

Conservation Actions to Support the Recovery of the Island Marble Butterfly

Julie K. Combs, WDFW Pollinator Species Lead

David Wilderman, DNR Natural Areas Program Ecologist

Kurt Licence, WDFW District Biologist

Ann Potter, former WDFW Conservation Biologist

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Cattle Point NRCA Island Marble Habitat Enhancement

Island Marble Butterfly (*Euchloe ausonides insulanus*)

Outline

- Status, Historical and Current Distribution
- Life History
- Project Objectives/Methods
- Results
- Conclusions
- Next Steps



Matt Hamer and Ann Potter search for island marble eggs

Status, Historical and Current Distribution

Island Marble Butterfly (*Euchloe ausonides insulanus*)

- “Creamy Marble” collected at American Camp SJINHP in 1998 (Fleckenstein & Potter 1999)
- Unnamed subspecies previously known only from Vancouver Island and Gabriola Island last seen 1908 (~ 90 years later rediscovered)
- In 2001 Guppy & Shepard formally describe the subspecies *Euchloe ausonides insulans* (Guppy and Shepard 2001)



Status, Historical and Current Distribution

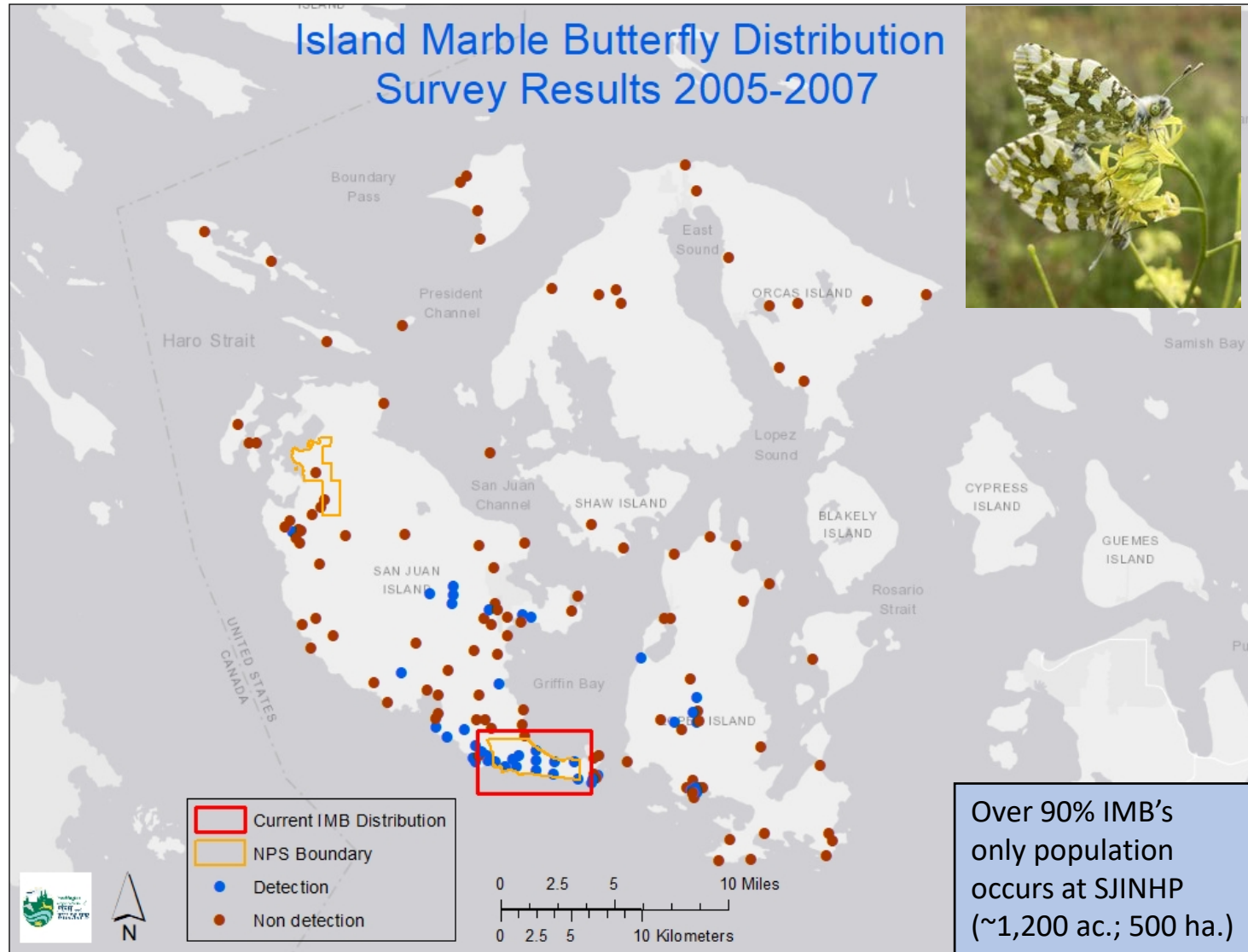
Island Marble Butterfly (*Euchloe ausonides insulanus*)

- Petition to list in 2002
- 2006 USFWS determines IMB is not warranted
- 2012 new petition
- 2016 USFWS determines IMB is warranted for listing but precluded by higher priority listing actions
- 2020 USFWS lists IMB as endangered, 2022 SBR, RIS and RP



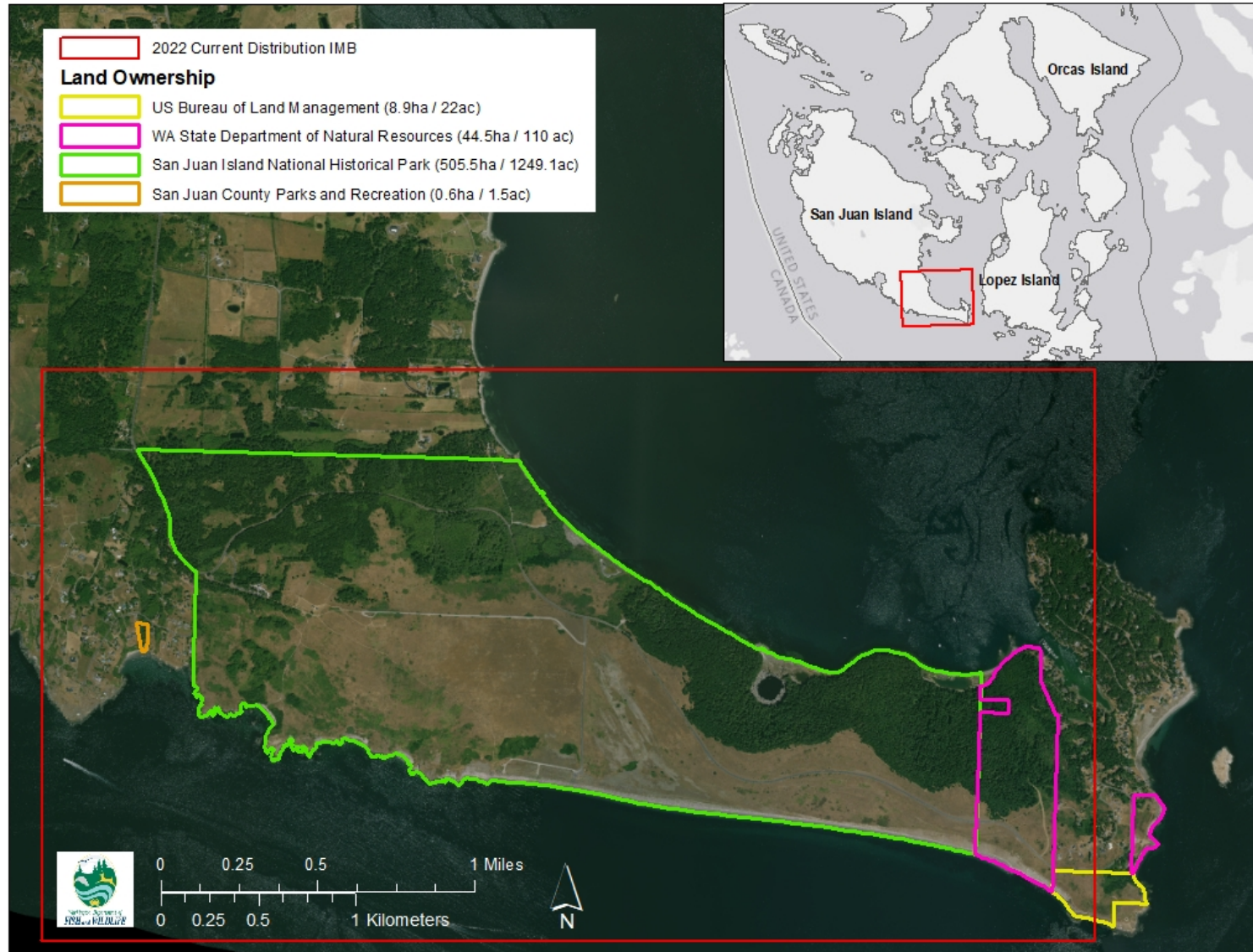
Status, Historical and Current Distribution

Island Marble Butterfly (*Euchloe ausonides insulanus*)



Status, Historical and Current Distribution

Island Marble Butterfly (*Euchloe ausonides insulanus*)



Island Marble Life Cycle

The island marble butterfly emerges as a butterfly (adult) in the spring (mid April) to mate and lay eggs until mid-June



Adults live approx. 6-9 days



Eggs hatch after approx. 10 days



Larval phases (I-V instars) approx. 27 days



Pupa for approx. 335 days

Island Marble Habitat and Host Plants

- Grassland
- *Brassica rapa*
(Field mustard)
- Flowers late
mar-mid jun



Island Marble Habitat and Host Plants

- Tidal Lagoon and shoreline
- *Lepidium virginicum* var. *menziesii* (Tall Peppergrass)
- Flowers late apr-jun



Island Marble Habitat and Host Plants

- Sand Dunes
- *Sisymbrium altissimum* (Tumble mustard)
- Flowers late apr-jun



Cattle Point NRCA Island Marble

Habitat Enhancement Project: Objectives/Methods

- Develop methods to enhance SIAL
- Increase SIAL host plant abundance to support IMB occupancy
- Establish other native vegetation, especially IMB nectar sources
- 21 experimental plots approx. 5m x 5m each; design based on Lambert 2011



Cattle Point NRCA Island Marble

Habitat Enhancement Project: Objectives/Methods

Pre-treatment Conditions

- 75-90% non-native cover (bromes, tall fescue, CA poppy, thistles)
- No host plants in treatment locations (only a few in entire project area)
- Few native species (yarrow, brodiaea, lupine, sand verbena)



Cattle Point NRCA Island Marble

Habitat Enhancement Project: Objectives/Methods

Timeline	Plot Treatment(s)
Summer 2018	Mowing + tree removal
Fall 2018	Control invasives (glyphosate application)
Spring 2019	Control invasives (hand removal/glyphosate)
Fall 2019	Seed in host plant (SIAL; 0.5g/plot), nectar and plant native plugs (e.g., <i>F. roemerii</i>) + additional hand weeding
Fall 2020; Spring 2021; Spring/Fall 2022	Seed in SIAL (4g/plot)



Cattle Point NRCA Island Marble

Habitat Enhancement Project: Objectives/Methods

Quantify

- # of host plant *Sisymbrium altissimum* (Tumble mustard)
- # of island IMB egg/larvae
- # of *Amsinckia menziesii* (Fiddleneck)



Cattle Point NRCA Island Marble

Habitat Enhancement Project: Objectives/Methods

Quantify

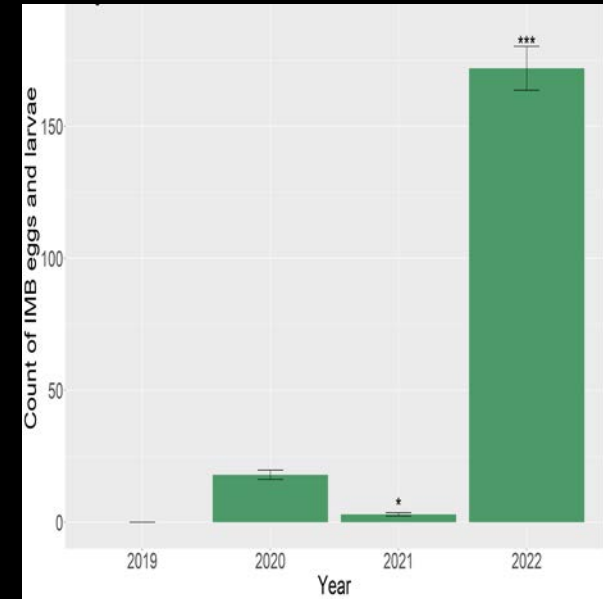
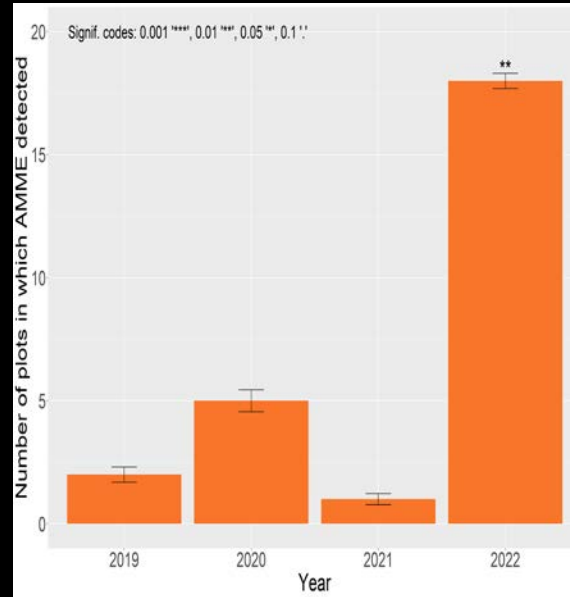
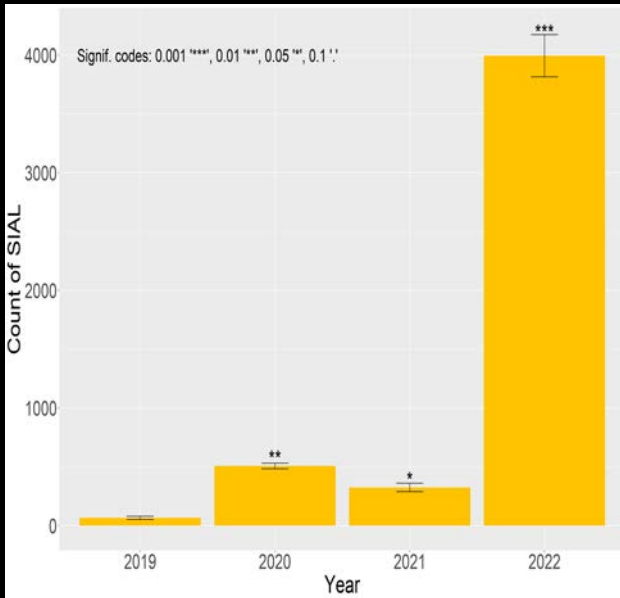
- # SIAL consumed by deer (2020-22)
- # egg/larval eaten in early stages? (2022)



The Columbia blacktail deer (*Odocoileus hemionus columbianus*) is the largest land mammal in the San Juan Islands
Mandy Lee Photo NPS website

Results: Host Plant, Nectar Plant and IMB Egg/Larvae Counts

Island Marble Butterfly (*Euchloe ausonides insulanus*)



Cattle Point NRCA Island Marble Habitat Enhancement Project: Results

SIAL consumed by deer (2020-22)

Deer herbivory in plots	2020	2021	2022
# SIAL	513	325	3995
# SIAL w/ deer herbivory	31	1	11
% SIAL w/ deer herbivory	< 7%	< 1%	< 1%



SIAL consumed by deer (2022)

Eggs tracked May 24 – Jun 6	% eaten by deer
N=52	.004



Results - 2020



Plot 1 - June 2019

- 14 out of 21 plots w/ SIAL
- 6 plots occupied by IMB eggs/larvae (n= 18)



Plot 1 - June 2020

- Good establishment of *Amsinckia*, *Cerastium*

Results - 2021



June 2021

- 6 out of 21 plots w/ SIAL
- 1 plot occupied by IMB eggs/larvae (n=3)
- Several patches outside plots

Results - 2022



May 2022

- 14 out of 20 plots w/ SIAL
- 14 out of 20 plots occupied by IMB eggs/larvae (n=171)
- Several patches outside plots
- Spring SIAL sown plots did not flower

Cattle Point NRCA Island Marble Habitat Enhancement Project: Conclusions

- Successful establishment host plant (SIAL; fall sown) and native plant(s) (AMME) and over time
- Successful occupancy of IMB eggs/larvae
- Data suggests deer herbivory is minimal
- Results are preliminary



Cattle Point NRCA Island Marble Habitat Enhancement Project: Conclusions

- If you plant it, they will come but...
 - Need to reset disturbance every 1-2 years rather than expected 3-4 years
 - Annual adaptive management is necessary but overtime less intensive?





Next Steps

- Monitor IMB use, herbivory (WDFW)
- Continue treatment & seeding as needed (DNR)
- Add new plots/incorporate IMB habitat into larger scale prairie restoration (DNR)



Thank you!

