

FER President's Report

By Mike Fenger

A sincere thanks to members who responded to a call in the Autumn/Winter LOG for support to narrow the gap between income and expenses. Things are now closer to a sustainable income-expense balance.

For a small organization with a little over a hundred members, thanks to those who, along with renewing their memberships, made the extra commitment to become sustaining members. Also a very big thank you to all who sent donations along with their membership dues. Fifteen hundred dollars was received and we are hopeful we can reach break-even status by raising the remaining \$500 needed, as the year progresses. Sorry about all the budget stuff right up front, but really, thanks!

Friends of Ecological Reserves has no staff which has its drawbacks, but it also means we are not in a position where people are financially dependent on us. We remain decidedly small and decidedly volunteer-powered as we enter our 32nd year as a registered charity. I think the founding alumni such as Lynn Milnes, Vicky Husband, Bristol Foster, Jim Pojar, Trudy Chatwin and other early FER pioneers whom I did not know, would be pleased with the FER situation and our continuing efforts today.

We held our Annual General Meeting a little later than usual this spring and would like to thank those who attended on a warm Friday evening. Also, a big 'thank you' to our guest speaker, Matt Fairbarns, Trial Island ER warden, for entertaining us with his informative talk entitled "A Sweep of the Broom: Why Trial Island matters and what we can do about it". Matt gave us a brief history of Trial Island, including fascinating pictures from the archives. He discussed the ongoing battle against invasive species, primarily Scotch broom and talked about the various methods of eradicating this invasive. Because of his and his team's efforts over the years, Trial Island has virtually no broom left. This work has helped to ensure the continuing survival of such rare and endangered plants as Victoria's owl-clover and Golden paintbrush.

We like to provide our members and supporters with a review of last years' activities measured against our Strategic goals and aspirations. And there is some crystal-ball type forecasts about where we hope to go during the rest of 2015 and into the first quarter of 2016. Here goes:

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Visit our website at:
www.ecoreserves.bc.ca



The Log

Spring/Summer 2015

The LOG is published two times a year by the Friends of Ecological Reserves to promote the establishment, management and maintenance of Ecological Reserves in British Columbia. *The LOG* is distributed to members, volunteer wardens, affiliates, supporters, government, friends and the enquiring public.

The views expressed in this newsletter are not necessarily those of the Friends.

Articles for publication are invited. The deadline for submissions for the Autumn/Winter 2015 issue of *The LOG* is November 15, 2015.

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President's Report Continued

Goal 1. Support for the Ecological Reserves wardens program

A review of 2014/2015

- FER did work with BC Parks staff on Vancouver Island and thanks to Erica McLaren for support for the Parks Legacy project. (See article in the Spring/Summer 2014 edition of the LOG.) We did not get the opportunity to work more closely with interior Parks region Areas Supervisors. Although we applied to the Parks Legacy Fund in order to continue this work, we were not successful. There are so many deserving volunteer organizations who care deeply about Parks and it was good to see Parks recognize groups and individual volunteers and worthy projects

(<http://www.env.gov.bc.ca/bcparks/volunteers/recognition/>).

- We hoped to receive more ER warden reports to post on the FER website. Some ER wardens are stellar in supplying warden reports to FER to share and archive. Many ER wardens do not file reports with FER and we are unsure if they file reports with Areas Supervisors. Even an email to FER containing a few observations and some images is considered a report and worthy of being placed on the 'wardens notes' pages of the FER website. Warden's reports do not need to be elaborate. Our vision of the role of FER and the FER website and the wardens' field reports remains unchanged. We want to post whatever we are sent. If you are a warden and you visit your reserve, we want you to share your observations and images with FER so we can post these.
- Similarly if you are an Area Supervisor with BC Parks and visit an ER or receive an ER

warden report, do share them with other wardens, but you leave a little accessible legacy if you send them to FER. This is how we build the ER legacy; through observations, images and reporting.

- Two board members Marilyn Lambert and Garry Fletcher are both ER wardens but there was no regional meeting of ER wardens on Vancouver Island this last year. FER is unsure which other regions held ER warden meetings in 2014.
- Judy Miller of Parks has retired and we wish her well in her retirement. Judy helped us maintain and keep current the ER warden list. We hope to hear of a replacement soon.

Anticipated Direction 2015/2016

- FER will continue to reach out to Area Supervisors and ER wardens to share ER-specific information/images/field trips so we can post on the FER website against specific reserves.
- FER will continue to encourage regional ER wardens and Area Supervisor meetings to build stronger relationships and sort out ER priorities for management and research opportunities.
- FER may have had a hand in recruiting new ER wardens through contact with some Area Supervisors. There are a number of ERs that are fairly accessible and in need of ER wardens. FER is less concerned about remote ERs without wardens as the risks to these from public misunderstanding, i.e. fishing, hunting, plant collecting, and camping are lower.
- We may propose a project to visit wardens and Park's offices in the Interior to complete a project similar to the Coastal ER

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Mount Tzouhalem – Breath-taking Vista of Wildflowers

By Emily Dent, BSc (Hon) Bio, BN

Mt. Tzouhalem is located in the backyard of Duncan (North Cowichan), BC, on Vancouver Island. It is located on municipal forest land, and part of it is an 18 acre Ecological Reserve. From the summit, you can see Saltspring Island and the Coast Mountains.

The mountain was originally named 'Shkewetsen', meaning 'basking', or 'warming in the sun', by the local Cowichan First Nations. The mountain was later named after a Quamichan chief who lived on the side of the mountain after being banished by his own people. Born of a Quamichan man and a Comiaken woman, Tzouhalem was trained to be a warrior by his grandmother. He was infamous for his combative and unruly behaviour.

In the mid-1800s, the mountain was used as a target for the Royal Canadian Navy HMS Trincomalee's cannons.

On April 26 of this year, the mountain was used as a target for the Friends of Ecological Reserves' Canons. Things change...and so pictures were taken; scads of them. And it was plain to see why: Winding past a plethora of recently built homes perched on the northern slope of Mt. Tzouhalem, you suddenly encounter a gravel parking lot surrounded by monumental Douglas fir (*Pseudotsuga menziesii*) trees. Several trail-heads beckon. Exuberant youth on mountain bikes launch out of the forest and into the parking lot. Dogs abound. Bird watchers and plant nerds and nature lovers glint in the dappled sunlight. Every person who uses the park seems happy...excellent common ground.



Cameras are primed and introductions are made. Our hosts for the day are Genevieve Singleton and David Polster, who care deeply for the remaining wild spaces in the Cowichan Valley. They are like loving parents and the Mt. Tzouhalem Ecological Reserve (ER) is their child. They are understatedly proud to show it to us, and yet they worry that it may be damaged. Urban encroachment, wear and tear from park users, creation of new unintended trails, illegal harvesting, invasive species and climate change threaten the reserve's health. I feel blessed to be here, despite these woes.

We start down a path at the western end of the parking lot, destination: the Mt. Tzouhalem ER, which is a seemingly short distance

of 200 metres from the parking lot. We don't make it very far.

If you have ever tried to hike with a troop of biologists, you will understand why. Every plant, every blossom, every fungi, every shard of lichen, every bird call, every flutter of every wing in every shrub must be examined. Keep in mind, this is only a small exaggeration. We are greeted by western coral root (*Corallorhiza maculata*) and the nodding heads of the last of the fawn lily (*Erythronium oregonum*) show. Pacific slope flycatchers (*Empidonax difficilis*) whistle for us to approach. Amanita mushrooms hunker down in the shade, and the ocean spray (*Holodiscus discolor*) is preparing to make its flowers. The air is clear

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Mt. Tzouhalem cont'd. from page 3

and sweetly earthy with the tang of Douglas fir essence. We slowly flow into the forest, enjoying the journey.

The trail winds through Douglas fir dominated slopes, rising up to a rocky plateau. Subtle signage reminds park visitors that they have entered the Ecological Reserve. By definition, ERs are meant to protect examples of rare, endangered or unique ecosystems. Sometimes, human intervention is needed so that ecosystems remain as they are, and evidence of this is visible in the Mt. Tzouhalem ER. One of the first things that you will notice is an abundance of girdled Douglas fir trees within the Reserve. Because Mt. Tzouhalem ER is considered a prime example of a Garry oak (*Quercus garryana*) woodland, the Douglas firs have been 'sacrificed', in order to keep it that way. Without removal of the Douglas fir, the trees would eventually come to dominate and the Garry oak woodland would disappear.

It is a hot button issue, and muted discussion takes place among some of the visitors. Many Garry oak meadows exist because of anthropogenic manipulation: First Nations regularly burned these ecosystems in order to enrich and maintain associated camas gardens. Any Douglas fir trees and encroaching shrubs would be lost in the fire. Oaks and annual wildflowers, grasses and bulbs would emerge anew the following spring. Those who agree to Douglas fir girdling argue that it is no different than prescribed burning because both are intentionally carried out by people. As we can no longer burn the Garry oak meadows due to fire containment issues, girdling is the new 'torching'. On the other hand, those who disagree with Douglas fir girdling feel that it is unethical to select for one species over another and as such, succession should be allowed to take



Deltoid balsamroot (*Balsamorhiza deltoidea*)

place, even if it means losing Garry oak ecosystems.

For now, at least, regardless of which side of the debate you are on, if you walk through the split rail fencing that borders the Mt. Tzouhalem ER, you will be greeted by a breath-taking vista of wildflowers and crooked oak trees perched high above the Cowichan valley below. It looks and feels as though you have just stepped into a

painting. The shallow soil is dominated by blazing magenta seablush (*Plectritis congesta*) blending beautifully with the rich purple of camas (*Camassia quamash*) and the vibrant yellow of the spring gold (*Lomatium utriculatum*) and western buttercup (*Ranunculus occidentalis*). A mountain-goat-esque path meanders gently

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Mt. Tzouhalem cont'd. from page 4

through the rich carpet of herbs. There are shooting stars (*Dodecatheon* sp.), Menzie's larkspur (*Delphinium menziesii*), death camas (*Zygadenus venenosus*) and Pennsylvania sedge (*Carex pennsylvanica*). Here and there, a chocolate lily (*Fritillaria lanceolata*) makes a cameo appearance. And tucked away in a gentle pocket of sloping green, there is a small huddle of the mountain's own sunflowers: the elusive and stunning deltoid balsamroot (*Balsamorhiza deltoidea*). Its shocking yellow rays contrasted sharply against the surrounding emerald stems and the ashen oak bark. It seemed as if it purposely chose the spot in which it grew.

Up on top of Mt. Tzouhalem, there was not a spot you could look without feeling a stirring of awe. It truly is a special place, and it is definitely worth an attentive hike. Mid to late April offers prime wildflower viewing.

Following our tour of Mt. Tzouhalem ER, our wonderful hosts had a final ace up their collective sleeve: we caravanned down into the valley to an area near Quamichan Lake. This area offers a contrasting example of a Garry oak meadow on deep, rather than shallow, soil. The oaks are massive, and belong in the romantic scene of a dewy love story. Tall and thick, the deep soil Garry oaks have long down-arching branches and spectacular shapes.

This is the site of a Western Bluebird (*Sialia mexicana*) reintroduction effort, the 'Bring Back the Bluebirds Project', which is led by the Garry Oak Ecosystems Recovery Team (GOERT). There are currently 18 adult Bluebirds, six of which are breeding pairs, with a total of 16 nestlings. The birds are supplemented with insect food on feeding platforms, and there are



Camas (*Camassia quamash*) with a sample of a paler colour variant

several nest boxes perched in the surrounding Garry oak trees. We are fortunate, and see a few male Western Bluebirds; their cobalt wings and ruddy breasts and shoulders are lovely, and shine in the sun like a tropical sea.

Western Bluebirds were reintroduced to the Cowichan valley in 2012, nearly 20 years after one was last seen in there in 1995. They are translocated from a healthy population in Washington State. The birds seem to be making a tenacious foot-hold in the valley, and have been spotted in Duncan, Metchosin and on Mt. Tzouhalem. On a clear day, you can see Mt. Baker, in Washington State, from the top of Mt. Tzouhalem; perhaps the Western Bluebirds pay a visit

there so they can peek at their old home, and, at the same time, delight in their new one.

Oaks and wildflowers and insects and western bluebirds are all beautiful and need your help! If you are interested in lending a hand with Mt. Tzouhalem ER stewardship, or the Bring Back the Bluebirds Project, please do not hesitate to contact any of the following folks:

Garry Oak Ecosystems Recovery Team (GOERT) 'Bring Back the Bluebirds Project'

Email: bluebird@goert.ca

Phone: 250-383-3427

Friends of Ecological Reserves

Email: ecoreserves@hotmail.com

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Final Evidence Report Submitted to the National Energy Board by the Board of FER Regarding the Kinder Morgan - Trans Mountain Pipeline Project

By Mike Fenger and Garry Fletcher

Executive Summary from the Report

This evidence report from Board of the Friends of Ecological Reserves (Board of FER) is for the National Energy Board (NEB) to inform their decision on the Kinder Morgan Trans Mountain Permit (KM-TMX) Application. We have reprinted only the Executive Summary due to the length of the whole report. Please visit: <http://ecoreserves.bc.ca/2015/05/28/final-evidence-report-tmx/> to view the report in its entirety.

FER is a small non-government organization (NGO) that through volunteer efforts supports Ecological Reserves (ERs) and BC Parks staff who have the legal responsibility to manage ERs. FER was formed 32 years ago with goals to maintain and enhance ERs so that they meet their intended legislated purposes as defined under the *Ecological Reserves Act of BC*. Those purposes are to serve as natural area benchmarks for research, education and monitoring for the benefit of British Columbians, government agencies, scientists and First Nations. We outline why monitoring and research in the 19 marine ERs along the tanker route is important to improve ecosystem understanding over the life of the KM-TMX project (30+ years). Research and monitoring information (baseline and ongoing) is critical in the event of an oil spill



Ecological Reserves with Marine Shoreline and Foreshore Habitat

and restoration. This report recommends to the NEB a number of permit conditions patterned after the permit conditions applied to the Enbridge Northern Gateway project. If this project is approved, the recommended conditions are intended to ensure that collection and maintenance of information about the natural environment will occur over the life of the KM-TMX project so that knowledge-based incremental improvements can be made.

Chapter One discusses the Board of FER's focus on marine ecosystems and the species associated with the 19 Ecological Reserves situated along the oil tanker route. We present a case for pre- and post-spill monitoring in ERs as fundamental to understanding marine ecosystems

under natural conditions and to learn of their resilience and/or restoration capability in the event of an oil spill. The Board of FER focused on three of the 11 issues identified by the NEB. These are:

- *Issue 4: cumulative environmental effects that are likely to result from the project;*
- *Issue 5: potential environmental and socio-economic effects of marine shipping activities including the potential effects of accidents or malfunctions that may occur;*
- *Issue 11: contingency planning for spills, accidents or malfunctions during operation of the project.*

We conclude that the environmental reports submitted by KM-TMX have failed to address these issues and that the KM-TMX

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project as submitted should not be approved. If the project is approved, our recommended conditions are intended to ensure that information to address Issues 4, 5 and 11 will be obtained during the life of project and inform emergency spill planning, habitat compensation, and species and ecosystem resilience susceptibility to the toxic effects of Dilbit.

Chapter Two outlines how the Board of FER gathered evidence and participated in the NEB KM-TMX process. This was and continues to be a time-consuming process and our participation would not have been possible without support from the NEB Participant Funding Program. We learned that the NEB process is flawed, as it does not include the opportunity for intervenors to cross-examine the proponent nor pose questions of Canadian government agencies with legal responsibility for environmental monitoring and oil response. We trust that in the future there will be a national energy strategy with clear policies to meet carbon emissions targets within time limits in order to mitigate climate change, so that projects such as KM-TMX can be assessed in a broader context along with alternate energy investments and subsidies. We are unclear from information brought to the process, the extent to which KM-TMX contributes taxes in Canada and the extent to which Canadians subsidize oil energy in general and KM-TMX specifically.

Chapter Three lists the 19 marine ERs potentially impacted by the KM-TMX project. For each reserve there is a summary description of the values, a list of



Northern or Steller Sea Lion Male, Female and Pup at Race Rocks Ecological Reserve (Photo by Ryan Murphy 2010)

the threatened and endangered species, estimated shoreline lengths, and summary of current monitoring and research gaps. The Board of FER is concerned about the inadequacy of baseline monitoring in ERs as well as research and monitoring gaps in the broader marine ecosystem.

We understand that KM-TMX casts this project as a minor increase in tanker traffic from six to 14 per cent but we see this project as a very major increase (>360 per cent) in oil tanker traffic. In this respect, KM-TMX is the major player bringing the highest risk to British Columbians and coastal ecosystems and with that there must be concomitant responsibilities.

Also in Chapter Three, we review monitoring for species (some listed) such as: killer whale, elephant seal, California sea lion, northern (Stellers) sea lion, river and sea otter, marine birds, over-wintering birds, salmon, rockfish, forage fish and invertebrates associated with ERs.

These sections highlight several intervenors' calls for better assessment of the potential damage to fish resources and others too identify huge gaps in what has been presented by KM-TMX. The proximity of a number of rockfish conservation areas along the tanker route has not been given the concern that it deserves. The diverse habitats of forage fish, invertebrates, sea grasses and marine algae appear to have been entirely discounted in assessments done by KM-TMX. Essential marine food webs have been ignored from the assessment. Lack of knowledge of the abundance and importance of the highly diverse community of invertebrates is a gap. A failure to consider any indicator species shows a lack of scientific rigour in the KM-TMX assessment reporting. On some of the island reserves, the rare terrestrial plant associations were not mentioned in KM-TMX impact reporting,

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even though air-borne dispersal of pollution from sea spray in the event of an oil spill would very likely lead to local extirpations. Even the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)-listed “species at risk” in several ERs have not been addressed, so we include what species were absent from KM-TMX reports along with our concerns and we have provided references and excerpts from more recent studies to KM-TMX.

Chapter Four reviews lessons learned by the Board of FER through our review of the KM-TMX documents and Information Requests (IRs) #1 and #2. The text of communications between the Board of FER and KM-TMX is provided in table summaries in Appendices B (IR#1) and C (IR#2). We outline our experience through these two rounds of IRs and read the KM-TMX responses to other intervenors’ requests too. We filed motions to compel KM-TMX to provide full and adequate responses. We got little additional information as a result. We see a lack of leadership and commitment by KM-TMX to address our questions and to address NEB Issues 4, 5 and 11. We now understand KM-TMX is diligently working to *limit* their role in marine systems to solely support the Western Canada Marine Response Corporation (WCMRC) and are content to have agencies such as the Canadian Coast Guard (CCG), the BC Government, Department of Fisheries and Oceans (DFO) and volunteer groups such as FER, monitor and improve knowledge on how to manage the increased risk to marine ecosystems from the KM-TMX project. KM-TMX will be content if no multi-



Black Oystercatcher adult and chick. These birds nest in the upper intertidal zone of rocky islands of the Race Rocks Ecological Reserve (Photo by Raisa Mirza 2010)

stakeholder forum is put in place to review and provide information that would in future compel changes in practices based on advances in learning on how to best reduce risk. We concluded that KM-TMX has not accepted any level of responsibility or accountability for marine systems despite the NEB direction to address the marine environment and impacts.

During Information Requests #1 and #2, KM-TMX showed no interest in commitments and weak collaboration with a variety of stakeholders. No voluntary commitments were made by KM-TMX similar to those made by Enbridge. We have learned that KM-TMX is not interested in participating in acquiring knowledge in the marine environment, nor being involved in developing incremental improvements to tanker traffic and risk reduction strategies, nor having a structured forum in which to periodically review newer information, practices and plans. KM-TMX responses to many of our questions, has been to provide assur-

ances that agencies such as WCMRC (a subsidiary of KM-TMX), CCG, Environment Canada and the BC Government have responsibilities for spilled oil clean-up and that tankers carry insurance. KM-TMX has convinced itself that it has no responsibility beyond the Westridge Terminal and none for oil in the marine environment. The Board of FER disagrees and sees KM-TMX as abdicating responsibility for marine transport while adding huge risk. We conclude that only through permit conditions can KM-TMX be brought to account for, and contribute to learning how to manage and mitigate the risk to marine ecosystem. KM-TMX expects to get a free ride for oil transport in the marine portion of their export business. Unless the NEB requires sufficiently stringent permit conditions, the Board of FER fears that this will come to pass.

Chapter Five recommends to the NEB 12 Permit Conditions for the KM-TMX project. We argue these conditions (based on

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Enbridge conditions) need to be longer-lasting and at arms-length from KM-TMX. This is because the Salish Sea and Strait of Juan de Fuca have much higher population density, greater concentration of shipping (risk of accidents) and the higher concentration of environmental values linked to the Fraser River Estuary, Strait of Georgia and Strait of Juan de Fuca. These conditions need to be at arms-length from KM-TMX but involve KM-TMX. KM-TMX's lack of interest requires an arms-length arrangement to allow others interested and knowledgeable in marine ecosystems a collective role towards an uncertain possibly environmentally devastating future. An overview of the recommended conditions follows:

1. Establish a Research and Monitoring Endowment Fund to provide stable long term funding for research and monitoring over the life of the project (30+years), to learn how to make incremental improvements to practices, plans, marine ecosystem restoration, etc. The Endowment needed is estimated to be at least \$450 million. This could be achieved with a 1% environmental levy or the equivalent of an environmental surcharge equal to (\$0.25/barrel of oil). Such a levy would accrue the Endowment fund within a 6 to 10 year time period based on expected forecasted oil exports. This Endowment conservatively invested (2% return on investment) provides stable secure funding for a \$9 million marine research and monitoring program annual budget over the life of



Surf Grass and Associated Community of Hydrocorals and Other Organisms Exposed at Low Tide at Race Rocks (Photo by Garry Fletcher)

- this project.
2. Form a multi-stakeholder Board of Trustees responsible for the management of the Endowment Fund and approval of annual expenditures of a Marine Research and Monitoring Program (MREMP). Trustees would represent the interests of First Nations, KM-TMX, Federal Government (DFO and Environment Canada), BC Environment, State of Washington, NGOs (FER and Pacific Salmon Foundation) and three other representatives selected by the Trustees.
3. Details on filing of progress for establishing the Endowment fund and the MREMP (Conditions 1 and 2) to the NEB.
4. Filing progress and results of monitoring and research done by the MREMP.
5. Set the boundaries of the MREMP to those equal to the size of the area identified as a High Spill Risk Zone for Western Canada) as identified by Tanker Safety Panel 2013 (see references for access to this report).
6. Conduct enhanced marine spill trajectory and fate modelling to support conditions 7, 8, 10 and 11. Modelling capacity needs to be maintained as part of the MREMP program to assess risks and support spill preparedness planning and understand how best to mitigate impacts.
7. Develop and maintain a Marine Habitat Compensation Plan and take responsibility for quality assurance and for updating shore zone mapping (to inform by condition 5, 10 and 12) and ensure that shore zone inventory is available as a coastal planning tool in general.
8. Conduct marine ecosystem research on potential impacts, mitigation, resilience and recovery to marine ecosystems and species including toxicological research on

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Survival of Southern Resident Killer Whales

By Garry Fletcher, Race Rocks ER Warden and FER Board Member

Certainly it was great news to read in the April 1, 2015 edition of the *Times Colonist* of the birth of another orca to the Southern Resident killer whale population. (TC April 1, 2015.) Let's not be misled however into thinking that new births will counter the current and impending problems this species is facing in the Salish Sea which will probably lead to their extinction.

Contamination of their habitat, ongoing interference in whale behaviour by the boating public, overfishing of herring and salmon and now the serious risk from increased tanker traffic resulting from the Kinder Morgan/Trans Mountain Pipeline Expansion Project, (KM/TMX) have much more to do with whether or not this population of the species will survive.

The background noise from all marine vessels and the risk of ships striking whales is perhaps currently the most serious problem for survival of the whale populations. The research of BEAM Reach in Washington State has provided a stark picture of the threshold levels of acoustic noise from ships beyond which Killer whales are not able to obtain food and communicate by Echolocation.

They found that: "At least one ship is present about 40 per cent of the time and when that ship is going through the area, it reduces the range that whales can communicate by 68 per cent," That means the whales miss about 37 per cent of calls and, if traffic doubles – as it could



The figure shows the probability of oil presence and dispersion within the Salish Sea following an oil spill during the fall. The overlap with critical habitat of Southern Resident killer whales is significant.

with increases in oil tankers from twinning the Kinder Morgan pipeline from Alberta to Burnaby and with 21 per cent more carriers and barges from proposed coal terminal expansions in B.C. and Washington – it is estimated the whales will miss 44 per cent of the calls.

Current noise levels mean whales are already finding almost 50 per cent less fish than they would otherwise and a doubling of traffic would increase that to 58 per cent. The noise is having a significant impact as is the scarcity of chinook salmon. Canadian and U.S. government studies have pinpointed lack of salmon – and particularly the whales' preferred diet of chinook – noise and pollution as the major threats faced by the resident killer

whales.

In January of this year the Department of Fisheries Canadian Science Advisory Secretariat, Pacific Region issued a report which dealt with the inadequate aspects of the environmental assessment process that KM/TMX has done in its Application for the Project.

In the report entitled "Sufficiency Review of the Information on Effects of Underwater Noise and the Potential for Ship Strikes from Marine Shipping on Marine mammals in the Facilities Application for the Trans Mountain Expansion Project," the conclusions are clear:

"There are deficiencies in both the assessment of potential effects resulting from ships strikes and exposure to underwater noise in the Trans Mountain Expansion Project Application documents."

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There is insufficient information and analysis provided with which to assess ship strike risk in the Marine RSA from either existing or Project-related traffic. Ship strike is a threat of conservation concern, particularly for baleen whales such as Fin Whales, Humpback Whales and other baleen whales (Gregs et al. 2006). If shipping intensity increases as projected in Section 4.4 in the Marine RSA and the Strait of Georgia and Juan de Fuca Strait as a whole, the significance of this threat to cetacean populations that occupy the region will increase.

Incidence of recovered whale carcasses is not considered to be an adequate measure of the frequency of ship strikes. No information is provided about the speed and maneuverability of Project-related ships or the distribution of whales in relation to the shipping lanes. Analyses that consider the statistical probability of ship-whale encounters and the risk of collisions are considered appropriate methodologies to assess this potential effect.

The JASCO MONM model, as it has been applied by the Proponent, is not adequate to assess the overall impact of noise from increased Project-related traffic. Although state-of-the-art acoustic modelling has been used to model the noise propagation associated with a single Project-related tanker in the Marine Regional Study Area (RSA) used to set the boundary of the KM/TMX environmental Assessment), only four locations were chosen to represent acoustic



Orcinus orca (killer whales) southwest of Race Rocks Ecological Reserve (photo by Jeff Lorton)

marine noise from within the Marine RSA; therefore, the assessment does not adequately represent the noise exposure for the entire time a marine mammal would be in the RSA. The assessment represents only Project-related tanker traffic and not the current noise environment or the potential increase due to Project-related traffic.

Finally, the method used to assess the significance of impacts from the modelled noise level contours resulting from a single Project-related tanker and tug on indicator cetacean and pinniped species is qualitative and the lack of an appropriate assessment framework reduces DFO's ability to evaluate the assessment."

Whales are just one ecological component that is at risk with this project. In the Strait of Georgia and the Strait of Juan

de Fuca, within just a few kilometres of the tanker traffic lanes, harbour seal and elephant seal birthing and haulout sites, sea lion colonies, sea-bird nesting, migrating and overwintering habitat are all being part of the sensitive ecosystem which supports numerous fish, invertebrates and algal communities. All are at extreme risk from increase in chronic oil contamination, (from bilge and exhaust from marine vessels) and a catastrophic oil spill which is predictable given the level traffic which will be going through Boundary passage, Haro Strait and the Strait of Juan de Fuca if this project were allowed to go ahead as proposed.



Legacy Project and seek ER specific information from regional files.

- Other activities to be decided.

Goal 2. Support studies in ERs

A review of 2014/2015

- It takes funds to support researchers and FER hopes to find new sources of funding to enable ER-specific research. We sadly had to turn down some modest requests for support and could only steer researchers and ER wardens to the Parks Enhancement Fund. Sometimes a small amount of funding can make the difference in getting new data for an Ecological Reserve. FER hopes to be in a position to offer assistance to those who choose to add to the research legacy of specific ERs.
- We applied for and received intervenor status in the National Energy Board (NEB) Environmental Review of the Kinder Morgan Trans Mountain Expansion project. We also applied to the Participants Funding Program as an intervenor and after a nine-month delay were approved for an amount up to 2/3 of what we applied for.
- We are optimistic that BC Museum staff may get to Ospika Cones and Sikanni Chief Ecological Reserves to sample species in these ERs. These ERs are extremely remote and difficult to access and we will be grateful for any data on these reserves. The purpose of BC Museum's staff visit is to sample flora and fauna to compare plant communities in these ERs to those of Pink Mountain, a candidate ER. We are working with Ron Long who continues to add to the baseline information on Pink Mountain. Please visit: (<http://pinkmountain.ca/home/ron-long>)

Final Evidence Report

Submitted to: National Energy Board Environmental Assessment
Process Hearings on Kinder Morgan Trans Mountain Expansion
Project Application (KM-TMX)



Prepared by: The Board of the Friends of Ecological Reserves
May 2015

- We will seek new sources of funds to channel to researchers willing to add to field studies to increase understanding of basic ecology in ERs. We dream of course, to be in a position to add data needed for understanding existing ERs and what may be needed to carry the biological legacy into an uncertain climate future. FER believes it could efficiently allocate funds to ERs and manage an ER-specific research in the order of \$250,000+. This would ensure that there is standard baseline data for all ERs.

Anticipated Direction 2015/2016

- It is hoped that our Information Requests and Final Evidence Report to the National Energy Board Trans Mountain Expansion Project meets with success in terms of monitoring/surveys and building better baselines and improved cross-agency cooperation. (see story page 6) We are unsure if the project will be approved, but have prepared permit conditions for the National Energy Board to consider, based on conditions

Continued on page 13

imposed on the Enbridge Northern Gateway Project. Hopefully our modest proposal to improve monitoring of indicator species and establish baselines for ecosystem indicator health, resilience and productivity meet with success. We need baselines and longer term monitoring in light of the 460 per cent increase oil tanker traffic and the enormous oil spill risk and environmental damage this project brings to coast waters.

- We hope to interest some graduates and undergraduates to work in ERs.
- Other action to be decided.

Goal 3. Support development of a resilient science-based ER system

A review of 2014/2015

- FER will continue to work with larger conservation organizations with similar goals of improving marine and terrestrial protected areas.
- FER met with the Assistant Deputy Minister of Parks and senior planners in Forest Land and Natural Resource Operations with a specific proposal for new ERs. The discussions are on-going.
- Other actions to be decided.

Anticipated Direction 2015/2016

- Continue with a process to make decisions on the candidate ERs proposed to government in 2014.
 - Other action to be decided.

Goal 4. Raise awareness of the value of ecological reserves

A review of 2014/2015

- Continue our newsletter the LOG and our Annual General Meeting and our annual public lecture series.
- Maintain the ER website, add reports and images as made available and encourage wider use of the FER website by wardens and Area Supervisors.
- Other action to be decided.

Anticipated Direction 2015/2016

- Find more help with web postings and web management so Garry Fletcher does not need to carry this webmaster responsibility to the level that he does.
- Continue to post information related to NEB with regard to potentially impact on Marine Ecological Reserves.
- Other action to be decided.

Goal 5. Sustain a nurturing and effective organization

A review of 2014/2015

- Increase membership and build

a larger operating budget.

- Remain a volunteer run organization and aim to stay that size without staff.
- We are so thankful that Liz Williams has joined the FER as she brings considerable experience to the FER Board especially on workings of government and decision making.
- Stephen Ruttan and Jenny Feick, FER Board members, have taken temporary leave to pursue travel plans. We are happy for them but will miss them at the monthly board meetings.
- The Board of FER organized a joint field trip with members of the Victoria Natural History Society to Mount Tzouhalem with the Dave Polster and Genevieve Singleton ER wardens as our guides. (see story on page 4) It was so good to get out with like-minded naturalists into this ER.
- Other action to be decided.

Anticipated Direction 2015/2016

- Recruit new Board members.
- Apply for funding to do specific projects to complete on a contract basis.
- Maintain or increase membership.
- Organize field trips to ERs for Board and interested public.
- Other action to be decided.

Final Evidence Report Cont'd. from p. 9

aquatic organisms as part of the MREMP.

9. Develop and maintain a Marine Mammal Protection Plan informed by Conditions 6, 7 and 8 as part of the MREMP.
10. Reporting details on the Marine Research Program Progress Reporting conditions 6, 7, 8 and 9.
11. Details of filing of Spill Preparedness Plans and consultation plans.

12. Participate in and filing updates on Spill Preparedness Plans and consultation plans.

Chapter Six is a tabular summary of the Conditions recommended by Board of FER to the NEB.

Appendices: Appendix A is a letter of support to the BC Government for disclosure of spill preparedness plans and is included with this report.

Appendix B is a summary Information Request #1 and the

KM-TMX response and a separate document.

Appendix C is a summary of Information Request #2 and a separate document.

Visit our website at:
www.ecoreserves.bc.ca

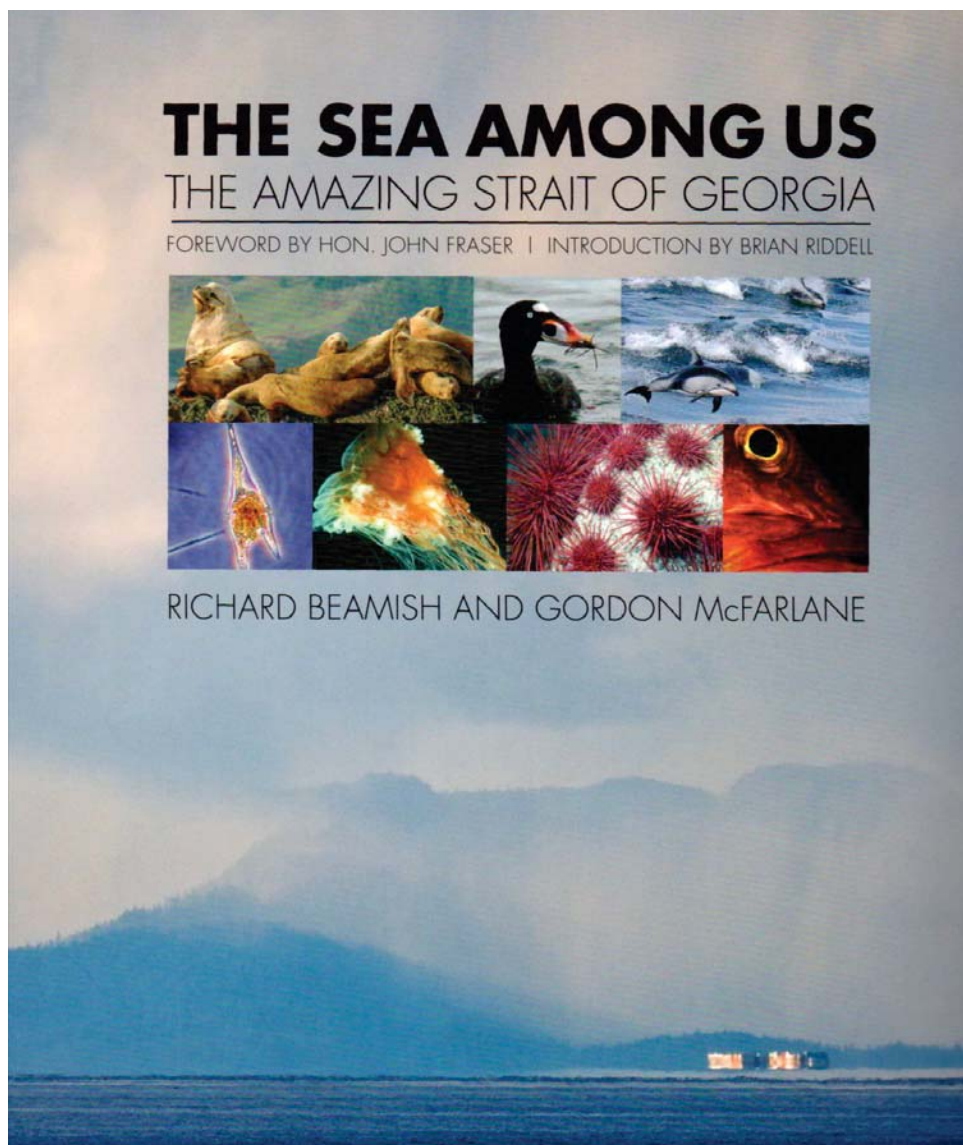


Comprehensive Study of the Strait of Georgia

The Sea Among Us by Richard Beamish and Gordon McFarlane, published by Harbour Publishing, presents a comprehensive study of the Strait of Georgia. Twelve experts have come together to provide chapters on fish, marine mammals, geology, oceanography, birds, the history of settlement and of industry. The book is written for the general public and the authors hope that the information it provides will form a common currency for stewardship that will be needed as the population around the Strait of Georgia increases by about 50 per cent over the next few decades.

The Strait of Georgia is the centre of recreational and commercial activity in British Columbia. It is also a major rearing nursery for a number of important species of invertebrates, fishes, marine mammals and birds. As Gordon McFarlane writes: "With the anticipated population growth, there will be more habitat destruction from coastal development, increased discharge of contaminants and sewage from urban areas, and increased use of the strait by resource industries such as aquaculture, fishing and forestry. Marine vessel traffic will increase, as will recreational use. Although debate continues on the relative impacts of these various threats, there is no debate on the requirement for new, more holistic approaches to prevent or mitigate impacts, and to sustainably manage the use of the strait and its resources. These approaches will require movement toward building frameworks for ecosystem assessment and management.

"Ecosystem assessment refers to monitoring climate ocean indices and indicator species to detect physical and biological changes.



Indicators should be directly observable and based on well-defined theory, while also being understandable to the general public, cost effective to measure, supported by historical time series, sensitive and responsive to changes in ecosystem state, and responsive to properties they are intended to measure. Without ongoing monitoring and evaluation of the effectiveness of management actions, we have no way of knowing if management strategies are working.

"Ecosystem management incorporates this scientific information into

developing resource management plans. Most effective ecosystem management would result from the collective adoption of policies by all sectors (i.e, fisheries, forestry, etc.) rather than each sector creating their own isolated policies. It is unlikely that government will lead these efforts, but rather they will be moved forward by a concerned well-informed public. Development of these approaches should allow us to both predict how biotic and abiotic factors will change the Strait of Georgia and implement development plans for all users of the strait to

Continued on back cover

FRIENDS OF ECOLOGICAL RESERVES MEMBERSHIP FORM

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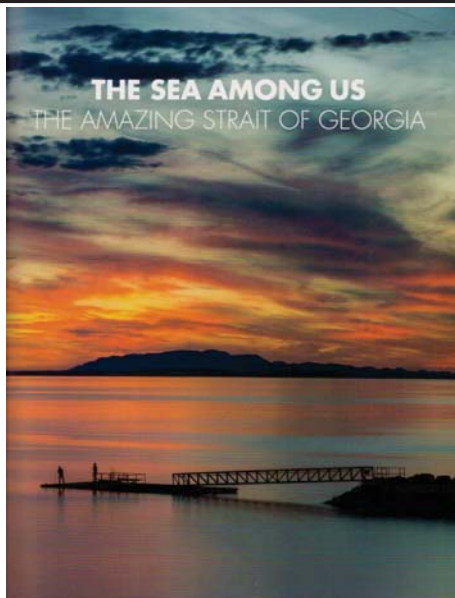
"The Sea Among Us" cont'd. from p. 14

ensure a healthy, resilient ecosystem."

Unfortunately, by the late 1980s there were signs of change in the strait. One major issue was the decline of Chinook salmon returning to the Cowichan River. A short while later major changes in the abundance and behaviour of coho salmon resulted in the closure of coho fisheries in Southern BC. There were many other ecological changes occurring such as the loss of kelp beds and local herring spawning locations. These changes had a huge impact on the lives of many people living on the Strait of Georgia.

Some twenty years have passed since the loss of the Strait of Georgia coho and yet little has been done to explain the changes or mitigate the effects. Increasing people's appreciation of the strait is an essential step to its care and protection.

The Pacific Salmon Foundation used the publication of this book to announce the creation of the Salish Sea Marine Survival Project (2014 - 2018), which will tackle the challenge of restoring sustainable Chinook and coho fisheries within the strait. The project is a multi-disciplinary program to understand



the primary factors affecting early marine survival of salmon, and ultimately to apply this knowledge to restore and sustain local fisheries and community benefits. Profits from the sale of *The Sea Among Us* will be directly invested in this restoration program.

For more information or to purchase the book (\$39.95) please visit Harbour Publishing website: www.harbourpublishing.com or the Pacific Salmon Foundation's Salish Sea Marine Survival Project at: <https://www.psf.ca/what-we-do/salish-sea-marine-survival-initiative>

The Log



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