

## ROOSEVELT ELK MANAGEMENT POLICY FOR BCTS AREAS OF THE PACIFIC TIMBER SUPPLY AREA (TSA) (FORMERLY TFL 44 WEST)

### Status

Roosevelt Elk (*Cervus elaphus roosevelti*) are native to Vancouver Island, the south coast of British Columbia, and coastal areas of Washington, Oregon and northern California. Except for transplanted herds on the Sunshine Coast, the entire BC population resides on Vancouver Island and numbers approximately 4,300 to 6,100 animals (Figure 1). The range of Roosevelt Elk has been reduced and fragmented in coastal areas and hence is blue-listed by the Conservation Data Centre (Cannings et al. 1999). However, the Vancouver Island population has been expanding in recent decades (K. Brunt, pers. comm.).

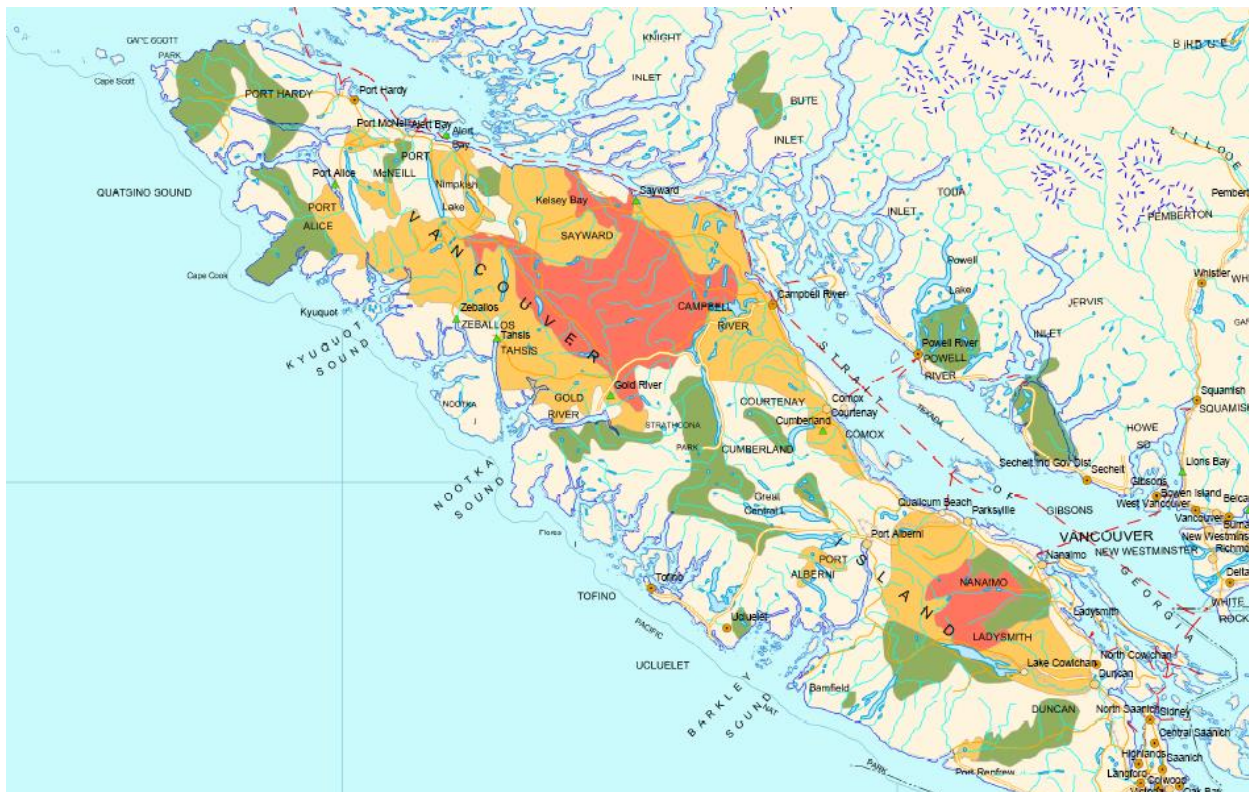


Figure 1: Distribution and abundance of Roosevelt Elk on Vancouver Island (FLNRO 2011)

**Green** = 1 elk per 10-250 km<sup>2</sup>; **Yellow** = 1 elk per 2.5-10 km<sup>2</sup>; **Red** = > 1 elk per 2.5 km<sup>2</sup>

There is keen interest in hunting Roosevelt Elk on Vancouver Island. The harvest is managed through a limited entry hunt (LEH) system with draws identified for First Nations and non-First Nations hunters. Currently 7 animals annually are available for harvest in the Nahmint Hunt Zone. There is a harvest agreement with First Nations (FN) for 4 elk per year, and 3 elk per year are allocated to non-First Nations. The FN hunt is for 2 bulls and 2 cows and the non-FN hunt is for bulls only. 12% of the non-FN allocation goes to Guide Outfitters (K. Brunt, pers. comm.).

### Roosevelt Elk in the Pacific TSA

Suitable elk habitat occurs throughout portions of the Pacific TSA in the former TFL 44 West area. In the western portion of the area, elk use is centred in the upper Nahmint Valley, above Nahmint Lake. A native population of Roosevelt Elk historically occupied the upper Nahmint, but were nearly extirpated by the 1980's. Thirteen Roosevelt Elk were transplanted into the valley in 1988 (K. Brunt pers. comm.) and the current population is approximately 60 to 70 animals. The herd is considered resident to the Nahmint, migrating seasonally up and down the valley. The herd also migrates into the Henderson Landscape Unit. (K. Brunt, pers. comm.).

An ungulate winter range plan was prepared for TFL 44 in 2004 (BC Ministry of Water, Land and Air Protection 2004) and subsequently 1,946 ha of ungulate winter range (UWR) were established on TFL 44 West, including 427 ha as four elk winter ranges in the upper Nahmint. All winter ranges were assigned ratings of *moderate-extremely high*, based on several assessment variables including: topographic features, overstory and understory characteristics, lichen load and evidence of elk use (BC Ministry of Water, Land and Air Protection 2004).

### Habitat Requirements

Roosevelt Elk habitat requirements are driven by their need for abundant, high quality forage. As a result, they are typically found in any habitat dominated by dense shrub cover, including open coniferous or deciduous forest stands, wetlands, riparian areas, vegetated slides in the summer (Fig. 2), and around the edges of rock outcrops with warm aspects in the winter and spring (Nyberg and Janz 1990). Roosevelt elk require snow interception cover in winter when snowdepths exceed 30 cm (BC Ministry of Water, Land and Air Protection 2004). Older stands are preferred as they provide good snow interception characteristics and access to forage. In other seasons elk are usually associated with cover for predator-avoidance reasons, often bedding down just inside a forested edge (Shackleton 1999). Research has indicated that Roosevelt Elk will avoid very young clearcuts (1-5 years old) and even-aged, regenerating stands (15-150 years old), preferring shrub-dominated clearcuts >5 years old and older stands (Schroer et al. 1993).



Figure 2: Warm aspect vegetated slide provides an abundance of forage in early spring, late spring and summer

Most Roosevelt Elk on Vancouver Island are migratory and occupy distinct winter, summer and spring ranges (Nyberg and Janz 1990). Winter ranges are typically in valley bottoms while summer ranges are typically at higher elevations. Elk are attracted to areas in spring where green-up occurs first such as wet areas, vegetated slides or rock outcrops with warm aspects.



Figure 3: Herd of Roosevelt Elk in winter

Roosevelt Elk range in herds (Fig. 3) and can occupy habitat features for days at a time (Nyberg and Janz 1990). As a result, they are susceptible to harassment by human-related activities that can displace them from otherwise suitable habitat.

### **Habitat Management Approach**

The winter requirements of Roosevelt Elk are intended to be met by Ungulate Winter Ranges specifically established for elk. Other areas reserved from forest harvesting may provide suitable elk winter range; in particular, riparian areas, Special Management Zones (SMZs) and Old-growth Management Areas (OGMAs). See Appendix 1 for Roosevelt Elk winter range assessment variables.

Migratory elk populations generally move into high elevation sub-alpine and alpine areas in summer. The location of spring ranges is variable; they are often located between winter and summer ranges. Important sites include riparian areas (Fig. 4), warm aspect vegetated slides (Fig. 5) and rock outcrops that are snow-free early in the season and provide an abundance of forage. There are some non-migratory elk populations that must meet all their life history requirements within relatively small, low-elevation ranges that may or may not be captured by existing UWRs, riparian zones and OGMAs.





Figure 4: Important spring range include riparian areas with treed buffers for visual cover



Figure 5: Important spring range include warm aspect vegetated slides with treed buffers for visual cover

Specific knowledge of individual populations is required to properly identify gaps in habitat management. BCTS will address Roosevelt Elk habitat requirements in portions of their operating area where elk occupy spring and/or summer ranges, while following legal objectives and associated General Wildlife Measures (GWM) for UWRs and other areas legally reserved from forest harvesting. BCTS will use available sources and will seek input from First Nations to help characterize local elk distribution and habitat use. BCTS may also conduct independent sampling for elk to confirm habitat use.

### **Management Considerations**

BCTS management of Roosevelt Elk habitats will follow the considerations:

1. Retain significant wet-habitat features that provide abundant forage.

- Protect significant riparian areas and wetlands within seasonal ranges.
2. Provide security cover adjacent to suitable forage sources.
    - Maintain buffers of 30 m to 50 m around significant riparian and wetland features, subject to operational considerations (Fig. 6).



Figure 6: Cutblock with retained riparian buffer

- Employ irregular cut-block designs that ensure that no point within the cut-block is >200 m from an edge that can provide security cover (Fig. 7).



Figure 7: Example of an irregular cutblock design that can provide security cover

3. Provide screening cover to minimize disturbance:
  - retain vegetation or use other features to hide suitable forage areas from major forestry roads or highways;
  - rehabilitate in-block spur roads.
4. Encourage conditions in cut-blocks that balance vigorous forage growth with restocking objectives:

- avoid herbicides;
  - regenerate disturbed roadsides within cut-blocks using clover and native grass mixes.
5. Encourage conditions in cut-blocks that do not restrict mobility:
- redistribute slash and avoid piling slash along known travel routes. (Maintain levels of Coarse Woody Debris (CWD) across the cutblock for other species.)
6. Employ harvesting and silviculture treatments that discourage large, densely-stocked even-aged stands:
- employ irregular cut-block designs (Figure 7);
  - employ a mix of silviculture systems, including clear-cutting, seed tree, shelterwood and retention.

### Literature Cited

- BC Ministry of Forests. 1990. Nahmint watershed review 1990.  
[http://www.for.gov.bc.ca/ftp/DSI/external/!publish/Stewardship/SIFD\\_Objectives\\_Matrix/Other\\_Supporting\\_Documents/Nahmint\\_Watershed\\_Review/Nahmint\\_Watershed\\_Review\\_1990.pdf](http://www.for.gov.bc.ca/ftp/DSI/external/!publish/Stewardship/SIFD_Objectives_Matrix/Other_Supporting_Documents/Nahmint_Watershed_Review/Nahmint_Watershed_Review_1990.pdf) .
- BC Ministry of Water, Land and Air Protection. 2004. TFL 44 ungulate winter range plan U-1-013.  
[http://www.for.gov.bc.ca/ftp/DSI/external/!publish/Stewardship/SIFD\\_Objectives\\_Matrix/3\\_Wildlife/UWR\\_approved\\_for\\_SIFD/TFL44\\_UWR\\_u-113\\_WLAP\\_Final\\_Conf\\_Report\\_Range\\_Plan\\_Nov\\_19\\_2004.pdf](http://www.for.gov.bc.ca/ftp/DSI/external/!publish/Stewardship/SIFD_Objectives_Matrix/3_Wildlife/UWR_approved_for_SIFD/TFL44_UWR_u-113_WLAP_Final_Conf_Report_Range_Plan_Nov_19_2004.pdf).
- Cannings, S. G., L. R. Ramsay, D. F. Fraser, and M. A. Fraker. 1999. Rare amphibians, reptiles, and mammals of British Columbia. Wildlife Branch and Resources Inventory Branch, BC Ministry of Environment, Lands and Parks, Victoria.
- Nyberg, J. B., and D. W. Janz. 1990. Deer and elk habitats in coastal forests of southern British Columbia. BC Ministry of Forests Special Report Series 5 and BC Ministry of Environment Technical Monograph #2, Victoria.
- Shackleton, D. 1999. Hoofed mammals of British Columbia. Royal British Columbia Museum, Victoria, and UBC Press, Vancouver.
- Schroer, G. L., K. J. Jenkins and B. B. Moorhead. 1993. Roosevelt Elk selection of temperate rain forest seral stages in western Washington. Northwest Science 67:23-29.

Appendix 1: Vancouver Island Roosevelt Elk winter range assessment variables (MOE)

VARIABLE	VALUE	RANK	COMMENTS
% SLOPE	70+ 50-70 0-50	LOW MOD HIGH	Flat to moderate slopes preferred
ASPECT	NW-NE  NE-SSE; WSW-NW Flat; SSE-WSW	LOW  MOD HIGH	Generally south aspect slopes preferred; west usually better than east
ELEVATION (m)	>1000 <200; 700-1000 200-700	LOW MOD HIGH	
OVERSTORY COMPOSITION	LOW <i>HIGH</i>  MOD <i>MOD</i>  HIGH <i>LOW</i>	LOW  MOD HIGH	Non-italicized=Relative amounts of Douglas-fir and hemlock to other areas within watershed  <i>Italicized=Relative amounts of cedar (red or yellow) and balsam to other areas within watershed</i>
STAND VOLUME	LOW  MOD HIGH	LOW  MOD HIGH	Relative to average stand volumes within the watershed
% CANOPY CLOSURE	<50; >90 50-60; 80-90 60-80	LOW MOD HIGH	
LICHEN LOAD	LOW MOD HIGH	LOW MOD HIGH	Relative to amounts within the watershed
UNDERSTORY COMPOSITION	LOW  MOD HIGH	LOW  MOD HIGH	Rank relative amounts of sword fern, skunk cabbage, deer fern and salmonberry to other sites within the watershed. They are associated with rich, moist sites which produce the best forage for elk.
UNDERSTORY ABUNDANCE	LOW MOD HIGH	LOW MOD HIGH	Relative to amounts within the watershed
<b>OTHER FACTORS:</b>	<i>The following factors are not currently quantified during EWR assessments but they can significantly influence the overall ability of an area to satisfy EWR requirements</i>		
TOPOGRAPHIC SHADING	The amount of shading from adjacent hillsides is a critical factor influencing winter range suitability (the more shaded, the less valuable the area). Preferably shaded for		



	less than 2 hours per day.
HETEROGENEITY	Topographic heterogeneity ("benchiness") is preferable to a uniform slope. Overstory heterogeneity (variations in canopy closure) provides enhanced forage production and thickets for hiding in open canopy areas, and greater snow interception in areas of more closed canopy. Gullies, wetlands, and hummocky terrain also increase value of elk winter range.
ROCK OUTCROPS	Rock outcrops provide topographic security cover (vantage points), favourable thermal conditions on sunny days, and areas that lose snow more readily during snow ablation periods.
RELATIVE ELK USE	Pellet groups, tracks, trails, sightings, beds, rubs and shed antlers all indicate relative amounts of use. Shed antlers conclusively indicate late winter/spring use; rubs indicate late summer or early fall use. Current elk population levels in the area need to be known before the relative level of use can be determined (i.e. what is heavy use during a period of low elk population levels may only be considered moderate or low use during high elk density periods).
LANDSCAPE FACTORS	Important landscape level considerations affecting the relative value of an area as a elk winter range include the following: a) position in the watershed (low, mod, or high snowfall area - EWR more critical in areas of higher snowfall); b) distance to other winter ranges (greater distances between winter ranges increases their individual importance); c) adjacency to high quality spring and summer range; d) the capability of adjacent areas to satisfy elk habitat requirements; and e) factors affecting local climatic conditions such as exposure to dominant winds or marine influences.