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The Old Growth Working Group, Ecological research and inventory team

Technical discussion paper for 6/90 meeting

Successional mosaics, biological diversity and the management of old growth fragments across districts

Regardless on the total area of old growth forest that is preserved or allocated for deferred harvesting, the remaining tracts of old growth in British Columbia will be part of larger landscape and district-wide wildlife management units that will be dominated by second-growth. There will hopefully be a few more large lowland wilderness areas established but even these will involve an uneven blend of old growth attributes - in terms of requirements for both wildlife and maintenance of local biological diversity and in terms of recreation. The success of these old growth / second growth mosaics at maintaining wildlife and recreational amenities will be in large part the result of management for maintenance of contiguous units with certain old-growth attributes across areas that will respond variably to the impacts of natural disturbance. And such "old growth landscape management strategies" will need to be very different between biogeoclimatic zones and natural disturbance processes and in terms of the extent of the biophysical diversity that occurs within each district. Old growth "fragments" need to be allocated and designed as networks, especially when the areas are relatively small, and linked through corridors (Simberloff and Cox 1986) of uncut forest or areas which are under increasingly precise harvesting prescriptions.

Tracts of old-growth forest are actually mosaics of different forest types, successional phases and ecological edges. Old growth reserves will be part of district wide landscape mosaics that are dominated by second growth. In planning networks of old growth fragments we are assuring the persistence of key but vulnerable elements of the (hetergeneous) regional landscape (Formann 1982, Merriam 1988). Such old growth attributes are particularly important for habitat conservation and for recreation (Orians 1986).

The old-growth reserves that are established will vary markedly by different natural and land use contexts at the district and regional levels (Isochenko 1973). Over the long term, such fragments of old-growth ecosystems will change in response to various factors in the region. Consider the possible differences in 100 years for a prospective reserve as surrounded by urbanization versus farmland versus intensively harvested second growth on short rotations versus a more gradual partial harvesting with some deferral. Issues of **scale** (Meenteneyer and Box 1987) emerge in terms of the extent of human-induced disturbance (Brady and Hanley 1984) in the region, the size of the reserves and the ecological corridors (or lack of) between the reserves.

In first looking at landscape mosaics, the concept of the habitat "isolate" (Wilcox and Murphy 1985) as applied to the different forest types and disturbance regimens in BC is useful. Similar types of habitat in an area are either isolated as "islands" (but with varying distances and barriers) or are linked by corridors of various widths and durations. Except in the case of the spread of disease and invasive species, management of regional landscapes to maintain ecological corridors of various types and with various ecological attributes is preferable. Therefore, old growth reserves must not be selected and designed as isolated fragments but rather as networks with various kinds of linkage within and across entire watersheds.

In addition to corridors, there is tremendous value in choosing conservation areas which consistitute large mosaics of diverse mosaics of old-growth habitat that extend over various environmental gradients and biogeoclimatic zones. The type of input provided by the Ecological Reserves Unit in the forest land use planning of the Tsitika Valley, Vancouver Island over a decade ago needs to be replicated for virtually every regional forest planning exercise in the Province.

research priority 1: district-wide studies of old-growth mosaics; past and current research in BC (as opposed to vague generalization from the PNW of the US)

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research priority 2: identification of the community-level diversity over districts and its relation to landform, disturbance and biogeography - as related to different biogeoclimatic zones - some methods and formats for BC

research priority 3: identification of particularly diverse or unique or vulnerable mosaics and elements of mosaics and relationships to various natural and human-induced disturbance factors

research priority 4: further identification of species where corridors are particularly necessary and identification of the respective old-growth attributes that are necessary

research priority 5: integration of requirements for maintenance of old-growth dominated successional mosaics into district-wide integrated resources management - review of techniques and planning and administrative approaches

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