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Value of Red Fescue as Wildlife Cover on a Coastal Bluff

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Herbaceous marine bluffs in southern British Columbia and northern Washington are considered of high conservation value (Ward et al. 1998, Chappell 2006) but are threatened by human impacts including displacement of native bunchgrasses (Chappell et al. 2001). Grass architecture can determine the quality of wildlife concealment cover and risk of animal mortality (Willson et al. 2000, Davis 2005). Knowledge of comparative cover value of bluff grasses in an era of novel ecosystems can inform habitat management decisions.

I sampled grassland adjacent to the nest of a Dark-eyed Junco (*Junco hyemalis*) located in red fescue (*Festuca rubra*) on a southwest-facing bluff (Figure 1) on Salt Spring Island, British Columbia. Fescue patches were intermixed with stands of hedgehog dogtail (*Cynosurus echinatus*) that included minor components of other species, principally *Bromus hordeaceus* and *Aira caryophyllea*. Bluff-growing red fescue is assumed to be native (Chappell and Caplow 2004) but the presence of exotic red fescue or hybrids is possible. The other species mentioned are exotic. Ten paired samples (from fescue and dogtail stands), each of 160 cm^2 ground coverage, were collected at 1-m intervals on a transect parallel to the coastline at an elevation above high water of 7.8 – 9.0 m.

Fescue stands exceeded dogtail stands in mean density of culms plus leaf blades measured at two cm above the soil surface (116.0 vs. 45.4/dm^2, $P < .001$, paired t-test) and in mean air-dried weight (9.5 grams vs. 2.0 g/dm^2, $P < .001$, paired t-test) (Table 1). Fescue concealment value is amplified by culm decumbency, creating a tuft that is a complex umbrella-like covert. Dogtail stands are structurally more simple.

The cover value of a grass species can vary dramatically with habitat. For example, greenhouse experiments have shown a 23-fold difference in dogtail biomass among soils of differing fertility (Benfield 2009). However, in the case of the harsh growing environment of a coastal marine bluff, the field observations reported here indicate that fescue can be superior to dogtail for wildlife species that select dense cover.

Figure 1. Three Dark-eyed Junco nestlings that successfully fledged from a fescue tuft on a marine bluff on Salt Spring Island, BC, 11 June 2011. *Photo by Peter Ommundsen.*

Fescue may slow exotic grass invasion by physically limiting space and light (Thomsen and D'Antonio 2007) but land disturbance may favour exotics (Corbin and D'Antonio 2004). I observed a 15-year-old burn adjacent to my transect occupied by exotic annuals, mostly dogtail, despite the presence of fescue at the periphery. Soil-consuming fires might be expected to favour dogtail, which Gonzales (2008) found to be negatively correlated with soil depth.

Much waterfront land in the Coastal Douglas-fir Biogeoclimatic Zone is subdivided and privately-owned (Capital Regional District 2010). Landowner education programs conducted by local nature conservancies can promote protection of desired grass species. Land use practices that destroy bluff habitat, such as trail construction, trampling, mowing, weed-eating, burning, paving, and landscaping, can be discouraged through public education and through development permit area zoning.

Table 1. Paired comparisons from red fescue and hedgehog dogtail stands on a marine bluff on Salt Spring Island.

Pair	Density[a]/ dm^2		Air-dried weight[b](g/ dm^2)	
	Fescue	**Dogtail**	**Fescue**	**Dogtail**
1	111	18	3.9	1.1
2	165	95	8.7	0.9
3	86	54	11.6	1.6
4	98	72	9.1	2.5
5	89	48	13.8	3.2
6	136	28	8.9	1.6
7	179	62	10.1	1.9
8	101	16	11.3	1.3
9	74	31	8.8	2.5
10	121	30	9.1	3.8
Mean	116.0	45.4	9.5	2.0

a Density of culms + leaf blades measured at 2 cm above soil surface on 15 June 2011. Density would be expected to increase distally where leaves are more abundant. Some fescue samples contained other herb species (median occurrence per sample = < 0.04 percent) and all dogtail samples included other herb species (median occurrence per sample = < 11.0 percent).

b Air-dried in shade for six weeks.

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About the author

Peter studied wildlife biology at the University of British Columbia and was employed for 32 years with the wildlife and environmental science programs at Selkirk College, Castlegar, BC.