Insect Outbreaks

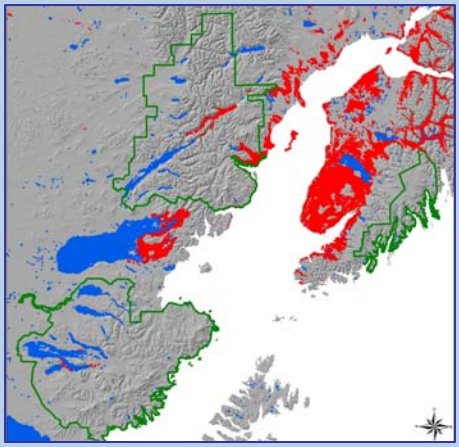
Vital Signs Monitoring- Southwest Alaska Network

Importance / Issues

Disturbance is an important driver regulating landscape pattern and process in the SWAN. High latitude forests have experienced widespread mortality and/or loss of canopy cover due to insect and disease outbreaks in the past. Spruce bark beetles (*Dendroctonus rufipennis*) and a variety of native and non-native defoliators (e.g., birch leaf roller, *Epinotia solandriana*, birch leaf miner, *Profensa thomsoni*, and the alder- and willow-defoliating noctuid, *Sunira verberata*) occur at various levels within the SWAN parks. Changing land use patterns and variation in climate may affect population dynamics of insects and forest pathogens, potentially altering forest structure and composition in the future. The current spruce bark beetle outbreak has killed approximately 35,000 ha (86,500 acres) on the Alaska Peninsula. A retrospective tree-ring study being conducted in Lake Clark NPP (LACL) will provide information regarding the frequency and extent of historic spruce beetle outbreaks, and whether the current outbreak is outside the historic range of variability.

Sampling Design and Objectives

Monitoring objectives are to detect the establishment of new native and non-native insects and pathogens in the SWAN, monitor the rate and extent of forest die back, and identify areas in the SWAN that have experienced the greatest mortality.



Spruce bark beetle mortality in southwest Alaska, 1989-2004 (USFS & State of Alaska Dept. of Natural Resources, 2004)

Top: Spruce bark beetle mortality near Tuxedni Bay, Lake Clark NPP. Bottom: Ed Berg, USFWS cooperator, takes notes on noctuid defoliator damage on alder in Katmai NPP. As of 2005, 2800 ha (6900 acres) of alder and willow had been affected.

Current and Future Monitoring

Aerial detection survey data compiled by the USFS and Alaska Division of Forestry will be used to quantify annual and cumulative damage from forest insects and pathogens. In some cases, satellite data (e.g., Landsat TM/ETM+) may be used to supplement the survey data.

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USDA Forest Service and State of Alaska, Dept. of Natural Resources, Division of Forestry. 2004. Forest Health Conditions in Alaska. Anchorage, AK, 97 pp.