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WESTERN BLACKHEADED BUDWORM IN THE QUEEN CHARLOTTE RANGES OF THE PACIFIC MARITIME ECOZONE GWAII HAANAS - QUEEN CHARLOTTE ISLANDS

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As part of a cooperative agreement between Canadian Forest Service-Forest Health Network and the South Moresby Forest Replacement Account, assessments of forest health were conducted on the Queen Charlotte Islands including the national park reserve of Gwaii Haanas.

A variety of conditions were examined, but the major disturbance was a new outbreak of the **western blackheaded budworm**, *Acleris gloverana*. This was assessed during more than 10 hours of aerial surveys over two days in cooperation with the B.C. Forest Service. Defoliation occurred in 133 infestations over 9460 ha of mature and immature hemlock forests on the east side of Moresby and adjacent islands. This is the first year of budworm defoliation on the Queen Charlotte Islands since the last major outbreak which occurred between 1985 and 1988.

Defoliation was mapped as 8100 ha light, 1180 ha moderate and 180 ha severe and occurred mostly in Gwaii Haanas. Tanu, Lyell, Burnaby and Kunghit islands all had multiple infestations although that on Lyell Island was the most severe, consisting of 1980 ha light, 700 ha moderate and 130 ha of severe defoliation. Many of the smaller islands were also notably infested. On Moresby Island, many areas of discoloration occurred from Cape Fanny to Jedway, and less numerous, scattered patches of light defoliation occurred north to the park boundary. Only four areas (totalling 290 ha) of light discoloration were found outside of the park; these were located at Crescent Inlet, Sewell Inlet, the west side of Talunkwan Island, and Vertical Point on Louise Island.

The aerial survey was completed on August 2nd; larval sampling in road-accessible areas of QCI during the period indicated large budworm populations with many larvae not yet in the final instar. A defoliator often associated with the budworm, the hemlock sawfly, was also present in high numbers at some sites. Larval development may not be complete until late August. Both intensity and extent of visible damage may therefore expand this year, especially north of the park.

Maintenance of forest ecosystem health and vitality for conservation and sustainable management for a variety of values is impacted by agents such as the **blackheaded budworm**. Damage to western hemlock varies with intensity of defoliation and duration of outbreaks. For this insect, this can be tracked using previously developed systematic sampling techniques. Severe defoliation for one or two years results in tophill; outbreaks exceeding two or three years may result in tree mortality. The additional presence of large populations of hemlock sawfly exacerbates the damage. Other tree species are less severely impacted and direct feeding damage to other vegetative species is unknown. Effects on biodiversity such as changes in species mix and population levels of various flora and fauna related to increased solar penetration and tree mortality have not been determined as the methodologies to assess these effects have not been developed. The mostly light defoliation to date is expected to result in some increment loss in hemlock.

The similarity in development of the pest to the previous outbreak indicates the potential for expansion northward and several years of defoliation. Larval sampling in the north part of Moresby and on Graham Islands indicate a rapidly expanding population. Egg sampling in the fall could further aid in predicting defoliation for 1997, while a mass larval collection currently in rearing will provide data on the health of current populations. Methods to predict effects on other flora and fauna related to such biotic disturbances have not been developed.

Historically, several ecoregions in the Pacific Maritime ecozone have been extensively defoliated by the budworm in periodic outbreaks, causing severe damage¹. As this is the first year of the outbreak, opportunities perhaps exist for cooperative research between federal and provincial agencies as well as SMFRA. Results² of major plot work to determine losses during the last budworm outbreak did not include comprehensive defoliation estimates over the life of the outbreak or direct involvement with damage appraisal expertise although most of the plots developed at that time may still be available for further study. No impact on biodiversity has been done in outbreak conditions and perhaps such ecology-based studies could also be conducted here.

¹ Koot, H.P. 1991. Western Blackheaded Budworm. Forest Pest Leaflet 24. 4 pp.

² Wood, C.; Garbutt, R. 1989. Defoliator Damage Assessment and Detection and Mapping of Insect Epidemics, Queen Charlotte Islands and Mainland Coast, 1989. FIDS Rep. 90 - 8, 43 pp.