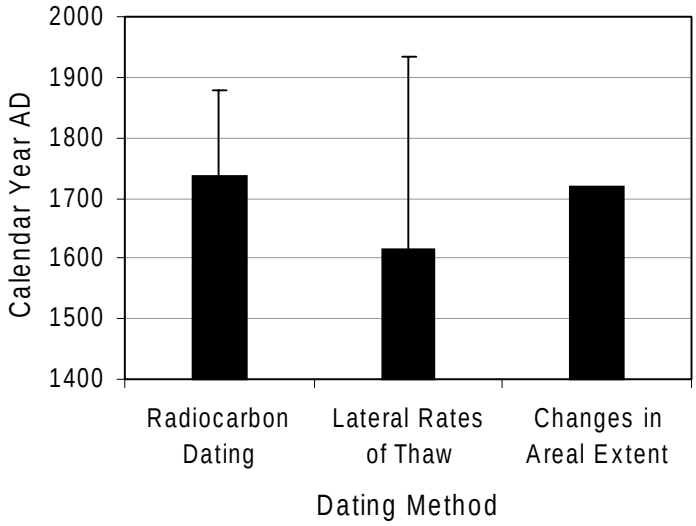

Figure 10. Estimated year of initiation of permafrost degradation on the Tanana Flats, based on (1) mean (±SD, n=5) radiocarbon dates of paper birch stems at the base of fen peat (*Menynathes trifoliata-Equisetum fluviatale*), (2) extrapolating mean (n=10) lateral rates of thaw of fen margins back to center of fens, and (3) extrapolating the rate of change in area of fens back to time when no fens were present.