

**ORIGINAL PURPOSE** To conserve an alkaline lake, its associated flora and fauna, and representative ecosystems of the Interior Douglas-Fir Zone

**OVERVIEW**

<b>Date established:</b>	4 May 1971	<b>Location:</b>	3 km SSE of Spences Bridge on the Nicomen Plateau
<b>ORC #:</b>	3003	<b>Latitude:</b>	50°22'N
<b>Map number:</b>	92 I/6	<b>Longitude:</b>	121°19'W

<b>Total Area:</b>	936 ha	<b>Elevation:</b>	670-1,250 m
<b>Land:</b>	927 ha		
<b>Lake:</b>	9 ha		

**Access:** Four-wheel-drive access is possible from the Trans-Canada Highway in good weather.

**Biogeoclimatic Zones:** Interior Douglas-Fir (IDF), Ponderosa Pine (PP)  
**Biogeoclimatic Variants:** IDF dk1 IDF Thompson Dry Cool, IDF xh2 IDF Thompson Very Dry Hot; PP xh2 PP Thompson Very Dry Hot  
**Ecosection:** Guichon Upland; Pavilion Ranges  
**Region:** Thompson  
**Management Area:** Fraser

**COMPOSITION**

**Physical:** Soap Lake, about 9 ha in size and located in a shallow valley in the center of the reserve, is very alkaline (pH 9.1) due to high evaporation and limited outflow. A band of encrusted salts up to 6 m wide occurs around the lake edge, and two alkaline ponds occur to the east of the lake. Gently sloping mountains with a variety of slope exposures rise to the north and south of the lake; upper slopes of the Nicola Valley occur in the northeast corner.

**Biological:** The shores of Soap Lake and adjacent ponds support concentric bands of plants which are adapted to high alkalinity. The most common species here are Nuttall's alkaligrass, saltgrass, foxtail barley, and pahute weed. A treeless community dominated by big sagebrush, bluebunch wheatgrass, and arrow-leaved balsam-root occurs outside this band of alkaline adapted plants, on southeast-facing slopes in the northern part of the reserve, and on the slopes of the Nicola Valley. Other dry, low-elevation slopes support ponderosa pine stands with an understory of wheatgrass and balsam-root. Douglas-fir communities cover much of the reserve area; dominant understory species vary from bluebunch wheatgrass in open fir stands to pinegrass in closed stands and snowberry in moist draws. A small stand of trembling aspen, willow, and water birch occurs near the two ponds.

Mammals recorded in the reserve include Mule Deer, Black Bear, Coyote, and Pocket Gopher. Many shrubs are heavily browsed by deer. A variety of dry forest birds is present, and Killdeers occur around the shoreline.

Interesting invertebrates associated with the alkaline lake are swarms of brine flies around its margin and brine shrimp in the lake itself.

**Cultural:** The lake's alkaline and sulphur-rich mud, as well as the mineral-rich spring water were used by local First Nations for medicinal purposes. Traditional plant gathering and hunting is said to take place in the reserve.

**MANAGEMENT CONCERNS**

SIGNIFICANT SPECIES	BC LIST STATUS	COSEWIC STATUS	CF PRIORITY
satin grass	Red listed		1
wedgescale orache	Red listed		2
thyme-leaved spurge	Blue listed		2
Edward's wallflower	Blue listed		3

**THREATS**

**Climate Change:** As the lake in this reserve displays high evaporation rates and lies in a shallow valley, warming temperatures may lead to accelerated evaporation, subsequently increasing the salinity of the lake while reducing its area and depth. Drying and drought in the southern and interior areas of North America has been observed; the drying of the wetlands and Soap Lake could result in the loss of the associated flora and fauna and a decrease in productivity due to lack of moisture.

**Agriculture:** Cattle grazing within the reserve damages the sensitive wetland features.

**Non-native species:** Knapweed and thistles have been introduced by cattle and vehicle traffic.

**Program Constraint:** Lack of staff impedes appropriate monitoring of reserve area.

**Recreation:** Motorized vehicle travel over wetland, sage and grassland is resulting in habitat degradation.

**RESEARCH OPPORTUNITIES** A descriptive list of the major plant communities is available. Wetlands and alkaline lakes are some of the most sensitive ecosystems to climate change. There are opportunities here to monitor the changes and the ecosystem response.

**SCIENTIFIC NAMES OF SPECIES MENTIONED IN THE SOAP LAKE ER ACCOUNT**

**Flora**

- alkaligrass, Nuttall's (*Puccinellia nuttalliana*)
- aspen, trembling (*Populus tremuloides*)
- balsam-root, arrow-leaved (*Balsamorhiza-sagittata*)
- barley, foxtail (*Hordeum jubatum*)

birch, water (*Betula occidentalis*)  
Douglas-fir (*Pseudotsuga menziesii*)  
grass, satin (*Muhlenbergia racemosa*)  
orache, wedgescale (*Atriplex truncata*)  
pahute weed (*Suaeda caleoliformis*)  
pine, ponderosa (*Pinus ponderosa*)  
pinegrass (*Calamagrostis rubescens*)  
sagebrush, big (*Artemisia tridentata*)  
saltgrass (*Distichlis* sp.)  
snowberry (*Symphoricarpos* sp.)  
spurge, thyme-leaved (*Chamaesyce serpyllifolia*)  
wallflower, Edwards (*Eutrema edwardsii*)  
wheatgrass, bluebunch (*Pseudoroegneria spicata*)  
willow (*Salix* sp.)

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**Fauna**

Bear, Black (*Ursus americanus*)  
Coyote, (*Canis latrans*)  
Deer, Mule (*Odocoileus hemionus*)  
Gopher, Northern Pocket (*Thomomys talpoides*)  
Killdeer (*Charadrius vociferous*)