Appendix C: Presentations

1. ITC's Species at Risk Program: Wendy Tyrrell (Islands Trust Conservancy)

2. Strengthening collaboration in Átl'ka7tsem / Howe Sound Biosphere Region: Ruth Simons (Howe Sound Biosphere Initiative)

3. Species at Risk Restoration and Monitoring and Sharp-tailed Snake eDNA research Mount Tuam: Carinna Maslovat (Maslovat Consulting)

4. Collaborative SAR Conservation - Linking Landscape and Site
   Chris Currie (Coastal Partners in Conservation)

5. PEPÁḴEN̲ HÁUTW̲ Foundation: Relational Restoration
   Judith Lyn Arney and Sarah Jim (PEPÁḴEN̲ HÁUTW̲ Foundation)

ITC's Species at Risk Program

Wendy Tyrrell

Species at Risk Program Coordinator

Islands Trust Conservancy

1

Species at Risk Program

- 3-year grant awarded by Environment and Climate Change Canada (ECCC) from the Canada Nature Fund's Priority Places Species at Risk Stream.
- The goals of the ITC SAR Program are:
  - Coordinate the compilation & analysis of SAR data for the Islands Trust Area (ITA)
  - Inventory, monitor & manage SAR & SAR habitat in ITC's protected areas
  - Deliver SAR outreach to the Islands Trust staff, officials and the public
  - Develop relationships and collaboration with First Nations for more effective SAR Program delivery
  - Increase land conservation with a focus on SAR protection & recovery

2

SAR Habitat Restoration, Surveying & Monitoring Projects on ITC's Protected Lands




- Partnering with local Island Conservancies on SAR projects.
- Surveying for Species at Risk and Critical Habitat
- Restoring SAR Habitat
- SAR Surveys and Ecological baseline studies for new conservation lands
- Invasive plant management in SAR Critical Habitat
- Installation of habitat structures

3

Mt. Tuam Pollinator and SAR Project



- Led by SAR Biologists Carrina Maslovat & Laura Mathias
- More than 20,000 meadow species installed, and 2 million seeds distributed
- Part of the larger Mt. Tuam Special Management Area Resource Team's (SMART) SAR habitat restoration efforts
- Coastal Scouler's Catchfly (*Silene scouleri ssp. scouleri*)
- Yellow Montane Violet (*Viola praemorsa* var. *praemorsa*
- Zerene Fritillary (*Speyeria zerene bremnerii)*

4

Pre-workshop Survey

Survey Highlights:

<u>Top Challenges</u>

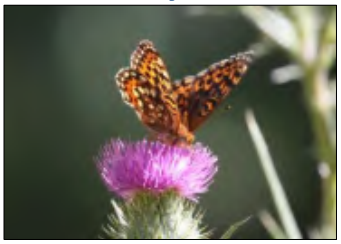
- Insufficient funding
- Capacity
- Expertise

<u>Collaboration & Data Sharing</u>

- 99% polled said YES!

<u>Islands-wide Working Group</u>

- 98% polled said YES!



Zerene Fritillary Butterfly © Laura-Matthias

"More data =
more knowledge =
more informed decisions."

5

Pre-Workshop Survey

- Was there something missing?
  - Is there a question that you would have liked to have seen on the survey?
- Put ideas in the chat.
  - we can come back to them in future gatherings!

6


Questions?
Wendy Tyrrell
wtyrrell@islandstrust.bc.ca
© Galiano Island, K. Mayes

7


THANK YOU TO ENVIRONMENT & CLIMATE CHANGE CANADA –
for making this workshop possible.
This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :
Environment and Climate Change Canada
Environnement et Changement climatique Canada
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8

KEYNOTE PRESENTATION

Ruth Simons

Howe Sound Biosphere Initiative

“Strengthening Collaboration in AĦutl'ka7tsem/Howe Sound Biosphere Region”


ÁTĽ̲KA7TSEM
HOWE SOUND
BIOSPHERE REGION
unesco
Biosphere Reserve
Strengthening collaboration in
Átl'ka7tsem / Howe Sound Biosphere Region
10/25/2021
1

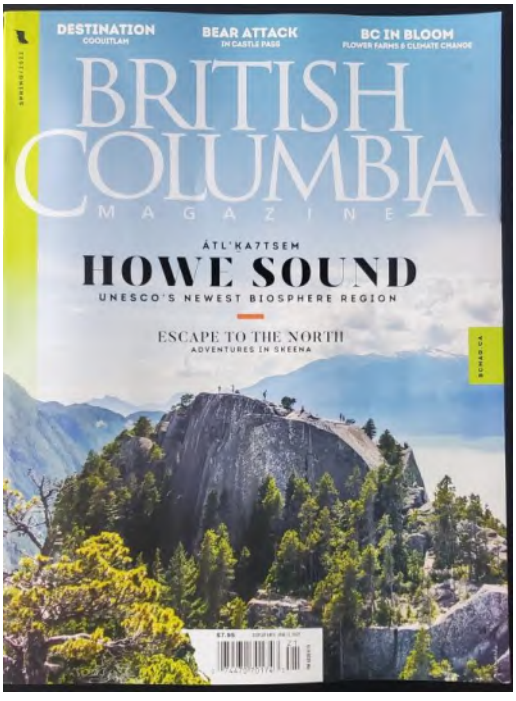
1


www.howesoundbri.org
A UNESCO Biosphere Region for Átl'ka7tsem/Howe Sound
Átl'ka7tsem
Howe Sound
Vancouver
10/25/2021
2

2

ÁTL'KA7TSEM HOWE SOUND BIOSPHERE REGION

unesco Biosphere Reserve



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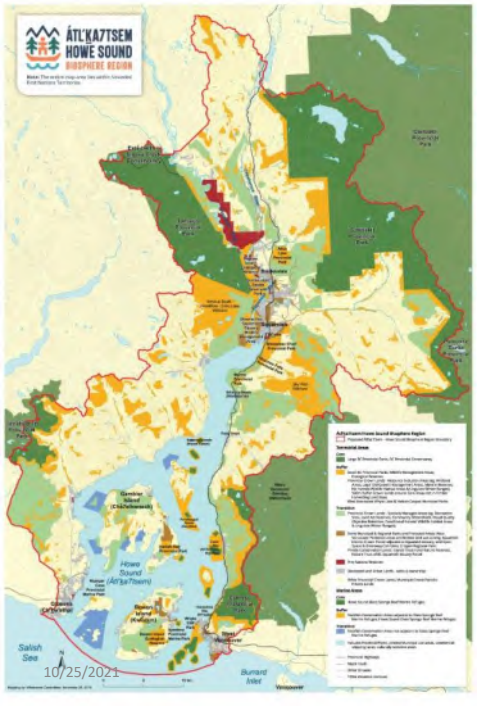


- 218,723 hectares,
- 84% terrestrial and 16% marine.
- 5% of the terrestrial is privately owned or "urban"
- 89% of the terrestrial area is under the management and shared stewardship of the Province of BC and First Nations.
- Approximately 42% of the terrestrial area within the region is under some form of management for conservation values.
- This is the unceded territory of the Sḵwx̱wú7mesh Úxwumixw, Squamish Nation people. Tseli-Waututh, Musqueuam, Sto:lo, Shishalht, St'at'imc-Lillooet Tribal Council, In-shuck-ch, Katzie, Lil'wat and First Nations within the Hul'qumi'num Treaty Group have claims in the region.

4

5

6

7

8




9



Place for learning, connecting with the land

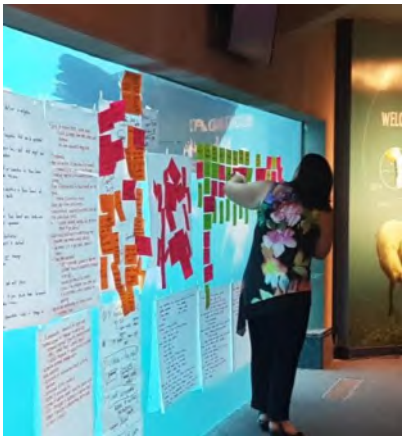
10


NCHU'ÚZMUT
UNITY PLAN

11


Howe Sound Community Forums since 2000
10/25/2021
www.howesoundbri.org
12

12



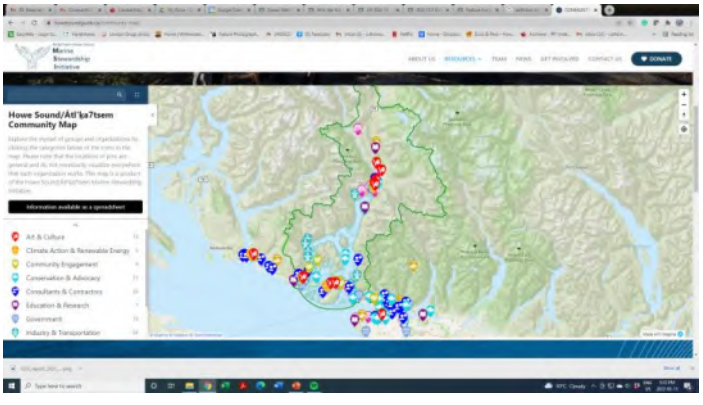
Many forums, many years

13

Collaborating for a sustainable future

Tools for collaboration

- Howe Sound Ocean Watch Report – Ocean Wise
- Marine Reference Guide – Make Way Foundation
- Suzuki Foundation's Conservation Map – David Suzuki Foundation
- Cumulative Effects Assessment project - FLNRORD
- iNaturalist Biodiversity Squamish project



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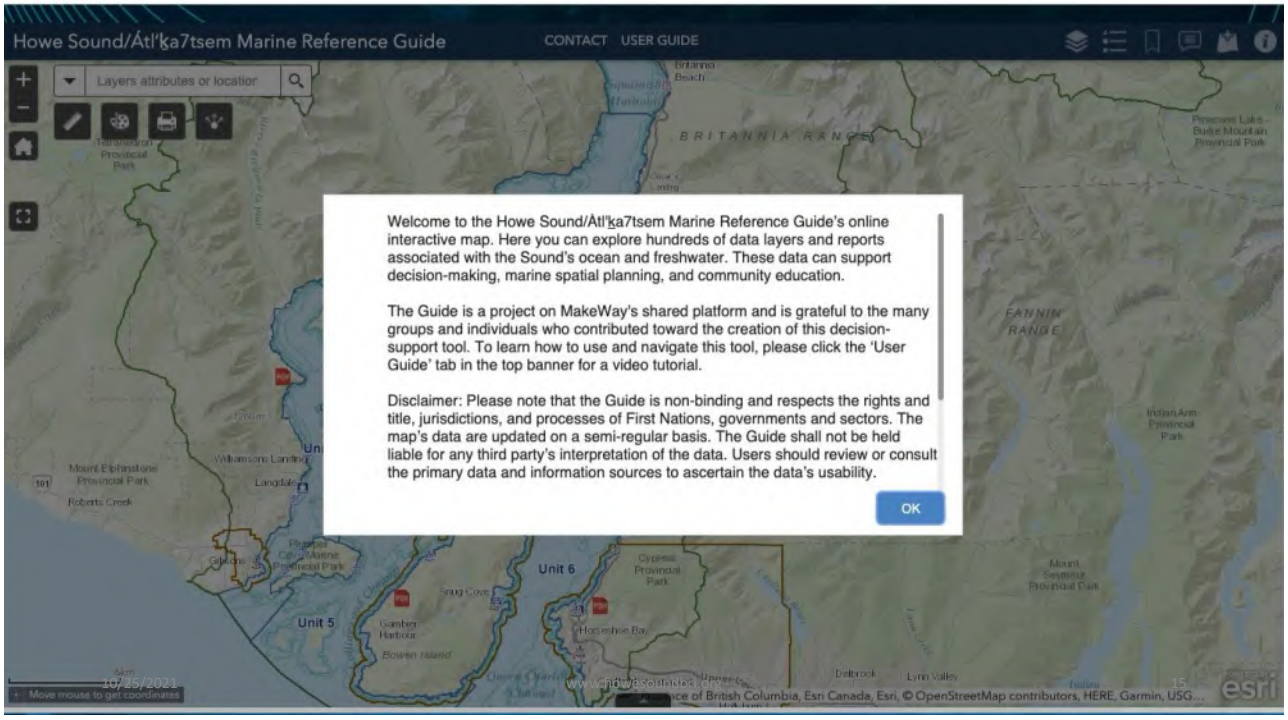

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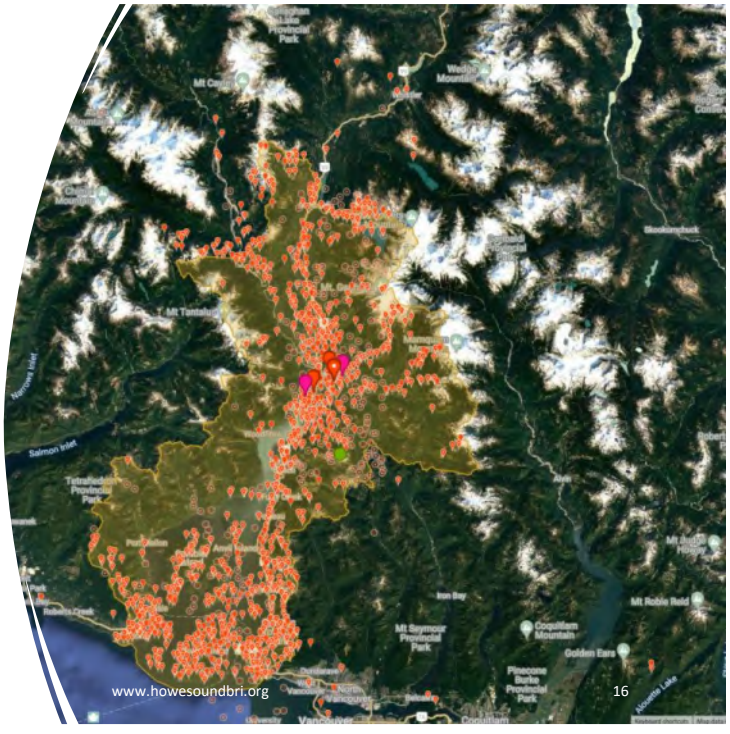
Biodiversity

- iNaturalist –
- Biodiversity Squamish Project



10/25/2021

16

17

Searching for Slhawt'/herring in Átl'ka7tsem/Howe Sound

- Marine Reference Guide
- Citizen Scientists
- Sḵwx̱wú7mesh Úxwumixw (Squamish Nation)
- St'a7mes School
- West Vancouver Foundation
- Howe Sound Biosphere Region Initiative Society
- UBC

18

Eelgrass Plantings in Howe Sound

Seachange Conservation Society and
community conservation groups

19

Glass Sponge Reef Marine Refuges

- Vancouver Aquarium/Ocean Wise
- Marine Life Sanctuaries Society
- Underwater Council of BC
- Howe Sound Community Forum/Local governments
- Squamish Nation

20

Nature Reserve work parties

21

Lessons learned

- Common goals defined
- Building & maintaining relationships
- Leadership and support

22

ÁTL'KA7TSEM HOWE SOUND BIOSPHERE REGION

unesco Biosphere Reserve

howesoundbri.org

Ruth Simons, howesoundbri@gmail.com

Photo credits:

Adam Taylor Tourism Squamish Chris Christie Bob Turner
Steve Quane Amber Turneau Kris Krug David Suzuki Foundation
Squamish River Watershed Society Bridget John
Fiona Beaty Richard Duncan

23

Species at Risk Restoration &

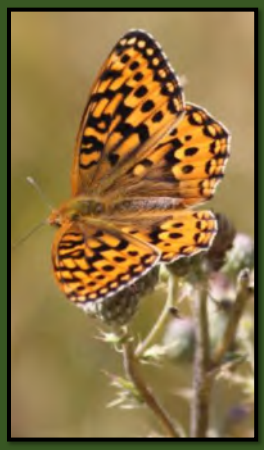
Monitoring Sharp-tailed Snake eDNA Research

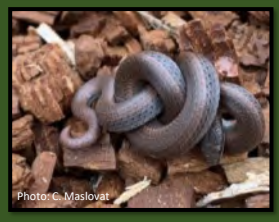
Mount Tuam

Carrina Maslovat & Laura Matthias

Species at Risk Restoration and Monitoring

and Sharp-tailed Snake eDNA research
Mount Tuam





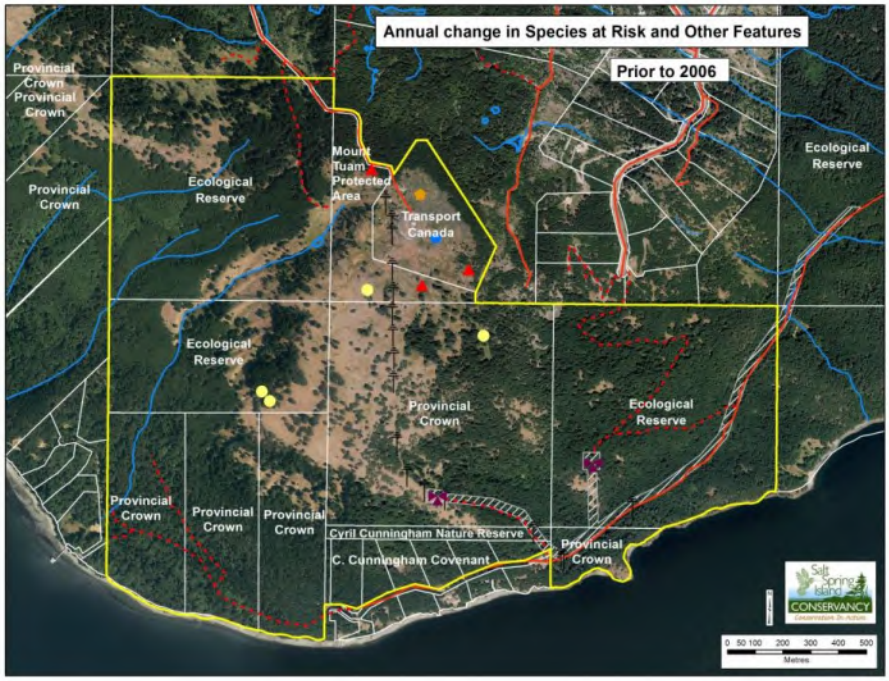
Carrina Maslovat and Laura Matthias, SAR biologists
All Photos: L. Matthias unless noted

1

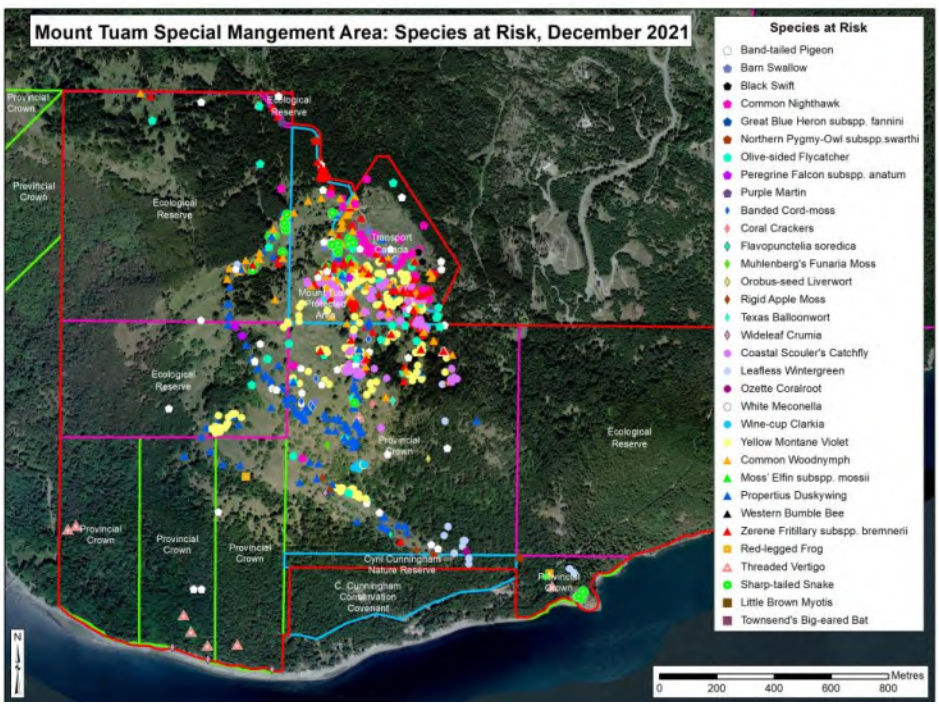
Mt. Tuam SMART

- Collaborative management based on ecological rather than jurisdictional boundaries
- Annual meetings for 12 years
- SAR monitoring and surveys- 100s of new occurrences
- Grant driven
- Restoration and invasive species removal

2


Annual change in Species at Risk and Other Features
Prior to 2006
Provincial Crown
Provincial Crown
Provincial Crown
Ecological Reserve
Mount Tuam Protected Area
Transport Canada
Ecological Reserve
Ecological Reserve
Provincial Crown
Ecological Reserve
Provincial Crown
Provincial Crown
Provincial Crown
Cyril Cunningham Nature Reserve
C. Cunningham Covenant
Provincial Crown
Salt Spring Island CONSERVANCY
0 50 100 200 300 400 500
Metres

3


Mount Tuam Special Mangement Area: Species at Risk, December 2021
Species at Risk
Band-tailed Pigeon
Barn Swallow
Black Swift
Common Nighthawk
Great Blue Heron subspp. fannini
Northern Pygmy-Owl subspp.swarthi
Olive-sided Flycatcher
Peregrine Falcon subspp. anatum
Purple Martin
Banded Cord-moss
Coral Crackers
Flavopunctelia soredica
Muhlenberg's Funaria Moss
Orobus-seed Liverwort
Rigid Apple Moss
Texas Balloonwort
Wideleaf Crumia
Coastal Scouler's Catchfly
Leafless Wintergreen
Ozette Coralroot
White Meconella
Wine-cup Clarkia
Yellow Montane Violet
Common Woodnymph
Moss' Elfin subspp. mossii
Propertius Duskywing
Western Bumble Bee
Zerene Fritillary subspp. bremnerii
Red-legged Frog
Threaded Vertigo
Sharp-tailed Snake
Little Brown Myotis
Townsend's Big-eared Bat
Provincial Crown
Ecological Reserve
Provincial Crown
Ecological Reserve
Transport Canada
Ecological Reserve
Provincial Crown
Ecological Reserve
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Provincial Crown
Cyril Cunningham Nature Reserve
C. Cunningham Conservation Covenant
Provincial Crown
N
0 200 400 600 800
Metres

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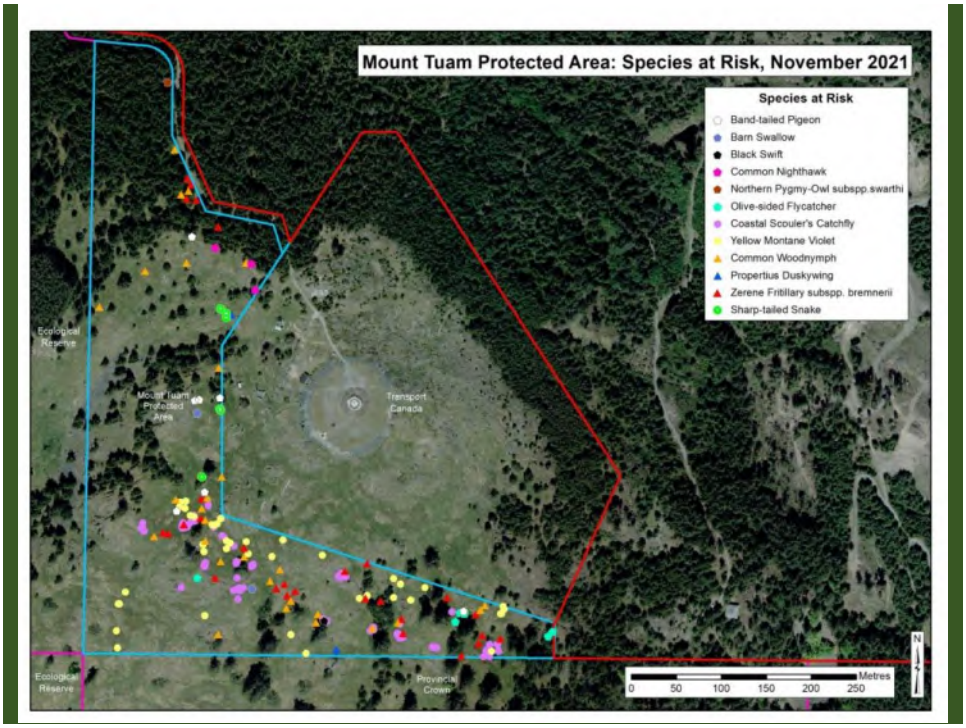

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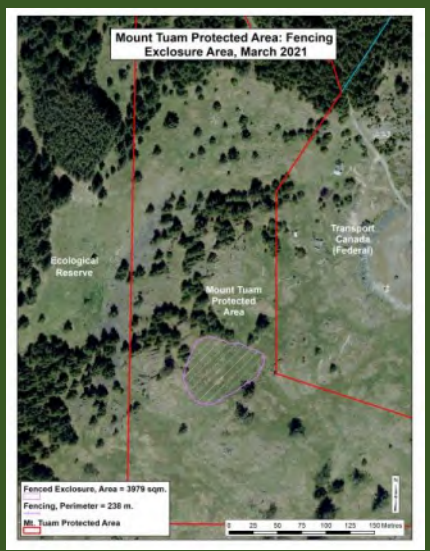
MTPA Pollinator Enhancement Project



6

Marking locations of rare plants

7

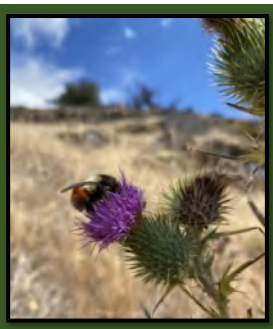
Mowing and raking to reduce thatch

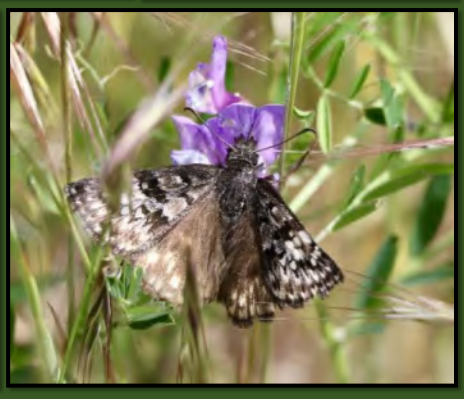
8

Invasive Species Removal

9

Pollinator Surveys





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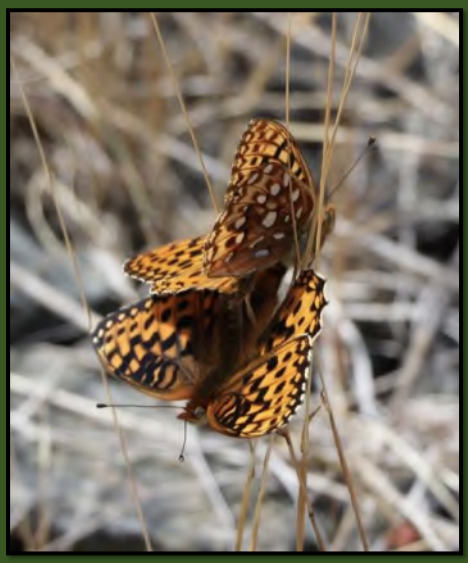
Zerene Fritillary



11

Yellow Montane Violet

12

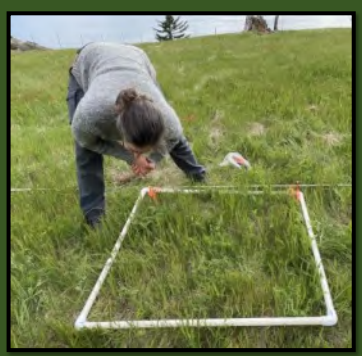
Acoustic Bat Monitoring

9 species detected on Transport Canada lands

Common Name	Scientific Name	Provincial Listing	Federal Listing
Big Brown Bat	*Eptesicus fuscus*		
Brazilian Free-tailed Bat	*Tadarida brazilensis*		
California Myotis	*Myotis californicus*		
Hoary Bat	*Lasiurus cinereus*		
Little Brown Myotis	*Myotis lucifugus*		Endangered
Silver-haired Bat	*Lasionycteris noctivagans*		
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Blue	
Western Long-eared Myotis	*Myotis evotis*		
Yuma Myotis	*Myotis yumanensis*		

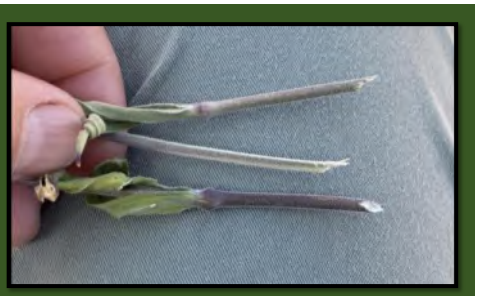
13

Vegetation monitoring 1m^2 plots



14

Coastal Scouler's Catchfly monitoring



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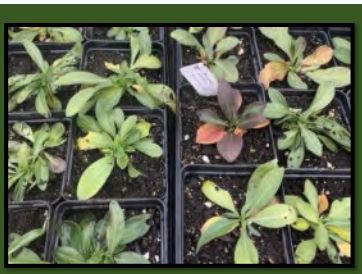
Coastal Scouler's Catchfly Augmentation



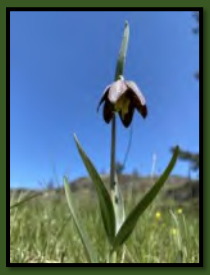
16

Planting the MTPA

17

18

Native Plants, Bulbs and Seeds Planted in the MTPA



PLANTS:

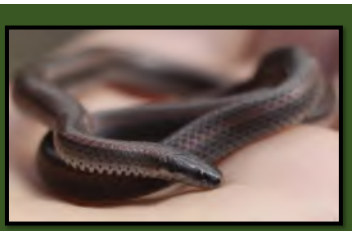
- 23 species of native plants
- 11,156 plants
- 9,394 bulbs and corms
- TOTAL: 20,550 plants!!!

SEEDS:

- 25 species of native plant seeds
- estimate of 2,050,492 total seeds

19

Sharp-tailed Snake monitoring



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Sharp-tailed Snake (*Contia tenuis*)

* Threatened (Committee on the Status of Endangered Wildlife in Canada-COSEWIC)
* Endangered under the *Species at Risk Act*
* Red-listed provincially

21

Sharp-tailed Snake Surveys using ACOs


22

Snakes are found using Artificial Cover Objects (ACOs)

23

Novel eDNA surveys for Sharp-tailed Snake

24

eDNA vs Traditional Surveys Results 2018-2019

Number of Samples	Detections	Success rate
6,060 ACO checks	**24** snakes found	**0.4%**
108 ACO swab samples (with and without snakes present)	**20** positive eDNA detections	**18.5%**
79 soil samples (with and without snakes present)	**16** positive eDNA detections	**20.3%**

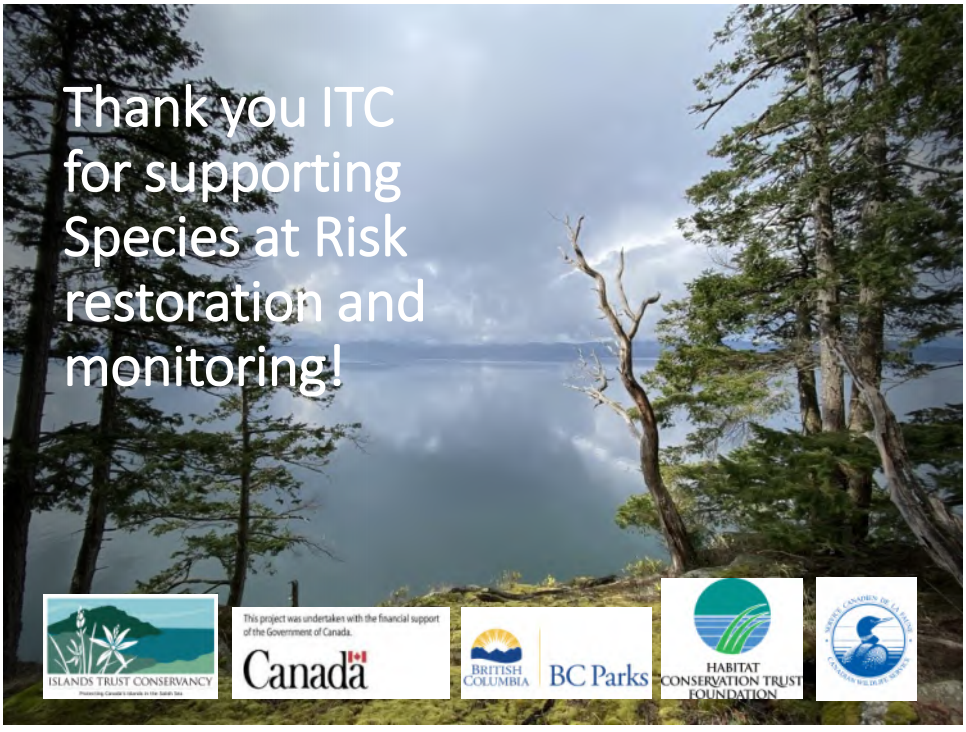
- eDNA can be detected from soil and swab samples even where snakes not observed: ACO swabs (**8%**) and soils (**13%**)


Ecological Indicators

Improving ecological surveys for the detection of cryptic, fossorial snakes using eDNA on and under artificial cover objects

Laura Matthias, Michael J. Allison, Carrina Y. Maslovat, Jared Hobbs, Caren C. Helbing

25



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PEPÁ̱KEṈ HÁUTW̱ Foundation:

Relational Restoration

Judith Lyn Arney & Sarah Jim

PEPÁ̱KEṈ HÁUTW̱ Foundation

PEPÁḴEN̲ HÁUTW̲ Foundation: Relational Restoration

Judith Lyn Arney & Sarah Jim
PEPÁḴEN̲ HÁUTW̲ Foundation

1

W̲SÁNEĆ Homelands

Saltwater People's Atlas, Dave Elliot Sr

2

PEPÁḴEN̓ HÁUTW̓: the blossoming place

3

W̓SÁNEĆ Youth: Restoration of Sacred Places

4

Emerging W̱SÁNEĆ Land Stewards

5

QENENIW̱ Restoration Project

6

July 2021: ĆENŦAKI Moon
W̱SÁNEĆ First Salmon Ceremony

Healing the Land, Connecting to Culture

7

Relational Restoration:
Connecting to the Land
& Each Other

8

HÍSWK̲E SII,ÁM!

PEPÁK̲EN̲ HÁUTW̲

pepakenhautw.com

9

Collaborative SAR Conservation:

Linking Landscape and Site

Chris Currie & Aimee Mitchell

Coastal Partners In Conservation

Collaborative SAR Conservation: Linking Landscape and Site

Aimee Mitchell

Chris Currie

Coastal Partners In Conservation

Who are we?

- Society established 2018
- Umbrella organisation for group of self-employed biologists
- Monitoring and restoring SAR pop'ns and habitat
- Partnerships and outreach
- Filling gaps

Who are we?

- Initially focused on Western Painted Turtle and amphibian SAR
- Found a need/opportunity to branch out to other SAR in region
  - Lots of gaps
  - Lots of opportunities

What do we do?

- Northern Goshawk
- Tailed Frog
- Coastal Giant Salamander
- Little Brown Myotis
- Townsend's Big-eared Bat
- Sharp-tailed Snake
- Rigid Apple Moss
- Rubber Boa
- Western Screech-owl
- Pacific Water Shrew
- Western Toad
- Red-legged Frog
- Oregon Spotted Frog
- Western Toad
- Great Blue Heron
- Rigid Apple Moss
- VI Beggarticks
- Streambank Lupine
- Giant Chain Fern
- California Sword Fern

Our approach

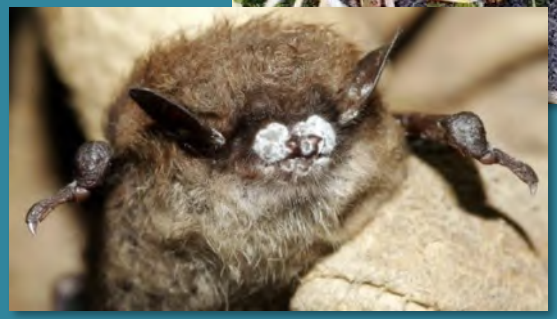
- Connect site level conservation & restoration and landscape level EBM
- Efficiencies – travel and access
- Bridge between specialist expertise, local knowledge and ongoing First Nations and stakeholder stewardship

Example Case #1

- Western Painted Turtles: Coastal Painted Turtle Project
- 2008-present – all of region 2
- Focus on population monitoring and restoration
- Realization of how many gaps could be partially addressed through overlap

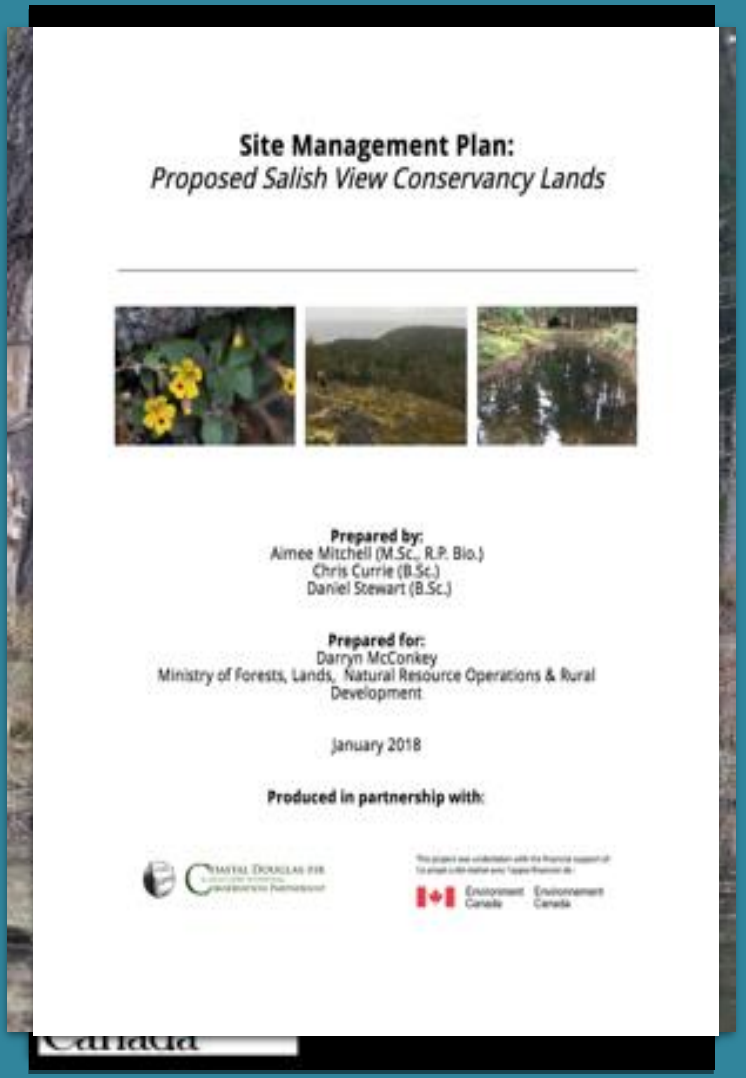
Example Case #2

- SAR Conservation in Coastal Douglas-fir and Associated Ecosystems (CDFAE) in qathet from 2016-2018
- Focused on six Species at Risk:
  - *Western Toad*
  - *Red-legged Frog*
  - *Little Brown Myotis*
  - *Western Screech-owl* (*kennicottii* subsp.)
  - *rigid apple moss*
  - *Sharp-tailed Snake*



Typical Project Flow

1. Identify, map and monitor populations and habitats
2. Prioritize sites, create site management plans, follow through on restoration and threat mitigation
3. Formally protect priority habitats wherever feasible
4. Engage and educate stakeholders, facilitate ongoing stewardship



Site Management Plan:
Proposed Salish View Conservancy Lands

Prepared by:
Aimee Mitchell (M.Sc., R.P. Bio.)
Chris Currie (B.Sc.)
Daniel Stewart (B.Sc.)

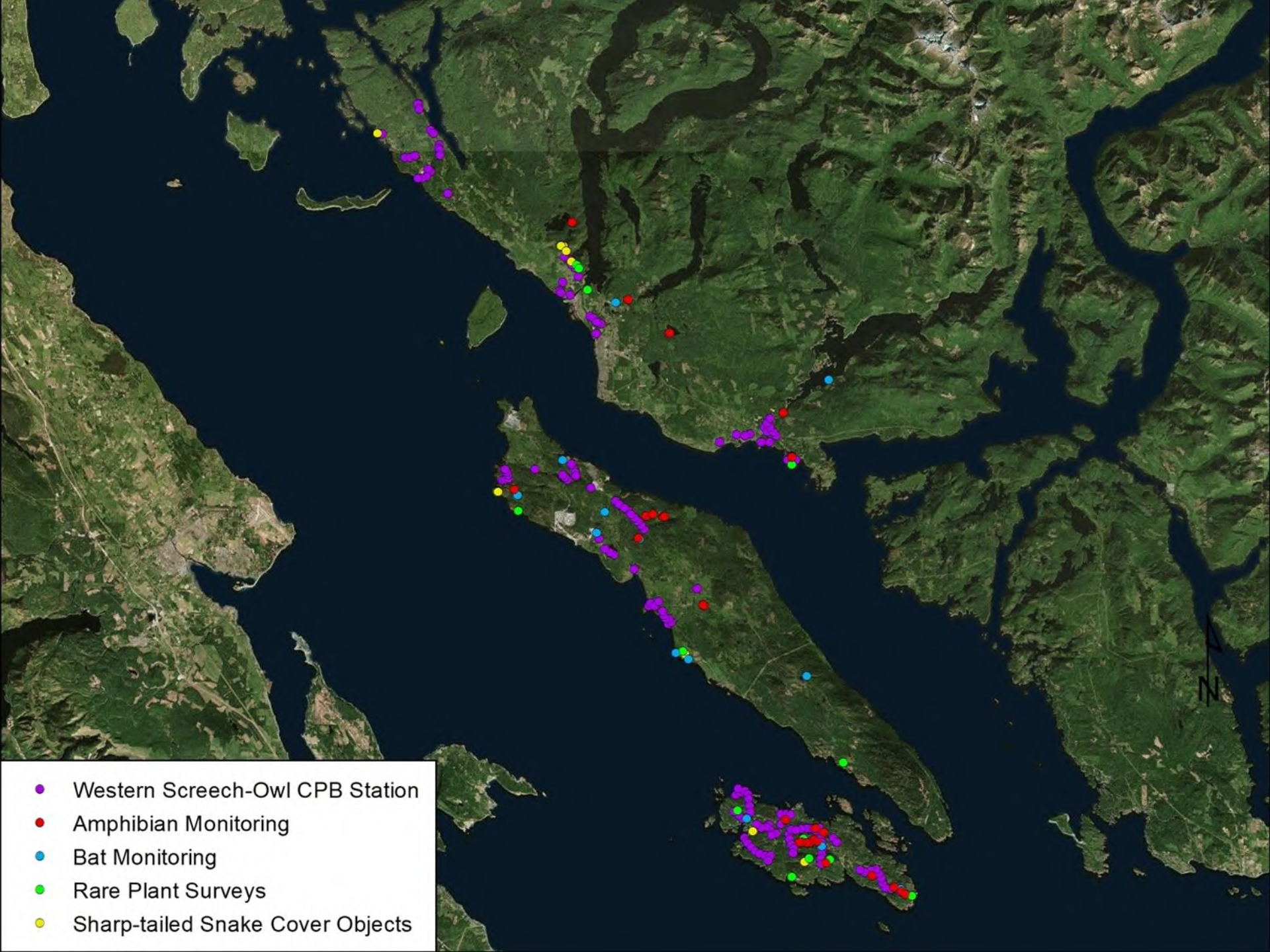
Prepared for:
Darryn McConkey
Ministry of Forests, Lands, Natural Resource Operations & Rural Development

January 2018

Produced in partnership with:

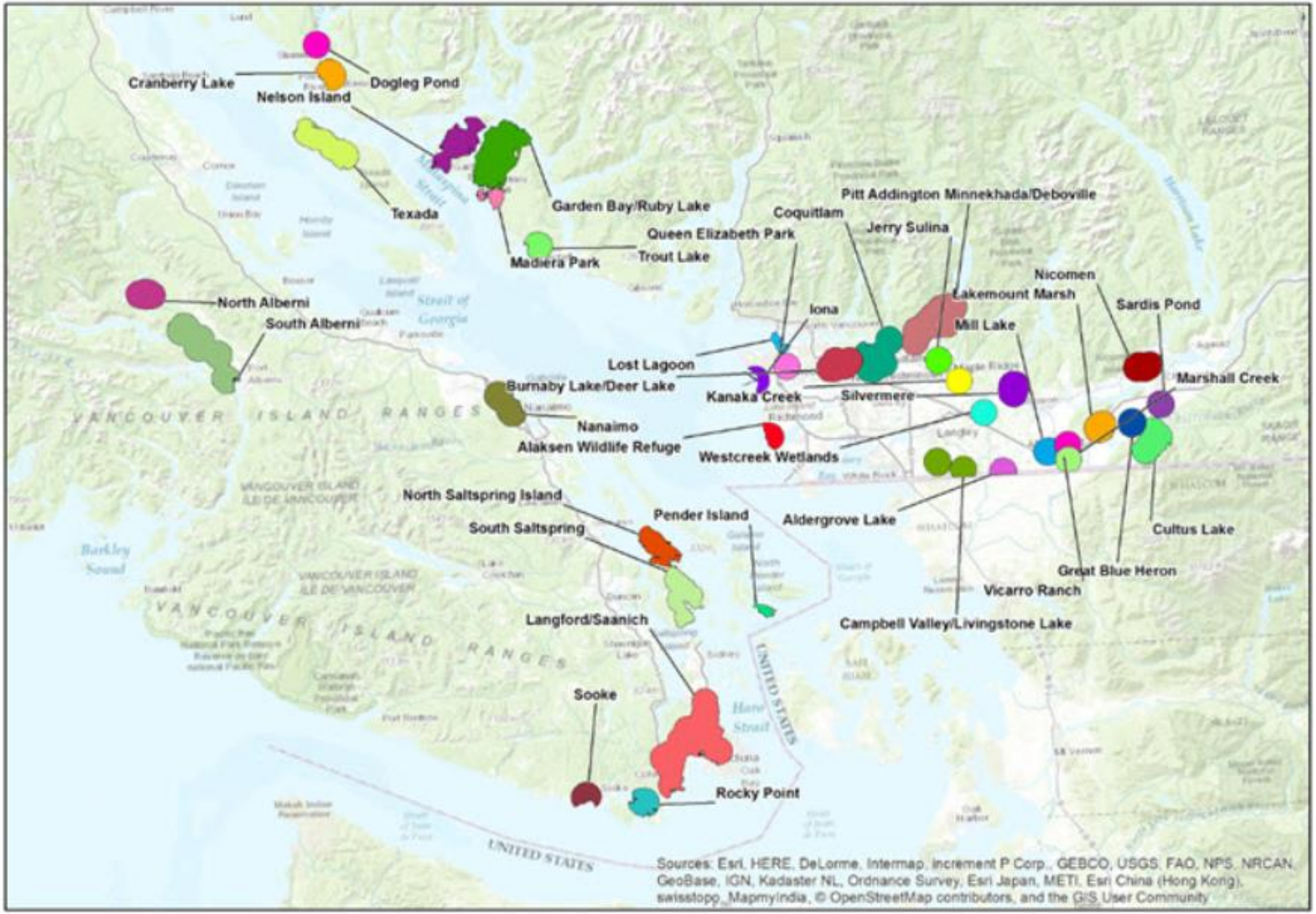
Identify, map and monitor populations and habitats

- Look at existing records and maps
  - Reach out!
  - MARXAN tool developed by CDFCP
- Consult with local stakeholders and First Nations
- On the ground surveys


Western Screech-Owl CPB Station
Amphibian Monitoring
Bat Monitoring
Rare Plant Surveys
Sharp-tailed Snake Cover Objects
N

Identify, map and monitor populations and habitats

- Look at existing records and maps
  - Reach out!
- Consult with local stakeholders and FN
- On the ground surveys
  - Leverage time on the ground
  - e.g. amphibian egg mass surveys = assessing habitat for turtles, WESO, Pacific Water Shrew etc.
- Get data into SPI at minimum



Distribution of Painted Turtle, Pacific Coast Population

Formally protect key habitats

- Use tools available to shift from immediate mitigation to long term conservation
  - WHAs
  - Conservation Covenants
  - Land Trust Acquisition
  - Other designations
- Prioritization might lead to moving forward with actions regardless

Education, outreach, partnerships, and collaboration

- Ensure local stakeholders and FN have information to enable stewardship
  - biologists come and go
- Partner with existing initiatives
  - Helping stewardship groups navigate the labyrinth of government
  - Lend our expertise
  - Use our connections to link local stewards to other experts

SAR Collaboration for *just* CDFAE and CPTP programs

- Leverage these connections to empower local stewards
- Connect laypeople to experts

- CDECP
- Local landowners
- LINC
- Malaspina Conservancy
- First Nations (12)
- Municipalities (21)
- Regional Districts (4)
- MoE
- ECCC
- MFLNRORD
- IT
- Nature Trust BC
- Texada Trekkers
- Lafarge
- BC Parks
- Friends of Stillwater Bluffs
- Imagine Lot 450
- Powell River Orphaned Wildlife Society
- BC Community Bat Program
- BC Bat Action Team
- Sunshine Coast Wildlife Project
- WPT Working Group
- WESO ke Working Group
- SCCP
- BCCF
- SWSK
- Schools (21)
- FVC
- FVWC
- GV Zoo
- SRWS

Thank You!