

**STEWARDSHIP AND MONITORING IDEAS
FOR THE TOFINO MUDFLATS WILDLIFE MANAGEMENT AREA
2005**



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Stewardship and Monitoring in the Tofino Mudflats WMA

This summary was produced as part of a larger project concerned with stewardship and monitoring of the Tofino Mudflats Wildlife Management Area conducted in 2005. The goal of the project was to identify current and potential stewardship and monitoring activities. There were two main objectives: 1) to identify existing information, data gaps, and to fill some of the gaps with interviews with local people; and 2) to identify potential monitoring activities.

1. Ecological and Cultural Profile

Objective: Compile ecological and cultural data relevant to stewardship of the Tofino Mudflats WMA. Where possible map data has been added to the West Coast Vancouver Island Information System web atlas. The purpose of this profile is to support management, research, education, and stewardship activities, as well as identify key data gaps.

a. collection of existing data

	Source and Data set	Brief Description
Birds	Waterbird Census by David Hatler (1978) Report (PRNP has a hardcopy)	<u>Report.</u> Provides a census of geese and ducks of the WMA area. The area is divided into 15 census units and survey data provided for each unit for geese and ducks.
	Butler, A. Dorst and M. Hobson (1991). Seasonal Abundance and biomass on the southwest coast of Vancouver Island. <i>The Ecology, status and conservation of marine and shoreline birds on the west coast of Vancouver Island</i> . Ministry of Environment, Canadian Wildlife Service, Ottawa, Canada	<u>Report.</u>
	Butler, Rob and Moira Lemon (2001). <i>Spring Shorebird Migration at Tofino Mudflats</i> . Discovery. Vol 30 p 30-32.	<u>Article.</u>
✓	BC Coastal Waterbird Survey	<u>Map and Data set.</u> Bird observation data for 1 site in the WMA and 1 site just outside. The species and number observed for each survey.
	Tofino Community Mapping Project, Shorebird Habitat Mapping	<u>Map.</u> Identifies priority areas for shorebirds. Based on interviews with local naturalists. Completed in 1995 by the Tofino Community

		Mapping Project.
	Ministry of Sustainable Resource Management, Land Information BC – Coastal Resources Inventory data.	<u>Maps</u> . Expected Habitat Occurrence for a variety of marine and terrestrial species. A Relative Importance value is assigned based on a predictive model (generated for the oil spill)
✓	Wildlife Tree Stewardship (WiTS), known eagle nest locations and monitoring (viewable on web atlas)	<u>Map and Data</u> : mapped known location of eagle and other raptor nests, and monitoring by local volunteers.
Wildlife		
✓	Ministry of Sustainable Resource Management, Land Information BC – Coastal Resources Inventory data.	<u>Maps</u> . Expected Habitat Occurrence for a variety of marine and terrestrial species. A Relative Importance value is assigned based on a predictive model (generated for the oil spill atlas)
Habitat		
✓	Strawberry Island Research Eelgrass Mapping (2004)	<u>Map</u> . Much of the WMA area was mapped in 2004. Areas in Jensens Bay still need to be completed.
❖	Strawberry Island Research Comparative Mudflats Research	<u>Map and Report</u> . Transects over much of the mudflats, identifying the mollusks along the transects
✓	Ministry of Forests, Biogeoclimatic Zones	<u>Map</u> . Broader scale mapping 1:250 000
✓	Ministry of Energy and Mines, geology	<u>Map</u> . Broader scale mapping 1:250 000
	Environment Canada Shellfish Water Quality Monitoring Program, water quality data (salinity, rainfall, tide, fecal coliform)	<u>Map and data sheets</u> . Several sites located within the WMA. Historical data (10 years)
✓	Fisheries Information Summary System, known salmon streams	<u>Map</u> . Known salmon streams and other data (accessed via web atlas)
	Ministry of Sustainable Resource Management, Marine Ecounits (benthic and pelagic)	<u>Map</u> . Broad scale mapping of temperature, salinity, substrate, exposure.
	Ministry of Sustainable Resource Management, Biophysical Shoreline Type	<u>Map</u> . Shoreline types.
✓	Ministry of Sustainable Resource Management, Kelp and Eelgrass	<u>Map</u> . Kelp and eelgrass
Human		
✓	Ministry of Sustainable Resource Management, Recreational Activities	<u>Maps</u> . Recreational activities (kayaking, crabbing, fishing)
✓	Ministry of Sustainable Resource Management, Commercial Activities	<u>Maps</u> . Commercial activities (crabbing, geoduck)

✓ currently in the West Coast Vancouver Island Atlas

❖ in progress of being added to the West Coast Vancouver Island Atlas

I tried several times to contact the Bird Centre, but was not successful.

Additional datasets that are currently available on web-based atlases:

Conservation Data Centre – red and blue listed species

<http://srmwww.gov.bc.ca/atrisk/ims.htm>

Ministry of Sustainable Resource Management – Coastal Atlas

<http://srmwww.gov.bc.ca/dss/coastal/crimindex.htm>

b. interview mapping

To help fill information gaps local people were interviewed. These people were selected because they are local naturalists, resource managers or people involved in relevant recreational sectors. During the interviews, information about the mudflats was mapped on mylar, using a 1998 black and white orthophotograph as a basemap (1:13,000 scale). The data were then digitized and entered into a GIS to allow for overlaying with other data. Eight people were interviewed.

A range of data were collected, namely areas of concentration for shorebirds, geese and ducks; wildlife corridors (bear and wolves); wildlife sightings (bear, wolves, raccoons, otters, cougar, mink); known kayak routes (guiding) and general waterbird hunting areas. It should be noted that often people had experience in certain areas of the mudflats WMA, and as such their knowledge focused on those areas. As such, because known wildlife corridors were not mapped along the whole shoreline, this does not necessarily mean that they do not exist where they were not mapped, but that the persons experience and knowledge does not include these areas.

The information gathered and compiled can be used to assist in assessing the location of recreational infrastructure within the WMA, including trails and viewing platforms.

Conversations about stewardship of the mudflats WMA took place with several people without mapping. Information and ideas were recorded from these conversations. See Notes of Interest section below and List of Resource People.

c. data gaps

Several gaps in data are apparent. While not an exhaustive list, the most apparent gaps identified in this research include:

i) Vegetation data for terrestrial areas of the WMA.

Minimal to no detailed data exists (that I could find) for vegetation within the WMA area. Possibilities for filling gaps include: conducting forest and vegetation transects to identify and map species, and mapping from aerial photographs.

ii) Wildlife Data

While some wildlife data have been collected, there are still many gaps, including habitat values and migration corridors. Moreover, no bird data were identified for the terrestrial areas (other than eagle nests).

Possibility for filling gap: Recording local observations.

iii) First Nations and other Historical Use Information

The Tofino Mudflats WMA is location within the Tla-o-qui-aht First Nation traditional territory. Inclusion of Tla-o-qui-aht First Nations information, knowledge and perspectives will work towards strengthening stewardship and monitoring activities in the WMA. The management plan does state that there are archaeological sites within the WMA area.

iv) Recreational type and use levels in the WMA

No quantitative data on the types, use levels and timing of the various types of recreational activities within the WMA was identified. It was suggested in the interviews, that there is no kayak guiding within Ducking Flats, Jensens Bay, Maltby Slough and English Cove areas of the WMA (although there may be some recreational kayaking).

Possibility for filling gap: Graduate research or supervised summer student (with established methodology and support) to observe and count recreational activities and commercial traffic at various locations within the WMA, and establish methods to assess disturbance on wildlife. This information would be useful to assist with decisions around spatial-temporal zoning within the WMA.

vi) Water quality data

Other than water quality monitoring by Environment Canada for the Shellfish Protection Program, no other water quality monitoring is on-going in the WMA area. Environment Canada has six monitoring locations within the mudflats (UT071, UT069, UT145, UT046, UT 147, UT 148).

Possibility for filling gap: If deemed necessary, establish a modest water quality monitoring program. Suitable monitoring sites need to be identified, along with the necessary parameters to measure. Check with Pacific Rim National Park Reserve on the water quality monitoring program in Grice Bay. There may be benefit to have a similar monitoring system to provide for a more regional overview.

vii) Land use mapping in and around the WMA

No land use map was identified for the WMA area.

Possibilities for filling gap: Pacific Rim National Park has a series of historical aerial photographs that cover part of the WMA area (around Esowista Peninsula) that may be useful for creating a land cover map, as well as documenting changes over time. Locate current orthophotographs to support land cover mapping.

viii) Ecological surveys of the food sources for birds (recommendation from Management Plan)

The management plan calls for biological studies and inventories to document and assess food supply for birds, an ecological inventory, conduct fish stocks assessments and monitor crab populations. Fisheries and Oceans Canada does maintain a database of landing statistics by DFO statistical area of commercial species (Clayoquot is 24). As well, the Fisheries Information Summary System (FISS) contains stream and fish information for some streams throughout BC. The FISS records can be accessed via a web atlas of the BC Community Mapping Network, also included in the West Coast Vancouver Island web atlas.

Possibilities for filling gap: Partner with local and external researchers to establish a survey and monitoring program. Funding will be required.

viii) Bird Census

The last formal bird census completed in the area was in the 1990's. This survey was completed by airplane and boat.

Possibilities for filling gap: create a partnership with Canadian Wildlife Service and/or other institutions to complete bird census.

2. Existing Opportunities for Volunteer Monitoring

1) Shorebird Surveys

Initially shorebird surveys were explored as a way to assess the impacts of recreational activities on the shorebirds in the WMA. After some discussions and research, it was identified that the high demands that would be required to monitor during the three week peak of the spring migration, coupled with the challenges of accessing the various parts of the mudflats would make this a challenging volunteer program, with overhead and management requirements. As such, existing opportunities were then identified and promoted. More formal shorebird census can be pursued in partnership with other institutions, such as the Canadian Wildlife Service, and/or funding secured to hire experienced people to establish and conduct the survey.

a) The BC Coastal Waterbird Survey

In 2001, the Canadian Shorebird Working Group and the U.S. Shorebird Research and Monitoring Working Group developed the Program for Regional and International Shorebird Monitoring (PRISM). PRISM aims to coordinate other shorebird monitoring

programs in North America, including the International Shorebird Surveys (ISS), the Western Shorebird Survey (WSS), the Maritimes Shorebird Survey (MSS), and others, as well as monitoring programs still under development (from website).

The primary goals of PRISM are to: 1) estimate the population sizes and trends of shorebirds that regularly breed in North America; 2) describe their distribution, abundance and habitat relationships; 3) monitor their numbers at stopover locations; 4) and assist local managers in meeting their shorebird conservation goals. PRISM does not supercede other shorebird survey programs; rather it seeks to coordinate with and build on existing programs and initiate new approaches that address monitoring needs not being met (from website). To learn more about PRISM visit http://wss.wr.usgs.gov/data/document_main.html.

The migration monitoring component of PRISM builds upon existing survey programs, and in BC the program being used is the BC Coastal Waterbird Survey (per com. Gary Donaldson, CWS Nov. 5, 2004 and Rob Butler, CWS, Nov. 5, 2004). “The BC Coastal Waterbird Survey (BCCWS), through a network of volunteers, regional organizers, naturalist groups, government agencies, and non-government organizations, aims to monitor waterbirds in coastal areas of British Columbia. The Survey will provide data that will be used to conserve coastal waterbird populations and habitats.

The BCCWS has the following specific objectives:

1. To assess the annual changes and long-term trends in population size and distribution of coastal waterbirds in BC.
2. To collect data that contribute to population estimates of coastal waterbird species in BC.
3. To advance our understanding of the ecology and the effects of human activity on coastal waterbirds in BC.” (from website)

Using experienced local volunteers, bird species and abundance are counted in assigned locations every second Sunday of the month, with emphasis from September to April. Methods of data collection have been developed and are used by each of the volunteers. Additional information on the program can be accessed at: <http://www.bsc-eoc.org/regional/bcwaterbirds.html>.



There are currently about 14 BC Coastal Waterbird Survey sites in the Tofino-Ucluelet area. In the Tofino area, 2 sites are currently not active (i.e., require observers). Two of the BC Coastal Waterbird Survey sites are located in or around the Tofino WMA. Site 14 exists within the WMA, and has data collected for 2000 and 2001. Site 3 is

located north of the mudflats on Esowista Peninsula, and has data from 1999 to present. The data for these two sites have been included in the West Coast Vancouver Island web atlas.

The BC Coastal Waterbird Survey provides an existing opportunity in which to involve local monitors in shorebirds, that contributes to local, regional and international programs. One limitation of this program is that it will not capture the peak migration of shorebirds, although the monitoring months could be expanded (although, the survey dates may or may not correspond with the arrival of the shorebirds). Discussions with the program coordinator indicated that at least two of the existing sites must be filled prior to adding more sites within the mudflats (Tasha Smith, pers. com. February, 2005). Addition of new sites must be done in consultation with the Program Coordinator.

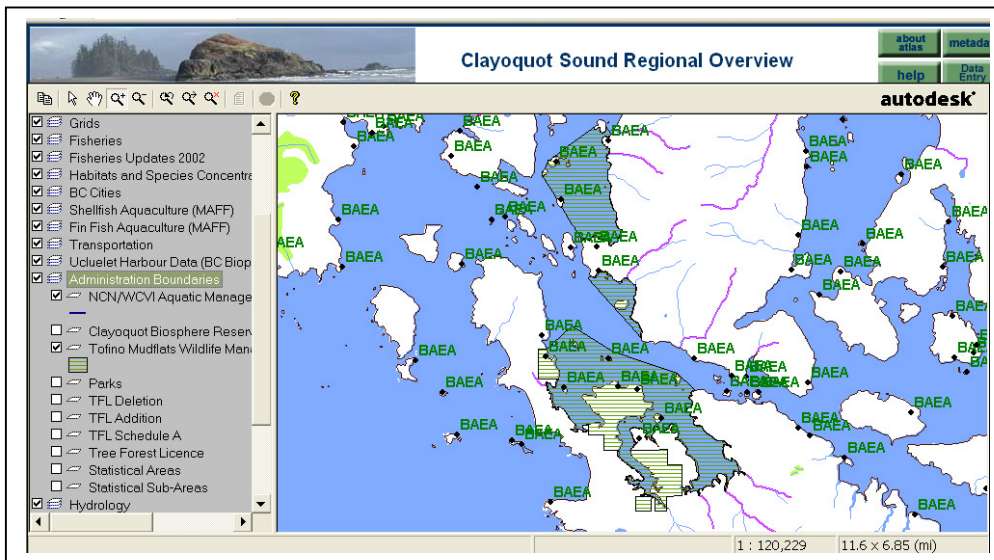
2) Eagles and other Raptors

“Wildlife Tree Stewardship (WiTS) is an environmental stewardship program of the Vancouver Island Region of the Federation of BC Naturalists (FBCN) that aims to create, coordinate, and assist a network of community stewards interested in conserving coastal wildlife tree habitats through volunteer monitoring and landowner agreements.

The WiTS program aims to document wildlife usage and location of wildlife trees as well as conserve wildlife trees within the remnant habitats of Vancouver Island's altered ecosystems. “By definition, a wildlife tree is any standing dead or live tree with special characteristics that provide valuable habitat for the conservation or enhancement of wildlife. They play an important role in forest ecosystems by contributing and maintaining the biological diversity in BC forests (Wildlife Tree Committee of BC).” (from website)

Through an established volunteer monitoring program, nests of eagles and other species are identified and mapped. Volunteers then monitor the productivity of the nests and data are entered into a database. The mapped locations and summary of the productivity data are publicly accessible via the Community Mapping Network website, and has been included as a layer in the West Coast Vancouver Island Web Atlas.

There is currently a coordinator for the Tofino-Ucluelet area, including the Tofino Mudflats WMA. As of April 22, 2005 there are 7 eagles nests identified in the WMA area. According to the WiTs Program Coordinator, currently none of these nests are being monitored (Kerri-Lynne pers com. April 2005).



WiTs sights within and around the mudflats

3) Tofino Streamkeepers

Tofino Streamkeepers is involved in stream work in the Tofino area, with a main focus on protecting and restoring fish streams. A current project focuses on Mackenzie Creek, a significant fish stream that flows into the WMA area. Streamkeepers provides training for interested volunteers, and as of March 2005 approximately 40 local people have been through the 2 day training program. One of the Directors from the Tofino Streamkeepers Society is currently a member of the Tofino Mudflats WMA Advisory Committee providing an opportunity to share information and collaborate on areas of mutual interest and benefit.

The Mudflats Stewardship Event provided a forum to highlight and promote the above stewardship activities. Posters, pamphlets and presentations were given for each of the programs, as well as other programs, including the Strawberry Island eelgrass mapping and the Western Hemisphere Shorebird Network. Moreover, Tofino Streamkeepers provided a guided walk providing hands-on experience with their work and the opportunities. The information produced and gathered for this portion of the event is now part of the displays and resources at the Raincoast Interpretive Centre in Tofino. As well, a short, fun description of these programs has been written for communication and further promotion.

4. Additional Opportunities

i. Shoreline Documentation

The shoreline is an important area because it is where much human-mudflat interaction occurs. Interactions involve direct human contact (e.g., wildlife interactions) and indirect

contact through development (e.g., land use conversion, loss of habitat, introduction of exotic species, sewage runoff).

Documenting the types of shoreline uses is a way to track changes and potential impacts over time. This is particularly relevant in areas of more rapid development where changes occurring independently can add up to larger cumulative effects on the mudflats ecology. It will also provide a historical record of the shoreline.

ii. Building Relationships with Researchers and Research Institutions.

It would be beneficial to establish a strategic and directed program to begin discussions with academics and other researcher about research opportunities and needs in the Tofino Mudflats WMA. This would be beneficial to support some of the information needs outlined above and outlined in the Tofino Mudflats WMA Management Plan. Getting the Tofino Mudflats area on the radar of researchers could take a while, so it is likely that a long-term and active strategy will be required. Discussions with researchers during this project could be a good place to follow up.

iii. Grice Bay Ecological Monitoring Project in Pacific Rim National Park Reserve

The Grice Bay Ecological Monitoring Project being conducted by the Pacific Rim National Park Reserve could be of interest to the Tofino Mudflats WMA. Components of the project include water quality monitoring, eel grass studies and recreational use inventory (pers. com. Heather Holmes, PRNPR, Nov. 19, 2004). Given the proximity of Grice Bay to the Mudflats WMA, it would be worthwhile to explore what aspects of the project would be of interest to the WMA. Some collaboration could bring a more regional overview to trends being studied. It would be worthwhile to have a member of the Grice Bay project to provide a description of the project to the WMA Advisory Committee.

5. Notes of Interest

During the project several interesting bits of information, ideas and thoughts were gathered from various people. So they are not lost, they are captured below.

- a) Recording and tracking of observations by people of WMA. Provide a system, perhaps web-based, that allows people to access and enter information about what they see in the WMA (e.g., illegal camping, invasive plant species, wildlife observations). This would provide the ability for tracking various observations (e.g., when and where they were first encountered).
- b) Documenting impacts of established (when built) trails and viewing platforms on birds. A project to observe and record disturbance of shorebirds by people using a trail and/or platform. Part of this could even be staged to set up various use scenarios. (In my searching I was not able to find information about disturbance of shorebirds and desired setbacks of trails from the shoreline)

- c) Monitor Japonica eelgrass bed to determine if it changes in size. There is a Japonica bed that if staked could be used for this type of monitoring.
- d) In 2004 Rod Palm had the grade 7 class involved in eelgrass monitoring. The plot lies just outside of the WMA boundaries.
- e) Email exchanges with Claudia Hand, DFO indicates that while data mapped by DFO indicates geoduck harvesting in the Arakun mudflats, according to her records, no reported commercial harvesting of geoduck or horseclams occurs in the mudflats of the WMA.
- f) The invasive plant species of Ivy has been observed at the location of the old school house in the WMA area.

6. Resource People Contacted during this Project:

Rob Butler, CWS Vancouver
 Gary Donaldson, CWS Ottawa
 Ron Ydnerburg, SFU Vancouver
 Pete Clarkson, Pacific Rim National Park Reserve
 Andrea Breault, Canadian Wildlife Service
 Tasha Smith, BC Coastal Waterbird Survey
 Bob Hansen, Pacific Rim National Park Reserve
 Heather Holmes, Pacific Rim National Park Reserve
 Brock Fraser, Pacific Rim National Park Reserve
 Berry Campbell, Tofino
 Arlene Armstrong, Pacific Rim National Park Reserve
 Adrienne Mason, author of Tofino Mudflats WMA Management Plan
 Marnie Eggen, author of Tofino Mudflats WMA Management Plan
 Steve Diggon, author of Tofino Mudflats WMA Management Plan
 Kerry-Lynne Wilson, program manager, WiTs
 Carol Ogborne, MSRM
 Ministry of Forests, Port Alberni
 Rod Palm, Strawberry Island Research
 Claudia Hand, DFO
 Maggie Henigman, Ecosystems Biologist, Water Land and Air Protection
 Tom Reid, WLAP
 Rob Knight, BC Community Mapping Network
 Brad Mason, BC Community Mapping Network

7. Various Web Resources

Seabird Survival write-up in Wave Length

<http://www.wavelengthmagazine.com/2004/as04seabird.php>

ShoreBird World

<http://www.shorebirdworld.org/>

Canadian Shorebird Conservation Plan

http://www.cws-scf.ec.gc.ca/publications/spec/cscp/index_e.cfm

US Shorebird Conservation Plan

<http://www.fws.gov/shorebirdplan/>

Centre for Wildlife Ecology

<http://www.sfu.ca/biology/wildberg/>

BC Coastal Waterbird Survey

<http://www.bsc-eoc.org/regional/bccwsprotocol.html>

Bird Studies Canada

<http://www.bsc-eoc.org/bscmain.html>

Florida Fish and Wildlife, Wildlife Viewing Information

<http://myfwc.com/viewing/info/disturbance.htm>

US Army Engineer Research and Development Centre, Monitoring Project Impacts on Birds

http://www.frf.usace.army.mil/capefear/mon_birds.stm