

Imperiled Butterflies of Western Washington Prairies and Oak Woodlands

Status Updates
and Field Observation
from a 2013-2015 Study

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photo Rod Gilbert

Colleagues

Butterfly Surveys

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photo Loni Beyer

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Prairies and oak woodlands of western WA and OR
support over 60 species of butterfly



Remaining Prairie-Oak habitat focus of intensive restoration



Butterflies are often intended to benefit from Prairie-Oak restoration, however, few projects assess their response to management.



*Conserving State Strategy Species in PNW
Prairie and Oak Habitats*

USFWS State Wildlife Grant (SWG)
2013-2015

photo Aaron Barna

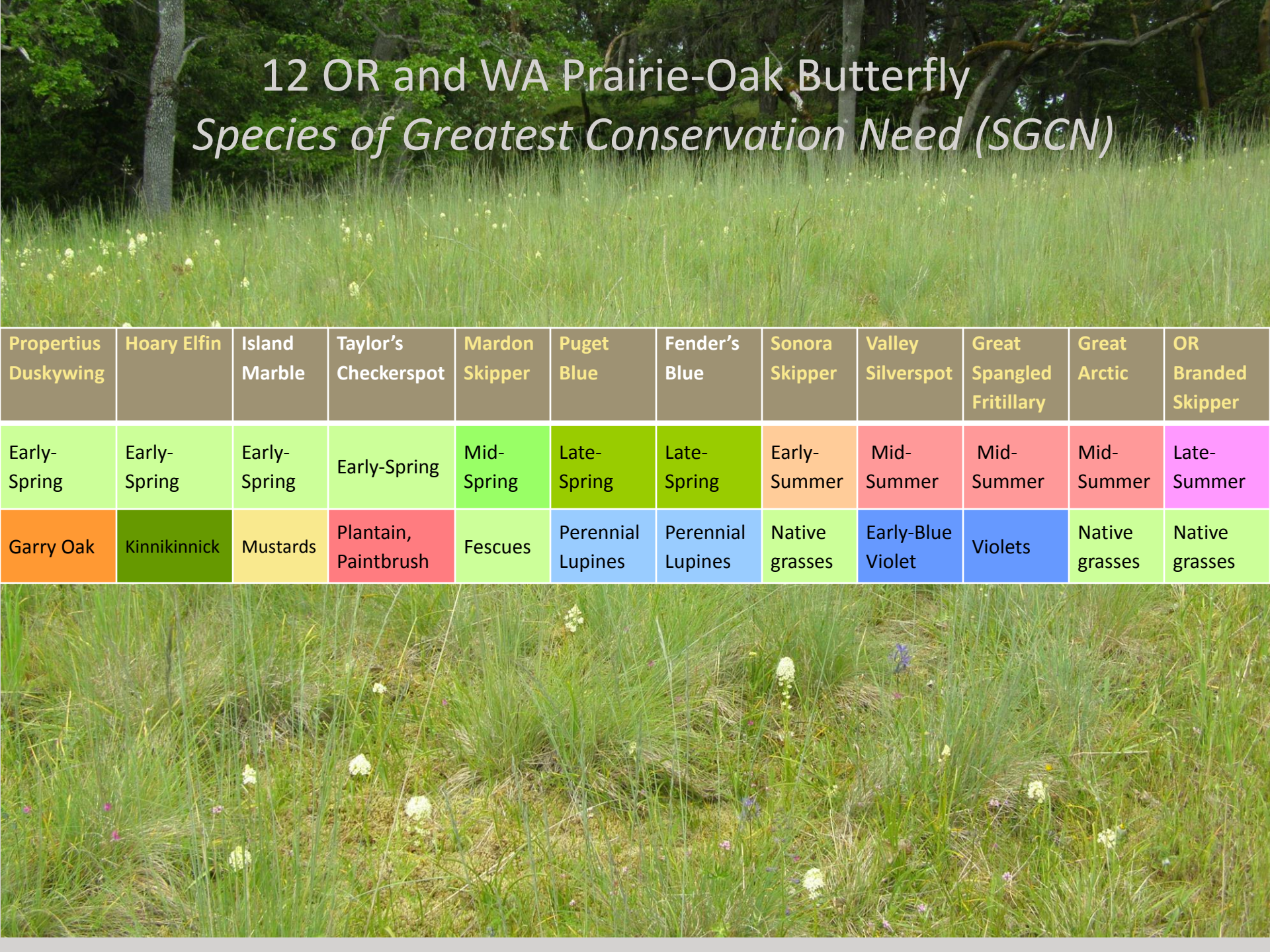
Study Objectives

- **Determine current status and distribution of Prairie-Oak butterfly SGCN (site and treatment unit scale)**
- **Assess effects and effectiveness of restoration treatment**
- **Collect key life history data**

- 12 Butterfly SGCN
- Multiple landowners
- 26 sites
- 8 sites - OR
- 18 sites - WA



Propertius duskywing
photo Aaron Barna



12 OR and WA Prairie-Oak Butterfly *Species of Greatest Conservation Need (SGCN)*

Propertius Duskywing	Hoary Elfin	Island Marble	Taylor's Checkerspot	Mardon Skipper	Puget Blue	Fender's Blue	Sonora Skipper	Valley Silverspot	Great Spangled Fritillary	Great Arctic	OR Branded Skipper
Early-Spring	Early-Spring	Early-Spring	Early-Spring	Mid-Spring	Late-Spring	Late-Spring	Early-Summer	Mid-Summer	Mid-Summer	Mid-Summer	Late-Summer
Garry Oak	Kinnikinnick	Mustards	Plantain, Paintbrush	Fescues	Perennial Lupines	Perennial Lupines	Native grasses	Early-Blue Violet	Violets	Native grasses	Native grasses

april



Properatus Duskywing

- Oak obligate butterfly
- Extant San Juan County: Turtleback Mt Preserve, Orcas Island
- Extant south Puget Sound region: Bald Hill NAP

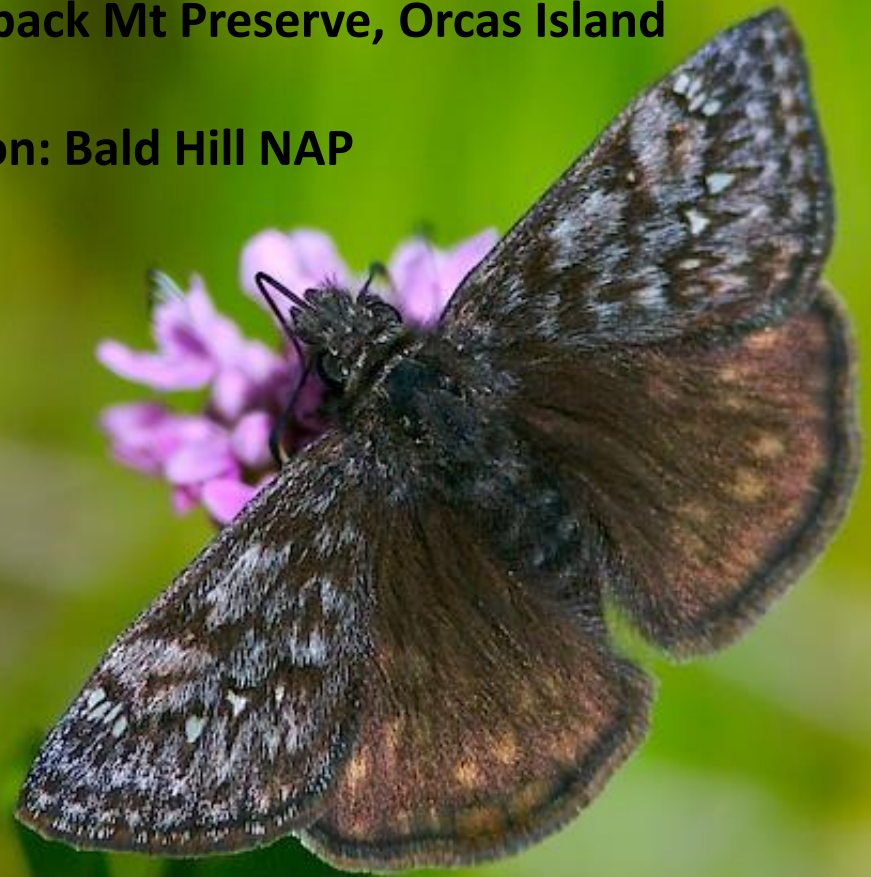


photo Aaron Barna



Turtleback Mountain
Oak savannah restoration
before treatment



**and same Oak tree
after treatment**

Turtleback Mountain

Site

- 5 acre Oak savannah restoration unit
- 14 Oaks within unit

PD Survey

- Focal observation @ each Oak (3 visits)
- 1 year pre-treatment (2013)
- 2 years post-treatment (2014 & 2015)



Oak #10
pre-treatment

Results

- No PD detected in unit *before* treatment (2013)
- 1 year *after* treatment (2014): PD detected @ 2 Oaks
- 2 years *after* treatment (2015): PD detected @ 7 Oaks
- Behavioral observation: Egg-laying observed in 2 Oaks (2015)



Oak #10
post-treatment

Bald Hill Natural Area Preserve 6

6 acre Oak Woodland restoration
Established 4-100m transects



130 260 520 780 1,040 Feet

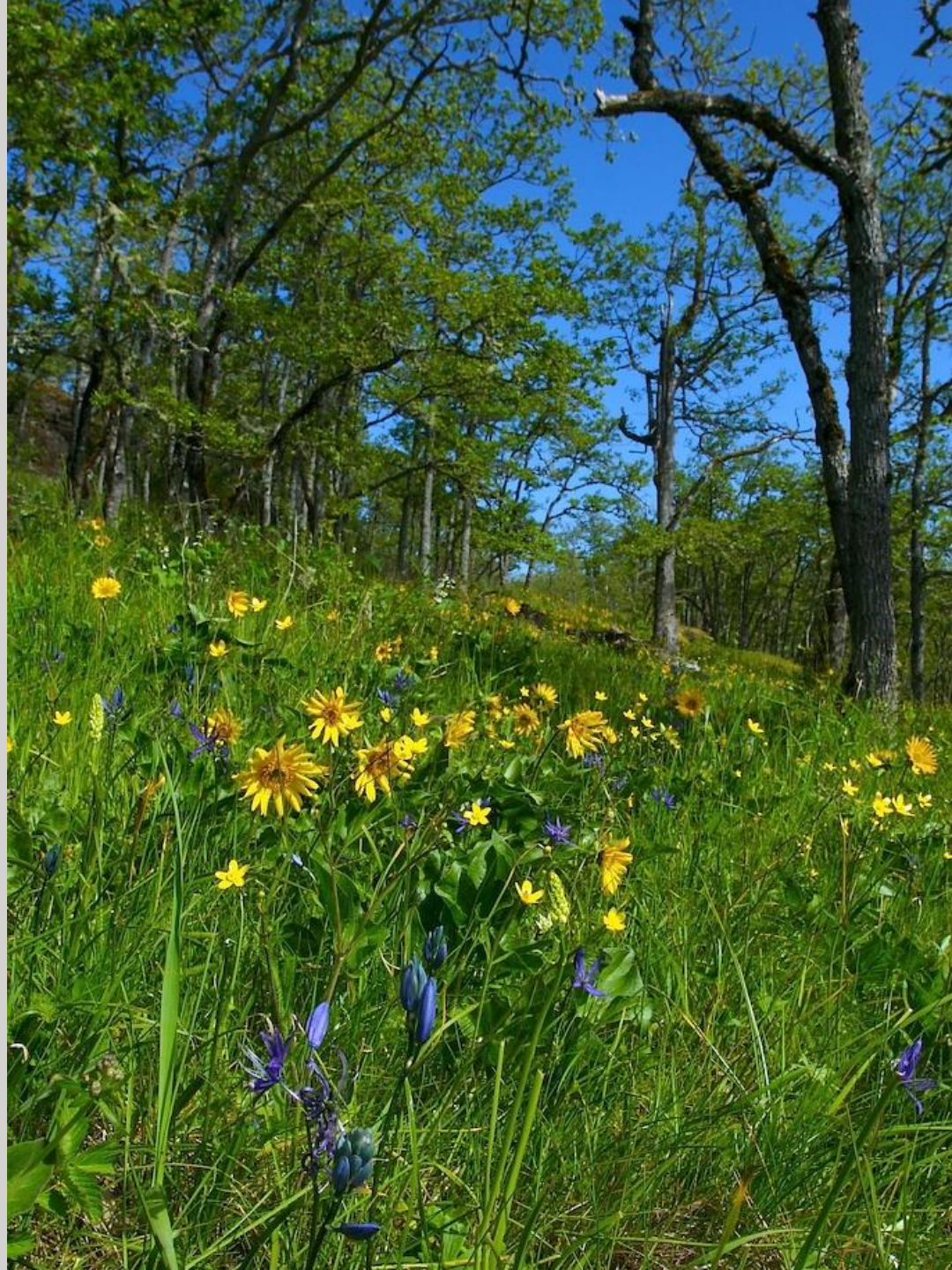
Bald Hill NAP

Propertius Duskywing Survey

- 1 year pre-treatment (2013)
- 2 years post-treatment (2014 & 2015)

Results

- Three of four patches treated
- No PD detected on transects *before* treatment (2013)
- PD detected on all transects *after* treatment (2014 & 2015), including defending males and an egg-laying female



Hoary Elfin

- South Puget Sound endemic
- Hostplant: Kinnikinnick
- Highly sedentary butterfly



Hoary Elfin Surveys and Monitoring

- **Confirmed extant populations on 5 prairie sites in the south Puget Sound region**





Restoration Treatment Assessment

(1 acre unit: Mima Mounds Natural Area Preserve)

Monitored Kinnikinnick patch occupancy

60 K² patches: split equally between unit and 25m buffer

2 years pre-treatment (2013 & 2014); 1 year post-treatment (2015)

Preliminary Results

Pre-treatment: HE detected in most K² patches

Post-treatment: Number and size K² patches greatly reduced

HE detected at most patches in buffer, 2 patches in unit

Plan to continue K² patch monitoring in 2016.

may



photo Aaron Barna

Mardon Skipper

Monitored abundance and distribution on Scatter Creek WLA, which supports 2 of the 3 remaining SPS MS populations

Monitored MS abundance on 5 restoration units on Scatter Creek WLA, before and after treatment



photo: Brad Gill

A photograph of a person standing in a field of tall, dry, golden-brown grass. The person is wearing a white shirt, light-colored pants, and a hat. They are positioned in the middle ground, slightly to the right of center. Behind them is a dense forest of green trees. The sky is visible through the canopy of the trees.

Results

Population Monitoring 2013-2105

Significant reduction in population size and distribution since the last extensive monitoring effort (2008-2009)

<15 MS detected ea year during search efforts @ Scatter Creek-North

<25 MS detected ea yr during search efforts @ Scatter Creek-South

Preliminary Results

Restoration Unit Monitoring

Unit Name	Pre-T Survey Year(s)	# MS Detect?	Post-T Survey Year(s)	# MS Detect?
Rectangle	2013	0	2014, 2015	0
Spade	2013, 2014	1 (2013)	2015	0
2012 Burn	2012	2-5	2013-2015	2(2014) 10 (2015)
2014 Burn	2013, 2014	0	2015	1
Powerline	2013, 2014	1 (2013)	2015	1 (2015)

Low MS numbers reduced ability to monitor restoration effects and effectiveness

Blackmore's (Puget) Blue

PNW Endemic: W WA and Vancouver Island

Hostplant: Sickle-keeled Lupine

Larvae diapause in soil



photo Rod Gilbert

***Monitored 2 restoration units (+ 50m buffer)
before and after treatment***

West Rocky Prairie WLA (5 acre unit)

- 1 year pre-treatment (2013)
- 2 years post-treatment (2014 & 2015)

Scatter Creek WLA (7 acre unit)

- 2 years pre-treatment (2013 & 2014)
- 1 year post-treatment (2015)

Preliminary Results

**PB numbers increased in units
after treatment**



photo Kelly McAllister

june



photo Aaron Barna

Sonora Skipper

SW WA/NW OR Endemic ssp.

Hostplant: *Unknown* Grass/Sedge



photo Rod Gilbert

Sonora Skipper Status

**Surveyed the 5 SPS prairie sites
where SS previously documented**

Found SS on 3 sites:

- **Small, highly localized populations on Scatter Creek North and West Rocky Prairie**
- **Single individual detected Scatter Creek South**

Did not relocate SS on 2 sites:

- **Rocky Prairie NAP**
- **Mima Mounds NAP**

***Prunella* Sonora Skipper nectar source**



photo Rod Gilbert

Great Arctic

Inhabits forest openings and balds,
primarily on Vancouver Island

Single record in US: Mt Constitution, Orcas Island

2-year life cycle: Adults occur even years

Hostplant: *Unknown* Grass/Sedge

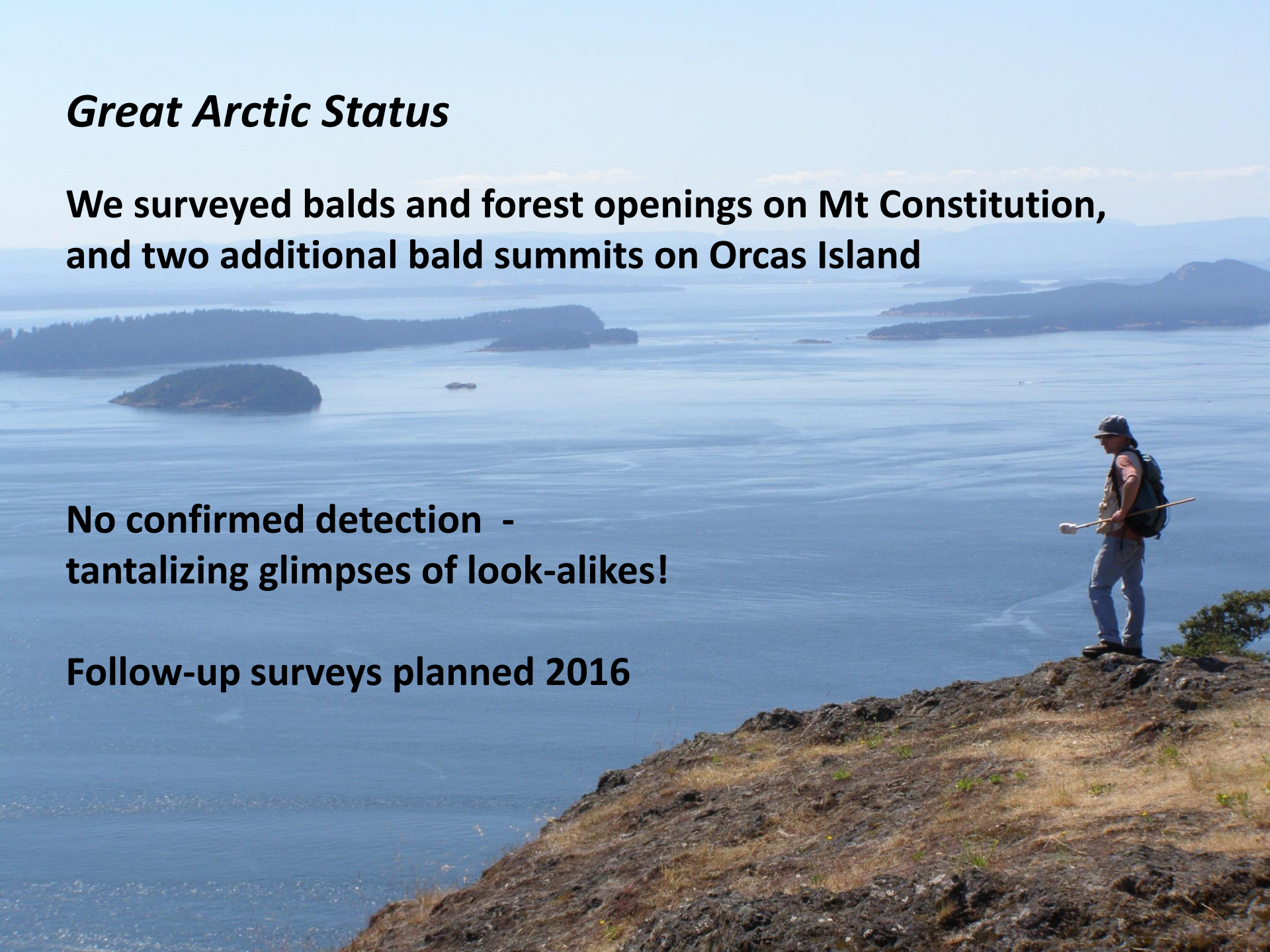


Great Arctic Status

**We surveyed balds and forest openings on Mt Constitution,
and two additional bald summits on Orcas Island**

**No confirmed detection -
tantalizing glimpses of look-alikes!**

Follow-up surveys planned 2016



july



photo Rod Gilbert

Zerene Fritillary
(*Valley Silverspot*)

PNW Endemic: W WA
and Vancouver Island

Hostplant: *Viola*



photo Rod Gilbert

***Great-spangled
Fritillary***

**PNW Endemic:
W WA/W OR**

Hostplant: *Viola*



photo Rod Gilbert

Greater Fritillary
Females

**For successful egg-laying,
require plentiful late-
season nectar sources**



photo Rod Gilbert

Status of Zerene and Great-spangled Fritillaries in SPS

Very small populations relocated on 5 of 6 historic SPS sites surveyed



august



photo Loni Beyer

Oregon Branded Skipper

PNW Endemic: SPS WA, San Juan and Vancouver Islands

Hostplant: *Unknown* Grass/Sedge

Surveyed the 5 SPS prairie sites where previously documented

Found OBS on 3 sites:

- **Mima Mounds NAP, and small, highly localized populations on Scatter Creek North and South**

Did not relocate OBS on 2 sites:

- **Rocky Prairie NAP**
- **West Rocky Prairie WLA**

Hostplant and oviposition habitat study



Status Surveys: San Juan and Orcas Islands



**Total of 6 sites surveyed,
including the 2 historic locales.**

Butterfly located on only 1 site

Lessons Learned:

Oak restoration appears to be effective in
creating habitat for Propertius Duskywing

**Puget Blue adult numbers increased
in restored hostplant patches,
in the south Puget Sound region**

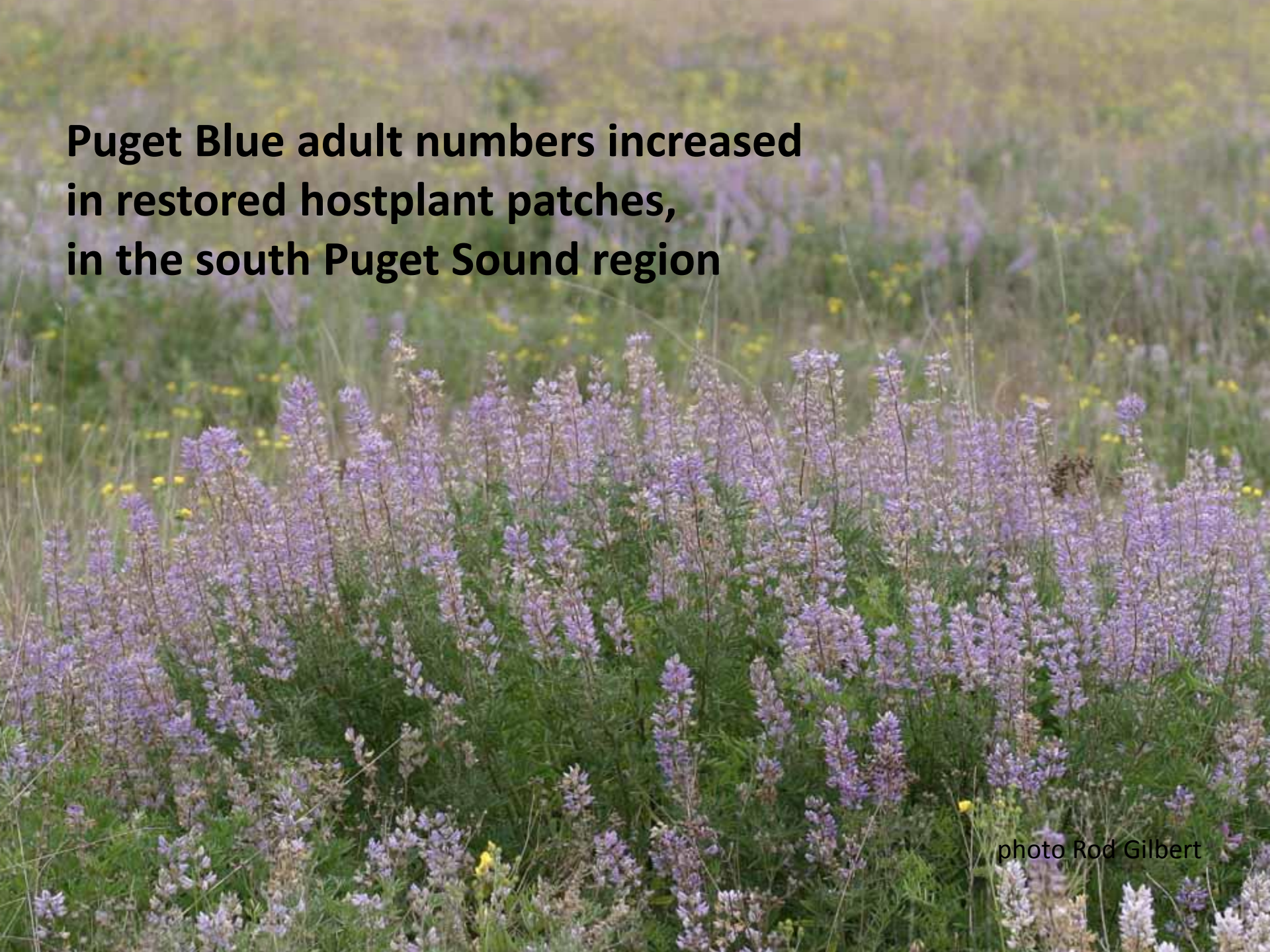


photo Rod Gilbert

Ultimately, these restoration projects were successful because the butterflies were extant on the project sites prior to restoration actions; highlighting the importance of maintaining existing populations



photo Aaron Barna

Prairie-Oak Butterfly SGCN:

Protection and management requires current information on distribution

Key life history and habitat information gaps remain for these species

Shortage of late-season nectar resources & need to tolerate key nectar weeds

All of these butterflies remain imperiled:

We observed declines in abundance and numbers of populations for all species

The greatest declines, and probably the most threatened are the grass-feeding skippers, Mardon, Sonora, and Oregon Branded Skipper; only a handful of small populations persist in western WA.



Thank you

Butterflies
Colleagues
& CPOP