

## Friends of Ecological Reserves Annual General Meeting

By Louise Beinhauer

The Friends of Ecological Reserves held their Annual General Meeting on April 26 at the University of Victoria. Our President, Mike Fenger started the evening with a brief summary of FER's activities in support of our strategic goals.

FER was well represented by Mike Fenger who had helped Parks and the Parks Collaborative craft the agenda for this meeting and two Board members (Garry Fletcher and Marilyn Lambert) who are also wardens. (Please see article starting on page 13.)

Friends also provided funding in the amount of \$800 to help support the research of Dr. Isabelle Côté and Siobhan Gray being conducted at Baeria Rocks Ecological Reserve. The title of the research being conducted is "Ecological Shifts Following Mass Mortality of Predatory Seastars". The researchers will be providing a write up which we plan to include in our Autumn/Winter edition of the LOG.

Ron Long who is a long-time member and an avid advocate for a new Ecological Reserve in northern BC on Pink Mountain contacted Ministry of Parks and Ministry of Forests, Lands and Natural Resource Operations staff in Fort St. John and convinced them to tour the mountain. They are now aware of its amazing plant life and the threats to it. Ron gave a rousing talk on Pink Mountain at a Victoria Natural History Society Botany Night in February. (Please see article on page 3 and 4) He sought our advice on where else he can present his talk and it was suggested that he approach Habitat Acquisition Trust to speak at their annual Conservation Connection.

The Friends of Ecological Reserves have spent considerable energy in the past year trying to get the attention of the Minister of

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# The Log

Spring/Summer 2016

*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 2016/17 issue of *The LOG* is September 15, 2016.

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Environment and the Minister of Forests, Lands and Natural Resource Operations to heed our request for new Ecological Reserves. We will continue to champion for new ERs as we believe that the Ecological Reserve system is not complete.

Garry Fletcher and Mike Fenger provided a final evidence report and argument in chief which they delivered to the National Energy Board in January. Friends of Ecological Reserves has been an intervenor against the Kinder Morgan Trans-Mountain Pipeline expansion. FER focused on marine ecosystems and on three issues identified by the National Energy Board, namely: a. cumulative environmental effects; b. potential effects of accidents and malfunctions; and c. spill contingency planning. We recommended to the NEB that they ensure long-term investment in marine ecosystem research and monitoring. We reiterated that we believe this is a legitimate internal cost for this project and it must be funded by Kinder Morgan by means of an Endowment Fund. We again stated that we believe that a multiple stakeholder/agency Trustee Council be set up so that public interests along the tanker route will be addressed over the long term.

We also stated that there is an inadequacy of the 150 NEB draft conditions for this project with regard to research and monitoring. We reviewed the conditions and made specific word changes to conditions 44, 50, 78, 114, 128 140 and 142 to increase access to information and transparency of

information to the public in general. We also recommended that the NEB adopt the 12 Permit Conditions which the Board of FER provided. One of these recommended conditions is to change the tanker route which we feel runs too close to Trial Island, Oak Bay Islands and Race Rocks Ecological Reserves. Unfortunately we were unsuccessful in persuading the NEB to make our proposed changes to the conditions attached to the Kinder Morgan Trans-Mountain project which was approved in May.

Mike briefly discussed FER field trips making reference to our last year's field trip which was a joint endeavour with the Victoria Natural History Society, to Mount Tzouhalem (see article in Spring/Summer 2015 issue of the LOG). FER does not offer a field trip to Trial Island anymore because of liability issues.

The Board is planning a Field Trip to Lasqueti Island ER for May 24 and 25 (see article beginning on page 10).

Mike reported that after several years of small deficits, we are running 'in the black'. Our Financial Officer Michael Brinsmead gave a brief financial report as did Louise Beinhauer on our membership numbers.

The meeting was adjourned and Mike introduced our Guest Speaker, Andy MacKinnon, retired Forest Ecologist who provided us with a very entertaining talk on plant-fungal interaction called "Cool plants and Their Fungal Friends". Please see article on page 5.)

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# Pink Mountain – A Strong Case for a New Ecological Reserve

By Mary Rannie

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As one of the FER board members present at the Victoria Natural History Society's Botany Night held at Swan Lake Nature Centre on February 16th, I could not have been more stirred by a talk given by Ron Long, long-time advocate for a new Ecological Reserve in northern BC.

Pink Mountain, named locally for its pink glow at sunrise (and Ron rose very early to see for himself) is 112 miles north of Fort St. John and 27 miles west of the Alaska Highway. A 2.2 square kilometre section of Pink Mountain awaits a future of long-term protection or certain demise as one of B.C.'s most significant and interesting wild places. This extreme tundra habitat has a high, possibly the highest, biodiversity in B.C. in spite of having one of the harshest environments. Although the two nearest ERs, Ospica Cones and Sikanni Chief have similar habitats, there is almost no overlap of plant species.

One fascinating inhabitant is *Gentiana prostrata* which flowers low to the ground to avoid wind but later sends a stem high to receive a sound thrashing by the wind, sending its seed flying.

Over the last 30 years Ron has kept track of the life and features of this lone gem of biodiversity that exemplifies the progression of evolutionary experimentation and possibly a



*Gentiana prostrata* (moss gentian) is a tiny jewel never more than 2 cm tall in flower in order to stay in the warmer air near the ground and out of the dessicating wind. But as the seed capsule ripens, the stem suddenly begins to grow, thrusting the capsule 10 cm up into the wind where the seeds are roughly shaken and scattered.

wider range of micro-habitats. Ongoing inventories for the entire plateau since 2014 are not complete. Of the 200 species of flowering plants (not including grasses, many rare), three red-listed, eight blue-listed can be named so far. Thirty-one species are rarely seen because of their normally remote habitat but are easily found on Pink Mountain. Seven plants that don't normally grow on tundra, including three orchids are there as well. Soil samples indicate a high Ph on the south end indicating high levels of plant nutrients, low Ph on the north end indicate low nutrients levels; a moss study has found one red-listed, one blue-listed and two species not

previously recorded in B.C. The weather stations (at the top and bottom of the mountain) indicate 0 mm of rainfall on the summit and yet the soil is moist (possibly from the uniformly high humidity at the summit).

Many groundcover berries draw American Robins in the fall and support six out of seven ptarmigan and grouse species in B.C. (a remarkable concentration). Bairds Sandpiper uses the Pink Mountain tundra area as a resting spot during migration between the Arctic and South America. Seven raptors can be found including Golden and Bald Eagles, American Kestrels and Sharp-shinned Hawks and Townsend's Solitaire, Horned

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Larks, Rock Wren and Pine Siskin have been seen.

Eighteen mammal species (not including bats) include Hoary Marmots, silver fox, pine marten and every ungulate in northern BC except Mountain Goats. The mammal of primary concern is the blue listed Northern Woodland Caribou which uses Pink Mountain daily, year round.

Just under 30 per cent of B.C.'s butterfly species (55 species including two blue-listed and two red-listed) have been catalogued on pink Mountain by an expert from the Czech Republic and there are an estimated 200 species of moths. Even geological features deserve scrutiny, like the rock river that melting permafrost has created.

Many threats face Pink Mountain: potential placement of 40 wind turbines, (Ron hopes



Looking North along the steep West side of Pink Mountain.

to persuade the company to build them further along the mountain); the proximity of fracking sites surrounding the mountain that will bring roads, trailer camps and human disturbance for decades to come; people trashing fragile plants near the fossil beds that are the

reason for the Parks designation.

In 2011 Ron raised \$60,000 in private money and designed a research program with expert opinion coming from the UBC Botanical Garden. In 2015 Ron made personal contact with B.C. Parks and FLNRO employees in Fort St. John (none of whom had ever visited Pink Mountain) with the result that 10 of them came for a tour of the mountain. They are now seriously concerned. Another hopeful proposal, the Yellowstone to Yukon wildlife corridor within which Pink Mountain sits, is gathering momentum. Ron recommends the provincial park be folded into the ER proposal and that a new road be built in a different location. He is working on a report about this unique and endangered ecosystem. Pink Mountain is at the top of FER's proposal and priority list. Thank you, Ron! You're amazing!

For more information and images of flora and fauna found on Pink Mountain, please visit: [www.pinkmountain.ca](http://www.pinkmountain.ca).



Fifty-five species of butterflies have been recorded on Pink Mountain. Each species requires its own food plant and it is only the marvelous diversity of plants that makes such butterfly numbers possible. Fifty-five species in one relatively small location is all the more remarkable when we realize that only 187 species of butterflies are known for the entire province of BC. Further, B.C. has more butterflies than any other Canadian province making Pink Mountain one of the butterfly hotspots in Canada.

# Andy MacKinnon Delivers FER AGM Talk

By Louise Beinhauer

**A**ndy MacKinnon's entertaining and educational talk presented at the April Friends of Ecological Reserves AGM was entitled "Cool Plants and Their Fungal Friends".

Andy began his talk with a message vis a vis Ecological Reserves: he said ERs represent benchmarks in the natural environment and are extremely important areas to conduct research. He then explained the term "centinelan extinction" which means extinctions before we even know an organism existed. He provided a reference to a study done in 1996 by Neville N. Winchester and Richard A. Ring where arthropod communities in an old growth Sitka forest in the Carmanah Valley were studied. One quarter of the species collected were new to science. We have no way of knowing whether other species of arthropods have already been extirpated due to logging of old growth forests. Hence the need for more research.

Andy then began to speak about the star of his talk, fungi. His first fungus example was the red-belted conk which is a fungal body of plants that eat



Red-belted conk (*Fomitopsis pinicola*)



Jelly fungus or witch's butter

trees. They are predators – their spores land on a branch stub and they begin to eat the heartwood. This conk will decompose a tree after it's dead (known as a Saprotroph). There are other predator fungi including jelly fungus or witch's butter, and oyster mushrooms. They produce paralyzing drops that kill small prey (amoebas). Therefore, they are carnivores!

Andy categorized fungi into three groups: lichens, mycorrhizae and mycoheterotrophs and mixotrophs.

**Lichens** are composite or symbiotic organisms but 95 per cent of a lichen is fungus. Macro lichens are diverse and include three times as many species as vascular plants. One example of a lichen, old man's beard, is an indicator of good air quality.

The lichen fungi cultivate partners that manufacture food by photosynthesis. Sometimes partners are algae and other times cyanobacteria. Lichens



Oyster mushrooms (*Pleurotus ostreatus*)

with cyanobacteria can pull nitrogen from the air and make a major contribution to soil fertility. Cyano lichens are only found in old growth forests.

A member of the audience asked how old a forest has to be to grow these. Andy's response was somewhere between 90 and 300 years!

Some species of lobaria contain three kingdoms of life in one organism. Lungwort is an example.

**Mycorrhizae** is a symbiotic relationship between a fungus and the roots of a vascular plant. Ninety-four per cent of vascular plants have fungus associated with their roots. The fungus brings water and minerals to the plant and the plant brings sugar down their roots which feed the fungus. Andy told us that if you kill all the fungi, the trees will all die!

The fungus dramatically increases the plant's water and mineral absorption ability because of its vast underground network of filaments (mycelium). These networks of fungus connected to trees are called ectomycorrhizae.

Recent research found that

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these networks of fungi connecting different species of trees are able to share resources which helps each species to survive. This could have important implications in helping to understand forest ecosystems and how they are dealing with climate change.

Ericoid mycorrhizae occur in plants of the ericaceae family such as red huckleberries. The mycorrhizal fungi associated with these plants assist with extracting nutrients from poor soils (the Ericaceae family of plants are generally found growing on acidic and poor soils). They can access organic nitrogen in the soil and make it available as inorganic nitrogen to feed the plant.

The final group of fungi, **mycoheterotrophs** and **mixotrophs** are generally plants without chlorophyll, that have small 'dust' seeds with undifferentiated embryos, leaves that are scale-like or absent, have degenerated vascular tissue, have reduced roots that lack root hairs and lack stomata. Mycoheterotrophic plants generally have elevated carbon and nitrogen values (compared to green plants). Mycoheterotrophs are host specific and associate with saprotrophic fungi which obtain carbon from the decomposition of dead plant material.

Mixotrophic plants are green (can photosynthesize), have carbon and nitrogen values between those of mycoheterotrophs and full autotrophs (regular green plants) which indicates that they get some of



Prince's-pine (*C. umbellata*)

their carbon and nitrogen from other plants through their fungal partner. They are related to mycoheterotrophs.

Andy provided some local examples of this type of fungi, namely: prince's-pine which is a mixotrophic plant with a fungal associate of a variety of ectomycorrhizal species, including several Tricholomas; Wintergreens (*Pyrola*, *Moneses* and *Orthilia*) There are six species in our area including: one-sided wintergreen (*Orthilia secunda*) which is a mixotroph, single delight (*Moneses uniflora*), white-veined wintergreen (*Pyrola picta*) which is mycoheterotrophic; and green wintergreen (*Pyrola chlorantha*), which is a mixotroph.

Club mosses and some ferns (gametophytes) which are non-photosynthetic can be found in our area. Andy said that they are mycorrhizal and likely micro-



Running clubmoss (*Lycopodium clavatum*)

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heterotrophic.

Most (perhaps all) of the 30,000 species of orchids require some sort of mycoheterotrophic arrangement with saprophytic or parasitic species of "*Rhizoctonia*" (Basidiomycetes) for germination of the 'dust' seeds. An example of a local orchid is the fairyslipper (*Calypso bulbosa*).

More than 100 fully mycoheterotrophic species of orchids are mixotrophs in *Cephalanthera* and *Epipactis*. *Goodyera repens* (rattlesnake plantain) has been shown to transfer significant amounts of carbon back to its mycorrhizal fungus. It can also photosynthesize in the sun.

Another local example of mycoheterotrophic plants are coralroots (*Corallorhiza* species) such as spotted coralroot (*C. Maculata*), western coralroot (*C. mertensiana*), striped coralroot (*C. striata*) and yellow coralroot (*C. trifida*). The fungal



Fairyslipper (*Calypso bulbosa*)

associates of spotted coralroot are 20 species of Russulaceae, of western coralroot, three closely related *Russula* species and of striped coralroot, *Thelephora-Tomentella* species.

The beautiful phantom orchid (*Cephalanthera austiniae*) is fully mycoheterotrophic and its fungal associates are 14 species of *Thelephora Tomentella*.

The candystick (*Allotropa virgata*) is mycoheterotrophic and its fungal associate is the tasty pine mushroom (*Tricholoma magnivelare*). The gnome-plant (*Hemitomes congestum*) is mycoheterotrophic and has fungal associates *Hydenllum peckii* (strawberries and cream) and *H. aurantiacum*.

Pinesap (*Monotropa hypopitys*) also known as *Hypopitys monotrop* is also mycoheterotrophic. Its fungal associates, the *Tricholoma* species include *T. sejunctum* and *T. flavovirens* also known as man-on-horseback. Pinedrops



Spotted coralroot (*C. Maculata*)

which are mycoheterotrophic have fungal associates *Rhizopogon salebrosus*, and *R. arctostaphyli*.

The final example of a mycoheterotrophic found



Indianpipe (*Monotropa uniflora*) above and its fungal associate, Russulaceae, often short-stemmed *Russula*, below.



Phantom orchid (*Cephalanthera austiniae*)

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locally is indian pipe (*Monotropa uniflora*) with its fungal associate Russulaceae, often short-stemmed russula (*Russula brevipes*).

In case you're wondering, truffles are a fungal fruit that appear underground.

Andy concluded his talk with the fascinating discussion of the more than 2,000 species of fungi that are associated with Douglas-fir forests. The underground network of fungi filaments mentioned earlier provide a powerful network (wood wide web).

These mycorrhizal networks can transfer essential resources such as carbon, nitrogen, phosphorus and water. Why would they do this? Transferring phosphorus and nitrogen from dying plants to a healthy conspecific neighbour would provide a conduit for legacy transference across generations. These networks can also transfer herbivore- or pathogen-induced defence signalling compounds to warn neighbours of pest infestations; kin recognition signalling compounds involving micro-nutrients to communicate genetic relationships of neighbours; toxins such as allelochemicals to convey negative interactions to competing neighbours and carbon from stressed to healthy heterospecific neighbours.

Studies by University of British Columbia Forestry students under the guidance of Dr. Suzanne Simard provide the basis for our understanding of the role of this mycorrhizal network in tree species



Candystick (*Allotropa virgata*) above and its fungal associate, pine mushroom (*Tricholoma magnivelare*) below.



migrations with climate change disturbance. The researchers discovered that these mycorrhizal networks form when mycelia (filaments) connect the roots of two or more plants. It was discovered that all trees in dry interior Douglas-fir forests are interconnected with the largest, oldest trees serving as hubs where younger trees establish within the mycorrhizal network of the old trees. It was determined that the survival of these establishing trees was



Gnome-plant (*Hemitomes congestum*) above which its fungal associate *Hydenllum peckii* better known as strawberries and cream, below.



greatly improved when they were linked into the network of the old trees. This research provides evidence that maintaining forest resilience is dependent on conserving mycorrhizal links and that removal of hub trees could unravel the network.

Andy was asked: when a forest is clearcut, if you leave the trees along the outside of the cutblock, will the mycorrhizal move into the centre where the trees were cut. The answer that Andy provided was that if you plant seedlings that are mycorrhizal, then all of the trees after one growing season will become mycorrhizal.

The Friends of Ecological Reserves would like to thank Andy for being our guest speaker at this year's Annual General Meeting.



# Fate of B.C.'s Old-growth Forests in Jeopardy

Dirk Meissner, Excerpted from the June 3, 2016 edition of *The Globe and Mail*

**T**he Douglas-fir Andy MacKinnon leans against is 40 metres tall. It's likely more than 500 years old and its fire-scarred trunk is almost two metres in diameter.

In most other countries, the tree would be the largest in the land, says MacKinnon, a forest ecologist who spent three decades with British Columbia's government researching old-growth forests.

At Francis/King Regional Park, minutes from Victoria, the park's trees are protected from logging, but about 150 kilometres west of Victoria, old-growth forests with 1,000-year-old trees twice the size of those in the park are being cut down every day, said MacKinnon.

The world's largest trees face dangers similar to elephants, whales and bison that have been hunted to the brink of extinction, he said.

Right now, MacKinnon said it's open season on B.C.'s old-growth forests outside of parks or protected areas.

"You hear debates about how much old growth we'd like out on the landscape and some people will say 'X' and some people will say 'Y,' but I think most people will agree that when you are down to less than one per cent, that's too little," he said.

MacKinnon is behind a push by some communities, business groups and politicians to stop logging in old-growth forests. The B.C. Chamber of Commerce recently endorsed a



Andy MacKinnon leans against a 500-year-old Douglas-fir which is 40 metres tall.

resolution to increase protection of old-growth forests where they have a greater economic benefit if they are left standing.

Port Renfrew, northwest of Victoria, has reported an increase in tourism in Avatar Grove, a 50-hectare section of old-growth forest named after the Hollywood adventure movie.

The Port Renfrew area is also known for Canada's largest living trees, including a 70-metre tall Douglas-fir named "Big Lonely Doug" by environmentalists because it was the only tree left standing after a logging clear cut.

The B.C. government is taking steps to protect forests, including the Great Bear Rainforest protection agreement. It will protect 85 per cent of the world's largest intact temperate rainforest from logging in an area on the central and northern coast of the province.

There are 1,000-year-old western red cedars and 90-

metre tall Sitka spruce trees in the rainforest, which is also home to the white kermode bear.

Environmentalists, forest companies and First Nations cheered the deal as a model of compromise after two decades of protests and difficult negotiations.

The environmental applause continued with a new provincial park east of Prince George that's the world's only inland temperate rainforest. Cedar and hemlock trees were slated for logging, but local citizens, First Nations and academics built a series of trails into the area known as the Ancient Forest where thousands now marvel at trees with trunks measuring 16 metres in circumference.

Rick Jeffery, president of Coast Forest Products Association, said 55 per cent of B.C.'s coastal forests are under some form of protection from logging. The days of leaving one tree in a

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# Lasqueti Island ER Field Trip

By Fred Beinhauer

On Tuesday, May 24, 2016, FER Board members and friends took a field trip to the Lasqueti Island Ecological Reserve # 4. Lasqueti Island is a small island located North of Parksville in the Strait of Georgia, between Vancouver Island and the British Columbia mainland, and adjacent to Texada Island.

Lasqueti Island is approximately 8 km wide and 22 km long, with an area of 73.56 km<sup>2</sup>. About 425 permanent residents call Lasqueti home (2011 census). It is accessible by foot passenger ferry service only, or by private boat or plane.

The roads are unpaved and the island has no public transportation. There are no public campgrounds. Lasqueti is not serviced by B.C. Hydro. Residents live either without electricity or with alternative sources of power like solar or micro-hydro. There is very little industry and no bustling economy.

The reserve was established in 1971 and is 201 ha in size and from sea level to 240 meters in elevation. Oddly, despite generally being in an area of temperate rain forest, it is very dry and has prickly-pear cactus as a result of being in a "rain shadow" caused by both the Washington State Olympic Mountains and the Vancouver Island central mountain range depleting much of the moisture.

Many of us travelled by car pool from the Victoria area that morning and we all met at a marina by the Departure Bay ferry terminal in Nanaimo for a planned departure at 8:00am aboard the Bastion City, a 60 foot twin-engine boat skippered by Dave, with Evelyn as first mate (and biologist). Also along for the trip were: Fred and Louise Beinhauer, Mike Fenger and Val Hignett, Rick Page and Joan, Garry and Helen Fletcher, Michael and Jean Brinsmead, Marilyn and Phil Lambert, Liz Williams, and Stephen Ruttan. A



Field trip participants except for Stephen Ruttan (who took the photo). ER Warden Al Gaensbauer is second from the right.

total of 16 of us which the vessel was able to accommodate quite nicely.

We made breakfast aboard ship on the way from Nanaimo to Lasqueti, a voyage of some five hours motoring at around 5 knots. We arrived about 1:00pm and motored behind Jenkins Island (yes, yet another island) where we saw quite a few pigeon guillemots in the water along the shore. Garry noted that the cavities in the fractured rock face along the shore were used for nesting.

We dropped anchor in a little bay just off the western edge of the ER. We took a tender to shore and met Alfred Gaensbauer (Alf or Al), an 87-year old long-time resident and the warden of the ER. After Garry commented on the pigeon guillemots that we saw, Al noted that 2,000 of the birds use the ER's rocky boulder shoreline for their nesting sites. He says they are always here this time of year. Al owns many acres which he lives on adjacent to the ER; hence he is ideally located to monitor what happens in the ER, and was able to

provide us with a vast wealth of stories, information and history while he guided us through the ER. Al was more agile and fit than most his visitors and every bit as quick minded!

Our first tour started from the west side of the ER at sea level, along the foreshore and up towards the back of it climbing to a high point, with spectacular views of the strait and Vancouver Island. We saw some of the notable species for this ER such as seaside junipers, shore pine, and very dry, crackling reindeer lichen underfoot on the rocky slopes. Much of the understory was very open due to the heavy grazing of feral sheep and deer. We saw a garter snake on the upper swales which was on the list of reptiles in the ER.

The reserve contains a rocky, irregular hill with slope exposure to the south and east, the steepest slopes, including cliffs to 30 m in height, being near the shoreline. About two kilometres of shoreline is included. Large areas of bare

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volcanic bedrock are exposed on hill tops, steep slopes and along the shoreline. Significant soil formation is limited to a few narrow draws and small valleys, and to less rugged terrain near the north boundary.

As a result of southerly exposure, location at sea level and thin soils, the vegetation here is representative of the very driest habitats within the Coastal Douglas-fir forest. Most of the reserve is covered with open stands of Douglas fir, arbutus and shore (lodgepole) pine, interspersed with mossy, grassy or bare rock openings. Western redcedar, western hemlock and red alder occur in a few moist draws, and wetland plants in three small swamps. Seaside juniper, including specimens of record size, is common near the shoreline, in association with other dry-site plants like prickly-pear cactus, Puget Sound gumweed, and introduced species such as early hairgrass and soft brome.

We took many photos that first day and we ended the day with a visit to Alf's home which we walked to from the ER. Alf has a fence surrounding much of his property as he grows many fruit trees and vegetables. The difference in vegetation outside and inside his fence was very noticeable. Outside, the vegetation at ground level was quite sparse while inside the fence it was very lush – largely due to the feral sheep and deer outside the fenced area. As well, some watering goes on inside the fence too!

We went back to the ship for the evening, raised anchor and moved up island to False Bay and dropped anchor there for the night. We made dinner onboard and for sleeping arrangements, having some three decks, some of us slept in the cabins below, some on the large sofas in the lounge area, some in tents on the upper deck, and one



Spectacular views from the high point of the ER facing Georgia Strait and Vancouver Island.

in the upper wheel house. It was a beautiful night with many stars visible in the clear sky.

In the morning we made breakfast and raised anchor to move back to the same bay behind Jenkins Island and again met up with Alf. However, this time we took the launch to the east side of the ER where the prickly-pear cactus are more viewable along the cliffs of the foreshore and also to walk the small portion of the ER that was fenced to protect it from feral sheep.

The cactus patch was in full bloom so our timing was excellent. (See back cover for more information on this beautiful plant.)

The ER has a very long history of grazing primarily from feral sheep and goats. Alf says the goats have not been seen in the last few years but the sheep remain. We did not see any, but the sheep were very much evident from droppings, bleached bones and a skull, and wool hanging from branches and on the wire mesh of the non-functional fence that was to enclose about 20 per cent of this ER from constant herbivory. Deer also browse within the ER but there was little evidence of their presence and we conclude that they are a minor influence in comparison to feral sheep.

The prolonged grazing by sheep has resulted in seedlings that do not germinate and establish so the stand structure is very much older trees in the over story with no pole sapling layer.

This ER has ground lichens that are in excellent condition. Seems the sheep only make trails through it and leave it to develop into dense continuous deep mats. We attributed this pristine condition due to isolation and lack of human trampling. We stayed on the animal paths too.

The fence in this ER was installed in the 1990s. It is a half circle with one end at the shoreline at the east edge of the ER and the other end at the shoreline at the middle of the ER. In all, there is about 1 km of fenced shoreline and 1.5 km total of fence line.

Unfortunately there was no difference inside and outside the fence. The fence had a number of breaches, many having sheep wool stuck to them which obviously let the sheep roam into the protected area. It was noted that most of the fence is in good condition and only a small bit of repair would be needed to fix it. Some portions have fallen trees that collapsed the fence. The eastern edge is rusted

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# Vancouver Island Ecological Reserves Wardens' Meeting

Summarized from notes provided by  
Sharilynn Wardrop, Msc, Protected Areas Ecologist, BC Parks

A two-day Ecological Reserves Wardens' Meeting was held at Vancouver Island University in Nanaimo on February 26 and 27, 2016.

The meeting began with a powerful welcome by Geraldine Manson, Eder in Residence at Vancouver Island University. She acknowledged the long history of the land, the connection we all have to it and the shared desire to protect it.

Steve Lane, Associate Vice-President of Academic Planning and Aboriginal Initiatives from the Office of the Provost welcomed us to VIU. He recalled a letter he wrote when



Some ER Warden Meeting participants (not all included in above photo)

he was 11 years old, expressing a desire to one day become a park ranger, noting that he has always

valued the experience of being on the land. Perhaps he would like to consider becoming an ER Warden!

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*Lasqueti Cont'd. from page 11*

and breached in places for about 200 meters from salt spray. Also it was noted that on the eastern edge it appeared that people coming ashore purposely breached the fence, perhaps for walks. It was suggested that a gate and a sign be placed there saying in effect "Please keep this gate closed to keep the sheep out. Thanks"!

Our conclusion after assessment of the fence and the ecosystems is that the fence was put up to allow a portion of the ER to develop



Over grazed *Juniperus scopulorum*



Breached fence with sheep wool clinging to the wire

with reduced grazing pressure from feral herbivores. The fence was a good idea and well implemented but is now in disrepair. Al was keeping the windfall off the fence for some time until instructed to stop by BC Parks staff. We think this may have been out of concern for liability issues. We think this liability issue has been resolved but the change in policy has not been communicated to this warden. Al says he is done with that kind of power saw work but would help if asked to by Parks. In a letter to Al, Parks staff indicated that they

would take care of fence maintenance but there has been no follow through on this.

On the return trip to Nanaimo, a small group compared their field notes and plant samples with the species on the published lists of plants and animals. An alligator lizard which was spotted on our hike, was not on the original list published in the 70s. A great deal of new information was found and we are fairly certain there are new plant species for the ER to be added to the list.

It was a really fun and informative trip to Lasqueti Island. Thanks again to Al, the warden, and the crew of the Bastion City: David Littlejohn and Evelyn Hamilton!!

Links:

- Additional photos from the field trip:  
(<http://ecoreserves.bc.ca/2016/01/01/er-4-lasqueti-island-field-trip-photos-june-2016/>)
- Published purpose statement and species list:  
([http://www.env.gov.bc.ca/bcparks/eco\\_reserve/lasqueti\\_er.html](http://www.env.gov.bc.ca/bcparks/eco_reserve/lasqueti_er.html))



Six ER Wardens shared pictures and stories about the ERs they work in. These were fascinating and varied stories that capture the wide range of ecosystems our ERs protect, the diverse issues that they face and the fascinating research that happens within them. The six wardens and their ERs were: Anne Stewart, Baeria Rocks Ecological Reserve; Matt Fairbarns, Trial Islands Ecological Reserve; Bill Image and Gerry van de Wolf, Bowser Ecological Reserve; Risa Smith, Galiano Island Ecological Reserve; Garry Fletcher, Race Rocks Ecological Reserve; and Dave Pinel, Checleset Bay Ecological Reserve.

BC Parks' Regional Director for the West Coast Region, Don Cadden, provided an overview of First Nations relationships. He noted that First Nations rights within protected areas include social, cultural and ceremonial uses on their traditional lands. These rights exist within the traditional territory of the particular First Nation. They do not extend to commercial use or the traditional territory of another Nation. First Nations rights can be infringed on in certain cases, if it is necessary to protect human safety or conservation values.

Title, however, is a game changer. Protected areas that are included in title lands are no longer protected areas. For example, part of Ts'il'qos Park is now title land and will be governed under Tsilhqot'in Law. New and stronger assertions are now being made around title. Some Nations are starting to assert that their prior consent is needed before a park use permit can be issued.

### WORKSHOPS

Two workshops were held to look at resourcing priorities for ER Wardens and to gather feedback on what ER Wardens envisioned for



Wardens, Parks Collaborative, Friends of ERs and BC Parks staff working to discuss Workshop Topics on Day 1

the future of the ER Warden Program. BC Parks, the Parks Collaborative and Friends of Ecological Reserves will be working together to look at the feedback provided in these workshops and see what can be implemented in both the short and long term. We will report updates on progress as it becomes available.

### ROLE OF THE ER WARDEN

Genevieve Singleton, ER Warden for Honeymoon Bay and co-warden for Mt. Tzuhalm, Don Closson, BC Parks Area Supervisor for Cowichan Area and Erica McLaren, BC Parks Conservation Specialist, for West Coast Region shared their perspectives on the role of the ER Warden. The main theme to arise in this session was the importance of communication between ER Wardens, their contacts at BC Parks, and the broader community.

In addition: Genevieve pointed out that ER Wardens can define their own role. She focuses on education and spending time on the ground. She sees collaboration as a great way to solve problems, and would like to see new ways for wardens to communicate with one another.

Don recognized that wardens are his eyes and ears. He recognizes and respects all volunteers he works with, and tries

to work collaboratively with them. He sees his role as providing direction and being a sounding board for the passionate volunteers he works with. He appreciates the expertise and passion ER Wardens bring to their roles.

Erica noted that her role is to coordinate the program for the region, helping fill in warden roles where they are needed. The area supervisor is the ER Warden's direct contact but Erica provides support with biological questions and is an additional point of contact where needed. She emphasized the importance of ER Warden reports, so that we all know what is happening on the reserves and don't duplicate efforts/information collected.

### TRAINING SESSIONS Counters and Cameras

Senior Park Ranger Hugh MacDonald provided an overview of how he uses trail counters and cameras to monitor activity in protected areas.

**Note:** If you find a monitoring device and do not know who put it there, alert BC Parks ASAP (your area supervisor and Erica), and provide exact GPS location. They can confirm whether a permit is in place.

To measure traffic, use trail counters or do periodic manual counts.

*Continued on page 14*

## VI. Wardens' Meeting Cont'd. from p. 13

Use cameras to collect non-specific data like time and location of an activity, not specific information like faces or license plate numbers. Cameras should only be used for surveillance when in partnership with law enforcement.

A few tips about using cameras:

- Cameras should be camouflaged, and placed high and in an inconspicuous location.
- Animals can detect cameras, wind and weather can shift cameras.
- Cameras are temperature sensitive – do not place inside a box.

Try to always approach from different directions to avoid creating a trail.

### Photo Monitoring

A few tips for effectively using photos to monitor change in a location over time:

- Be sure to photograph from the same location every time. Mark the spot using both GPS and a marker or landmark.
- Document well. Ipads and cameras are great for taking notes, georeferenced photos (pictures with GPS coordinates attached).



Two field trips were held after the morning training session of Day 2. The first field trip was to Woodley Range Ecological Reserve lead by ER Wardens Katherine Banman and Gary Bucklund and Erica McLaren. The second trip was to Mount Tzuhalem ER lead by ER Wardens David Polster and Genevieve Singleton and Don Closson, BC Parks Cowichan Area Supervisor. The photo above is from the Mt. Tzuhalem field trip.

### LONG-TERM ECOLOGICAL MONITORING

In 2012, BC Parks launched a project to monitor changes over a long time period – mostly due to climate change. This is called the Long-term Ecological Monitoring (LTEM) project. Erica McLaren shared some information about this project.

Five biomes are currently being monitored. The protocols for monitoring some of the biomes measure changes in productivity, and others monitor changes in species (abundance and assemblages). **Productivity** (repeat

every year: Forest (berries and squirrels), Wetland (Amphibian, waterfowl, water temperature/level)

Species Change (repeat every four years) Intertidal Grassland Alpine / Sub-alpine

The goal is for each management area to have one productivity and one species change protocol in place. More still need to be established on Vancouver Island.

Many ER Wardens are already participating in LTEM. If you are interested in participating, or would just like to know more, please contact Erica.

### Continued from page 9

clear cut are gone, said Jeffery, whose organization represents major forest companies that employ 38,000 forest workers in the province.

"This isn't a jobs versus environment thing," he said. "We can have both if we do this smartly."

Steve Thomson, B.C.'s Forests, Lands and Natural Resource Operations Minister, said the Great Bear and Ancient Forest agreements highlight the

government's commitment to protecting old-growth forests.

"It's about protecting important values and making sure we have that balance that continues to provide jobs and employment in the forest sector."

The Ancient Forest is considered a natural wonder, a temperate rainforest inland, hundreds of kilometres away from similar coastal rainforests. The province said it would work with the federal government to declare the forest a UNESCO

world heritage site.

"Scientifically, the trees are pretty amazing," said Darwyn Coxson, a plant ecologist at the University of Northern British Columbia. "They really shouldn't be there."

Coxson said because the trees take 1,000 years to grow, it's prudent to focus on what is in the forests now.

"We have a finite supply and the ones that are out there are realistically all you are ever going to have."



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*Opuntia fragilis*, brittle prickly-pear cactus in full bloom. This photo was taken at the Lasqueti Island Ecological Reserve during the recent Friends of Ecological Reserves field trip. Field trip participants found a previously undocumented cluster of the cactus which will be added to the information on the FER website on this Ecological Reserve. Brittle prickly-pear cactus are rare but have been reported along the east coast of Vancouver Island and some of the Gulf Islands. The two spots where the cactus were found on Lasqueti Island occurred on dry open sites; one near sea level and the other higher up on an open slope.

# The Log



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