SUMMARY OF BALD EAGLE NESTING RESULTS

SATURNA ISLAND, BRITISH COLUMBIA

2009

We know of 25 Bald Eagle nest sites on Saturna Island

The Bald Eagle is among the most charismatic and widely known species of wildlife in North America. Bald Eagles occur in large numbers along the west coast of Canada and are symbolic of the natural world. In the late 1990's, supported by BC Hydro, administered by BC Nature, and in partnership with the Canadian Wildlife Service and the Ministry of Environment, the Wildlife Tree Stewardship Program (WiTS) was created as an on-line Atlas and database of Bald Eagle nest information.

Through the WiTS program, volunteer citizen scientists and local naturalist groups monitor nesting eagles and contribute their observations back to the program. The pool of Bald Eagle nesting information is available to the public, to local government planners, and to consultants in hopes that knowledge and information will help to protect Bald Eagle nesting sites. The information presented here is a summary of what we know about the locations and nesting success of Bald Eagle on Saturna Island, British Columbia.

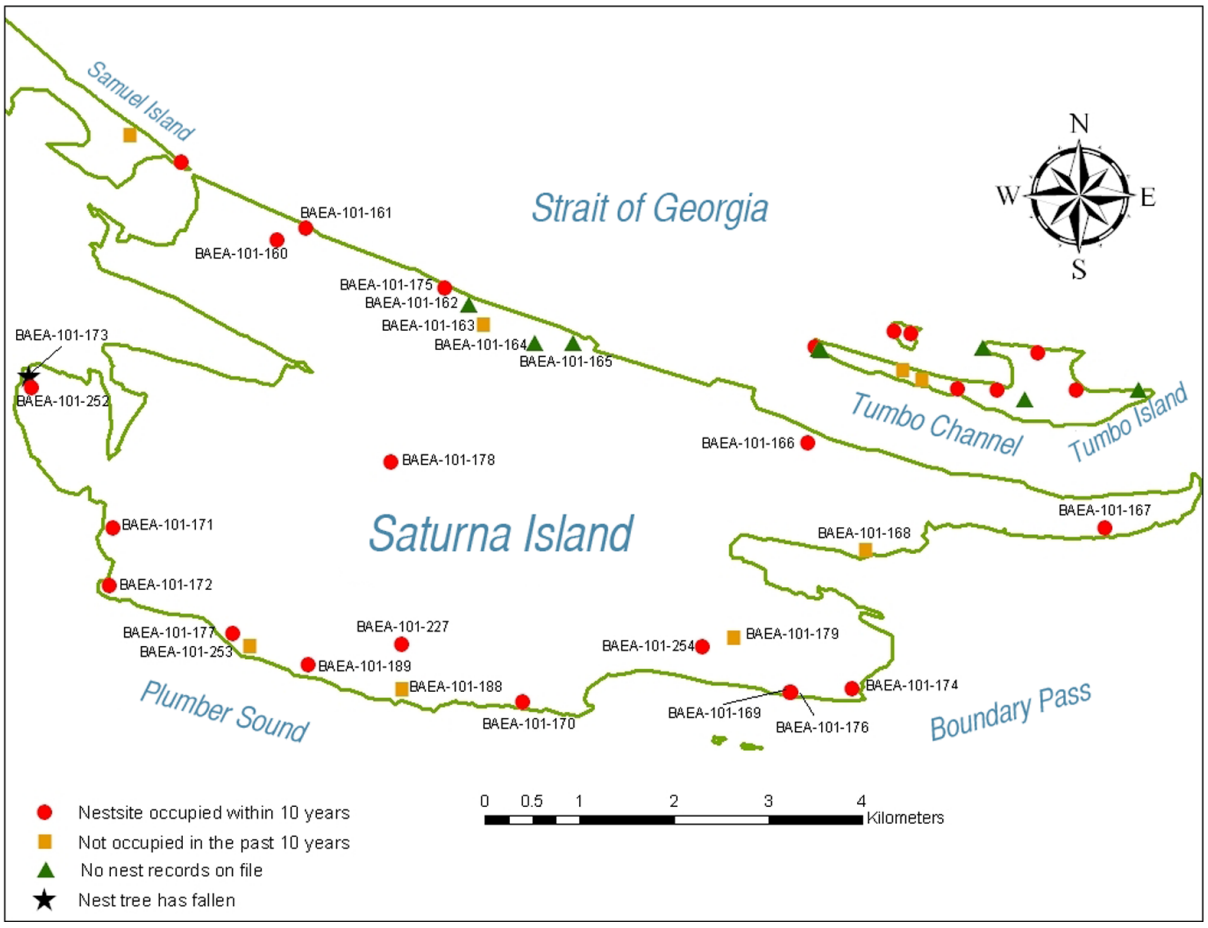
CONSTRAINTS TO BALD EAGLE NESTING SUCCESS

Bald Eagles are most susceptible to disturbance when human activity patterns near their nests are changed

The primary constraints to Bald Eagle nesting success are food supply, health of the eagles, availability of nesting and perch trees, and disturbance by human activity. Through the nesting season, Bald Eagle egg and chick survival depends on a reliable source of food that meets the energy needs of the rapidly growing chicks, and the adult eagles as they both tend to their nests and fly between their nests and their food source. Along the shores of Vancouver Island and the Gulf Islands most Bald Eagle nest trees are located near the shore at sites with commanding views of the ocean, the source of their food supply. Preventing the loss of nesting and perching trees is critical in assuring the long term viability of the eagle population. Development pressure for residential properties has led to the loss of many nest and perch trees. In the past, the most common eagle nest trees were veteran Douglas fir, often with tops that were damaged by winds or lightning strikes. As coastal forests are cleared for residential construction, lone veteran nest trees are at increased risk for wind-throw, are often considered as hazards and are cut down. As eagles lose their preferred nest trees, they nest in smaller less suitable trees where nest failure due to collapsing tree limbs is common.

Disturbance

Bald Eagles are most susceptible to disturbance when human activity patterns near their nests are changed. In remote areas, the presence of a hiker, a forestry worker, a biologist, or even a boat landing at the shore a few hundred metres from a nest



tree, may be all that is needed to flush them from their nest. While Bald Eagles living in more populated areas, such as the Gulf Island, appear to habituate to the proximity of human settlement and activity, each pair is unique. Some eagles choose to nest by busy road and seem totally oblivious to constant noise and traffic, though may be highly disturbed by someone walking near the base of their nest tree. Eagles nesting near a private residence may not appear to notice the local residents working in their gardens, but might be very disturbed if someone starts ripping off and replacing a roof. Bald Eagles most often will abandon their nests if disturbed early in the nesting season, before bonding with their chicks.

Guidelines to behaviour in the vicinity of eagle nests may be found in a provincial Develop with Care publication available through the WITS website at http://www.wildlifetree.org/docs/DWC-eagles.pdf

METHODS

Using ground based observations, nest tree monitors with the WiTS program follow a scientific method laid out by Sergej Postupalsky in 1974. This method involves a minimum of two nest observations per year. A first observation, to record nest activity, is timed for early in the nesting season when the presence of birds near a nest should represent the commitment to a nesting attempt. At this time, the presence of birds on or near a nest receive an "Active" score. At the same time, if the birds are in the immediate area, though clearly not focused on the nest site in question, a score of "Occupied Territory" is given with the assumption that the pair are defending an area and likely nesting in an alternate nest. For Bald Eagles nesting on Saturna Island, the activity period falls between 15 March and 30 April. The second observation scores the success of the nesting attempt and is timed to be within the last two to three weeks before chicks would leave the nest. On Saturna Island the productivity period falls between 15 June and 31 July.

The importance of the timing in the two visit method centres on eliminating bias when scoring nesting success or failure. For example, if a nest is empty late in the nesting season, unless there was a previous observation earlier in the season there would be no way to determine if the nest was not used that year or if a nesting attempt had failed early and the adult birds had left. If a site visit is made mid season, and chicks are present, it is not possible to predict if the chicks will survive to the point when they would naturally leave the nest.

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Map 1: Bald Eagle Nest Locations on Saturna Island

Territory #	Nest ID #	Site Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
SI-T01	BAEA-101-160	Winter Point - South								1C		OT
	BAEA-101-161	Mount David								N/A		OT
SI-T02	BAEA-101-162	Dark Horse Road - A										
	BAEA-101-163	Dark Horse Road - B								N/A		N/A
	BAEA-101-175	South of Russell Reef				A				1C		0C
SI-T03	BAEA-101-164	Howghquie Wynd Road										
	BAEA-101-165	East Point Road										
SI-T04	BAEA-101-166	East Point								OT		ND
SI-T05	BAEA-101-167	Cliffside Road				A				A		N/A
SI-T06	BAEA-101-168	Narvaez Bay - North								N/A		
SI-T07	BAEA-101-174	Cactus Point				A				2C		OT
SI-T08	BAEA-101-169	Bruce Bight - West - A				A				N/A		N/A
	BAEA-101-176	Bruce Bight - West - B				A						
SI-T09	BAEA-101-179	Brown Ridge - East										N/A
	BAEA-101-254	Brown Ridge - B								0C		
SI-T10	BAEA-101-170	Taylor Point					A			1C		A
SI-T11	BAEA-101-188	Murder Point				N/A	N/A			N/A		N/F
	BAEA-101-227	Quarry Road										0C
SI-T12	BAEA-101-189	Log Dump					A					0C
SI-T13	BAEA-101-177	Billy's Bay - A				OT	N/A	OT				
	BAEA-101-253	Billy's Bay - B								N/A		
SI-T14	BAEA-101-172	Crocker Point				N/A				N/A		1C
SI-T15	BAEA-101-171	Breezy Bay								OT		A
Si-T16	BAEA-101-173	Payne Point				A			TD			
	BAEA-101-252	Payne Point - B								1C		0C
SI-T17	BAEA-101-178	Narvaez Bay Road							A	N/A		N/A

Code descriptions: N/A - Not Active, N/F - Not Found, TD - Tree Down, ND - Nest down, A - Active nest site, OT - Occupied nesting territory, 0C - Failed nesting attempt, 1C - One chick, 2C - Two chicks

Notes:
1) Cells with shading represent data that do not satisfy the two site visit method. These records may be improved with new information.
2) The cell outlined in bold represents a tree that blew down

Table 1: Wildlife Tree Stewardship (WiTS) Records for Bald Eagle Nesting Territories on Saturna Island

Table 2: The production of young Bald Eagles at four sites around Vancouver Island and the Strait of Georgia

Location	Sample of Occupied Territories	% nest success	Young per Occupied Territory
Mayne Island 2000 – 2009 (WiTS 2009)	5	38	0.50
South-east Vancouver Island 1991-1995 (Elliott et al. 1998)	41	64	0.95
Fraser River Delta (1993-1996) (Elliott et al. 1998)	13	75	1.10
Johnstone Strait 1991-1995 (Elliott et al. 1998)	38	28	0.30

RESULTS AND DISCUSSION

Known Nest Trees

At of the completion of the 2009 nesting season we had confirmed locations of 25 Bald Eagle nests sites on Saturna Island (Table 1 and Map 1). This represents 26 known locations, minus one tree where we have confirmed information that it has fallen. Of the 25 remaining nest sites, nine trees were either not located or not looked for in 2009. It is quite likely that some of these trees may have fallen in recent years.

Bald Eagles are a monogamous species, and will defend a nesting territory for many years. Along the British Columbia Coast, Bald Eagles defend a nesting territory of approximately one kilometre of coastline. For reasons not completely known, most pairs of Bald Eagles have more than one nest in their territories and they will often switch nests from year to year. By considering the nest usage pattern and the distances between nests we have divided the 26 known nesting sites into 17 nesting territories (Table 1 and Map 2).

The 1km circles in Map 2 are centred on either the nest location or an average centre point of nests thought to make up a nesting territory. In the natural world, Bald Eagle nesting territories are never precise circles and will vary in size depending on habitat conditions. In areas of fast currents and where fish are often concentrated, nesting territories are expected to be smaller and closer together. Saturna Island is surrounded on three sides by open water and strong currents. When attempting to assess the quality of habitat available to eagles, we might look at Map 2 and question why there are areas of coast with no apparent nesting territories. These might be sites where we have yet to look for nests or they may be areas where no suitable nest trees remain.

Bald Eagle Nesting Productivity

Over the past ten years, Bald Eagle nest records received from Saturna Island have been sporadic and often the timing of observations has often not followed the prescribed methodology. These records are highlighted in Table 1 along with many blanks in hopes of uncovering additional information from local residents and to encourage more comprehensive record keeping in the future. While the results are too sparse for statistical analysis of trends over time, we can make some general comparisons to other areas. For comparative purposes, Table 2 shows the past ten years summary results from neighbouring Mayne Island and results from Elliott et al. (1998) from the 1990s.

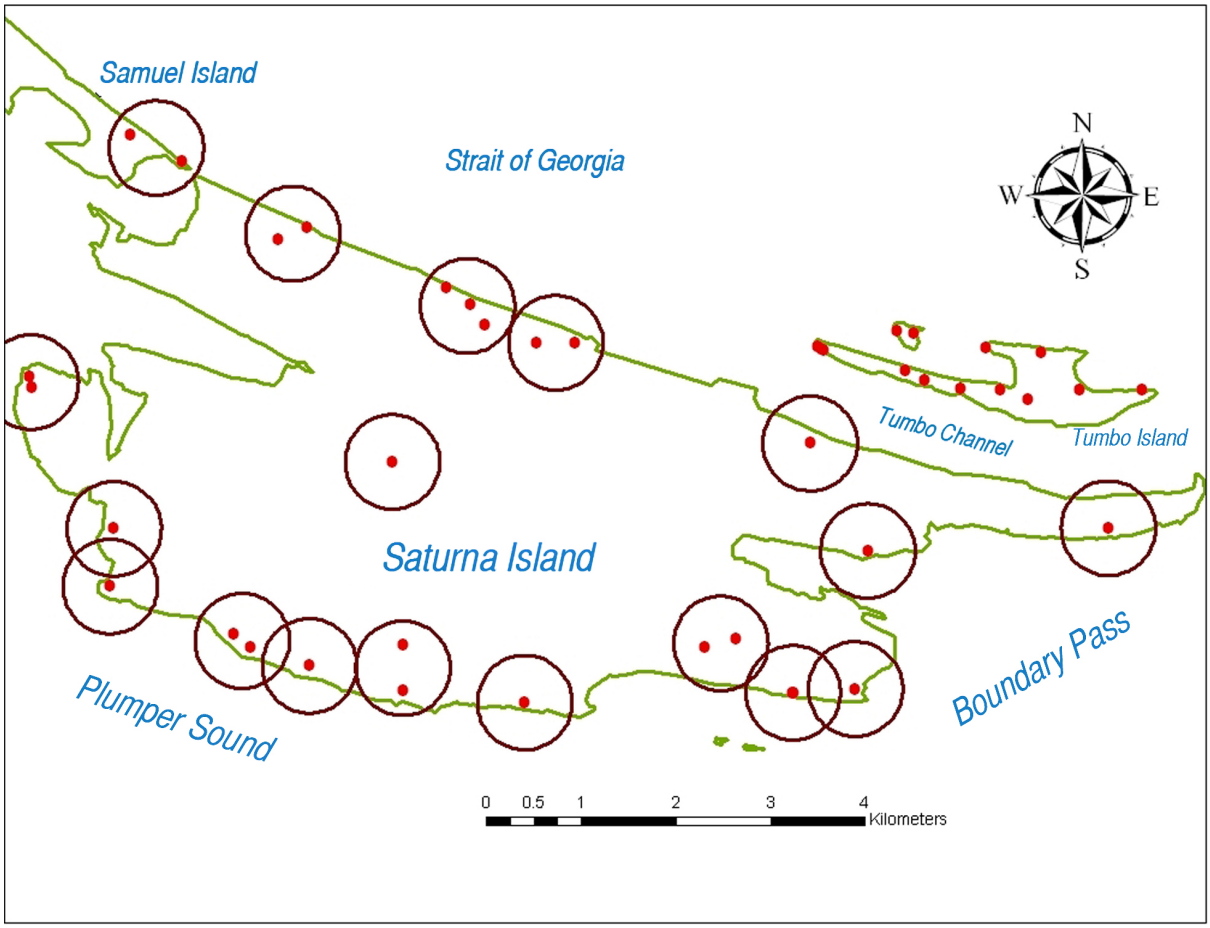
Saturna Island is located at the extreme edge of the southern Gulf Islands. This is an area of strong marine currents accounting for much of the tidal waters that enter and exit the southern Strait of Georgia. Previous studies of eagle productivity suggest that mild climate and the proximity to human settlement and supplementary food sources can increase the number of eagle chicks fledged. At the same time, Saturna Island lacks the immediate proximity to the large areas of tidal mud flats found along much of the eastern Vancouver Island shore and Fraser River Delta that are linked with an abundance of natural food sources. Given its location, we might expect the rate of nesting productivity on Saturna Island to fall in between that of east coast Vancouver Island (0.95 chicks per occupied territory) and Johnstone Strait(0.30 chicks per occupied territory). While the sample size was very small, results from Mayne Island (0.50 chicks per occupied territory) meets this expectation. The rate of reproductive success thought necessary to sustain an eagle population is an average of 0.7 chicks per occupied territory (Sprunt et al. 1973).

Along the British Columbia Coast, Bald Eagles defend a nesting territory of approximately one kilometre of coastline.

Health and Vitality of the Bald Eagle Population and Local Natural Systems

The success and vitality of Bald Eagles, one of the top predators in the food chain, is a good measure of the health of the natural systems in any local area. Without the top predators the natural checks and balances of nature give way to unnatural abundances and ill health of many species lower in the food chain. On Saturna Island the natural beauty and the proximity of wildlife are key elements when people consider moving to or visiting the island. Saturna Island is fortunate in having extensive land purchase and protection afforded through the federal and provincial land acquisition program for the Southern Gulf Islands National Park Reserve. At the same time, as in many other locations in British Columbia, human population growth has the potential to weaken or destroy the very qualities that make the island desirable. As the human population moves increasingly beyond the natural capacity of the land to provide for the population, costs of living increase as goods and services are imported. Studies in other areas demonstrate a vast cost effectiveness of retaining natural systems and ecosystem services as compared to replacement with infrastructure and technology (see Olewiler 2004). As a means to track the health of the local environment, the WiTS program strongly encourages local residents of Saturna Island to monitor the nesting success of Bald Eagles.

Map 2: Bald Eagle Nesting Territories on Saturna Island



LEGISLATION PROTECTING BALD EAGLE NESTS

Section 34 of the Provincial Wildlife Act provides year-round protection for Bald Eagle nests. This legislation does not protect the surrounding habitat. Nest trees and eagle nesting success often suffer due to disturbances, vegetation removal, and water table changes in the vicinity of nest trees. Excellent recommendations on protecting Bald Eagle nest trees may be found in a provincial Develop With Care publication available through the WITS website at http://www.wildlifetree.org/docs/DWC-eagles.pdf To increase the protection of eagle nest trees, many Local Governments have included Bald Eagle nest protection in their Official Community Plans (OCPs) and developed bylaws that protect the habitat surrounding nest trees. These local bylaws are often in the form of Development Permit Areas (DPAs).

All nest observations by WiTS Tree Stewards are made from either public locations or on private lands with permission from the landowner. WiTS Tree Stewards strive to be very respectful of private property and personal privacy.

ADDITIONAL INFORMATION FROM WiTS

Specific information for all known nest sites may be found on the WiTS Atlas at www.shim.bc.ca/atlases/wits2/witsloginscreen.htm As the WiTS program has a responsibility to protect personal privacy and sites of special conservation concern, some information will only be released following signed information sharing agreements. Beyond public viewing there are two levels of Atlas access: 1) The naturalist level allows one to view all information on public viewing, but also allows volunteer monitors who have been trained in the WiTS procedures to add new nest observations; 2) A government or consultant level, (requiring a signed understanding of confidentiality limits), offers detailed information on nest locations, an inventory description of the surrounding habitat, land tenure, and photographs of the nest sites. All additions to the WiTS Atlas are screened by WiTS staff. While effort are made to keep records up to date and accurate, all information in the WiTS Atlas is dependent on what is provided back to the program by government, industry and the public.

On request, by donation, the WiTS program is able to provide summary information on specific sites or areas, as are presented in this report. Within the constraints of personal privacy WiTS may provide mapping shape-files and/or lists of nest coordinates. Most nest tree coordinates in the WiTS data-base were collected by hand held GPS and are at best +/- 10m. For planning purposes, WiTS records are an alert that a nest-site is in the area. When considering development permits restrictions and protective buffers, it is recommended that location coordinates be confirmed by a surveyor or an appropriately qualified professional.

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