

Barred Owl Removal Experiments within the Range of the Northern Spotted Owl: Preliminary Results

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Photo by Patrick Kolar

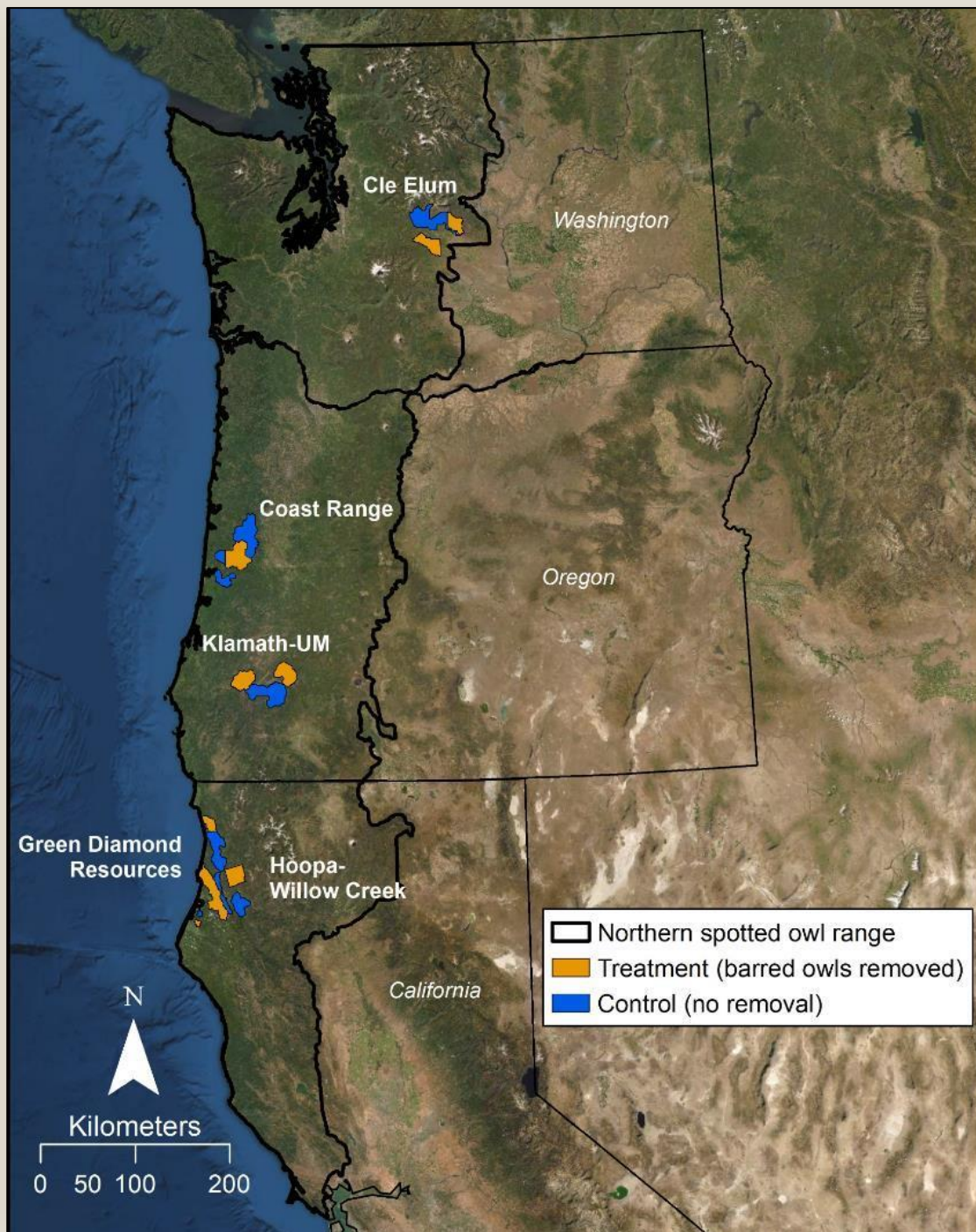
Primary Research Questions

1. What is the effectiveness of removal in reducing Barred Owl populations?
 2. Can Barred Owl removal improve declining population trends of Northern Spotted Owls?
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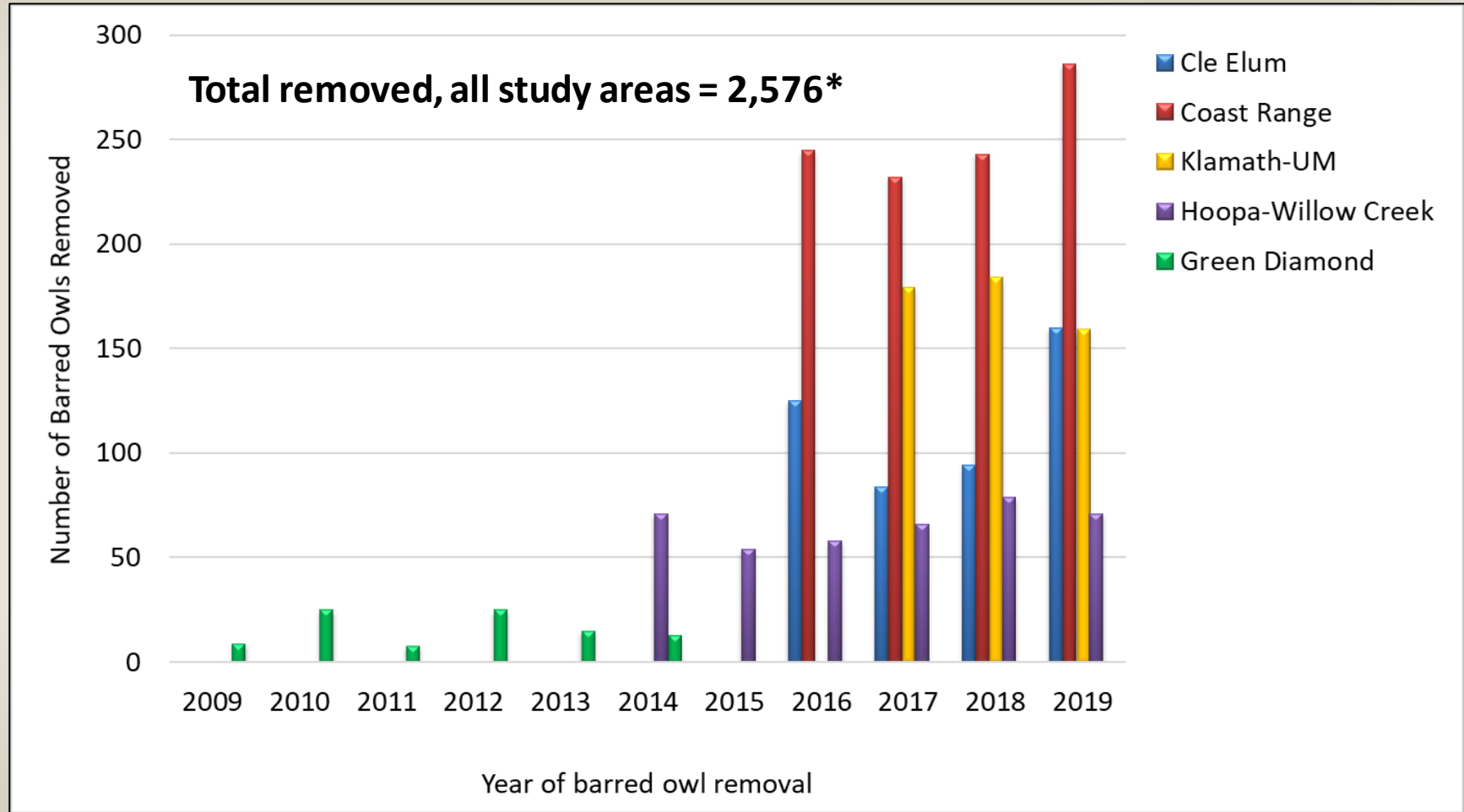


Before-After Control-Impact (BACI) Experimental Design

- Replicated on 5 NSO demographic study area
- Each area divided into ≥ 2 similar Control-Treatment (removal) areas
- All areas surveyed for both owl species annually, Mar – Sep
- Removal of Barred Owls on treatment areas over 4 – 6 years
- BACI comparisons of NSO vital rates and population trend
- **Total area with BO removal = 3,145 km²**



Total Barred Owls Removed, 2009 – 2019

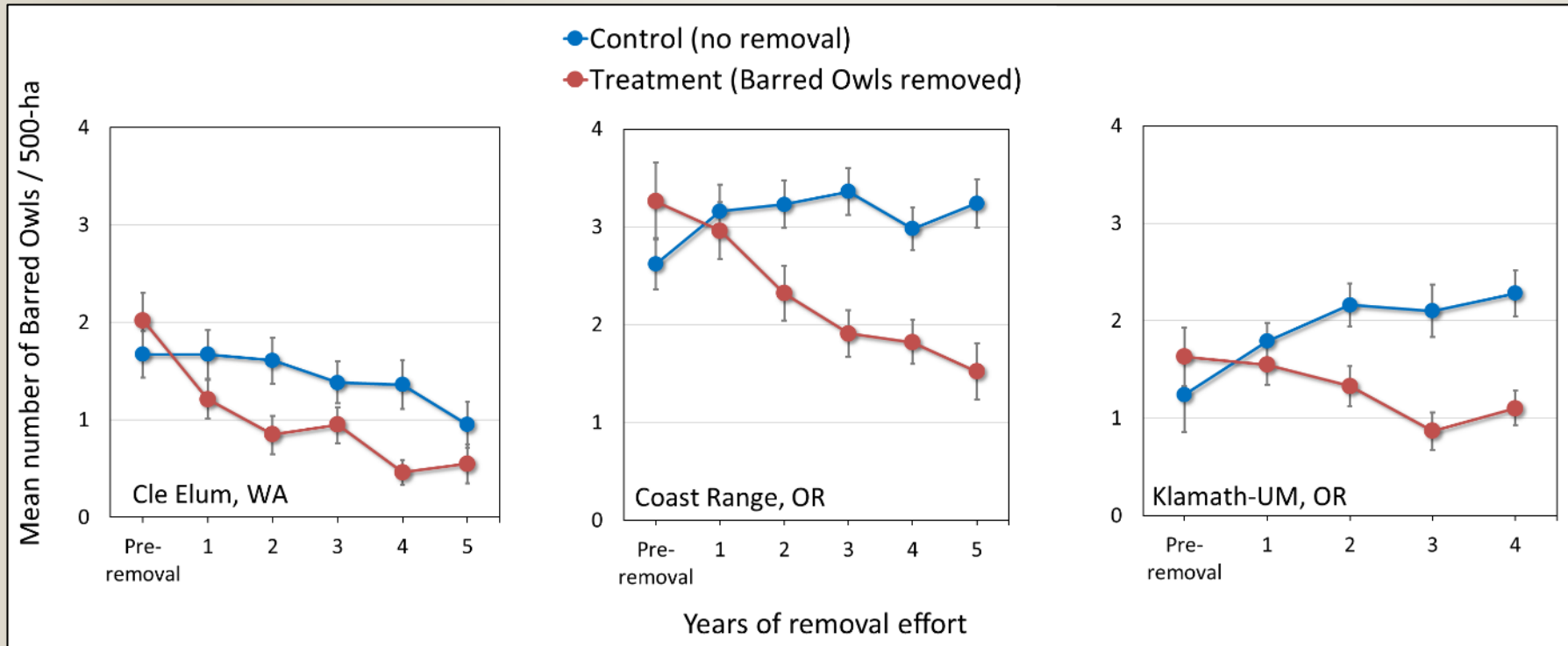


*Does not include 654 barred owls removed in 2019–2020

Effectiveness of Removals in Controlling Barred Owls

(OR and WA study areas, 2015 – 2020)

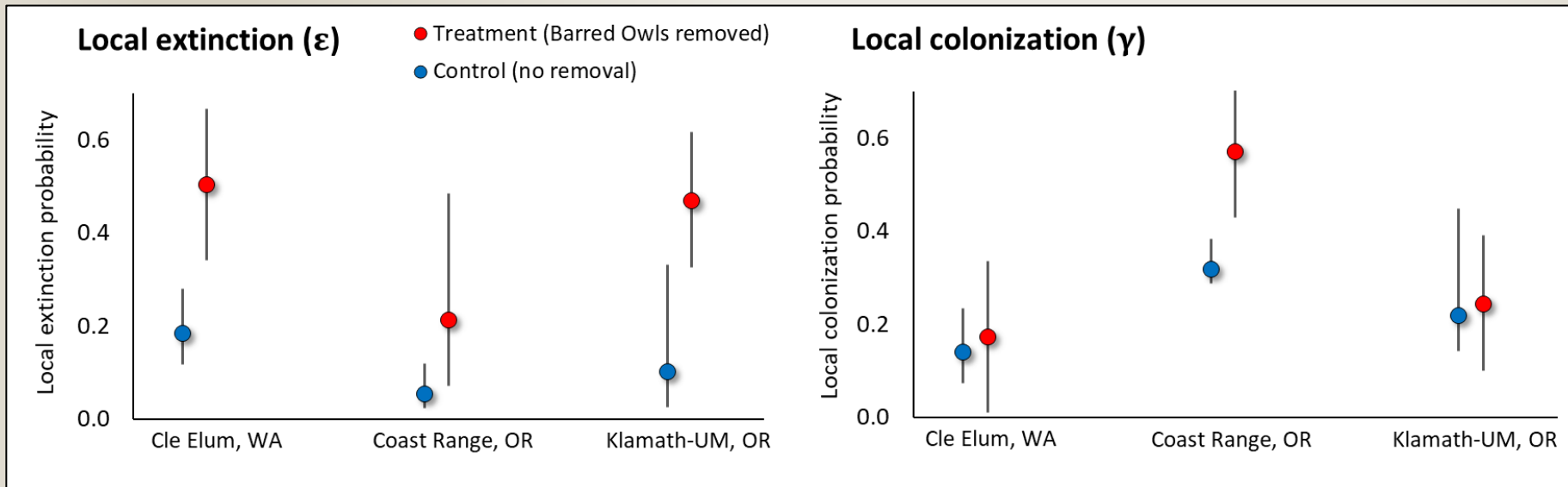
Mean number of individual Barred Owls detected per 500-ha survey site



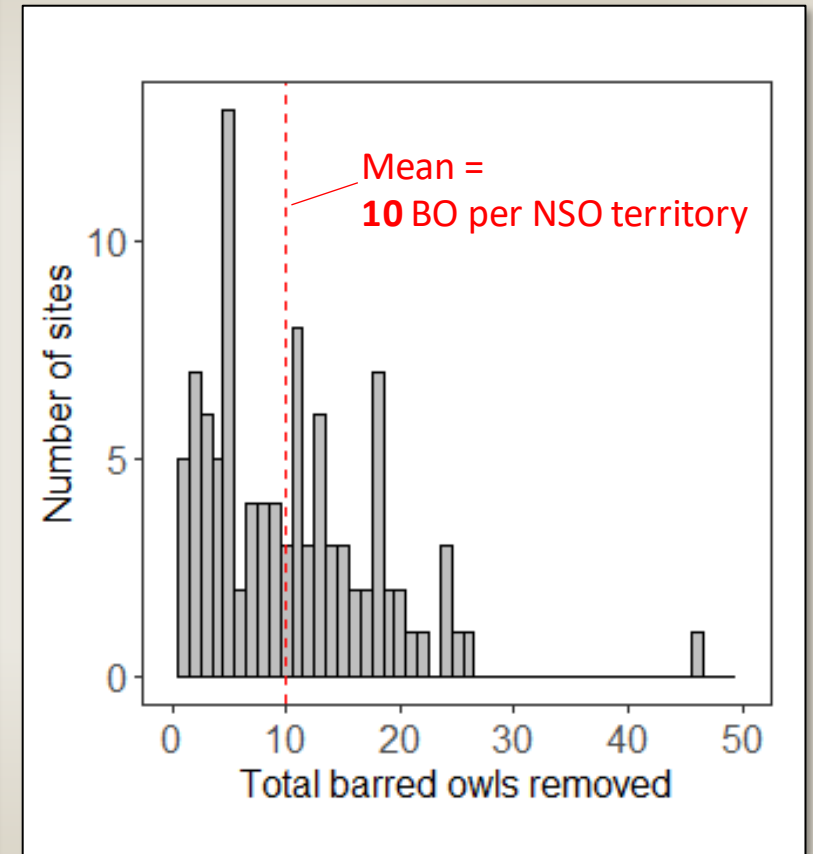
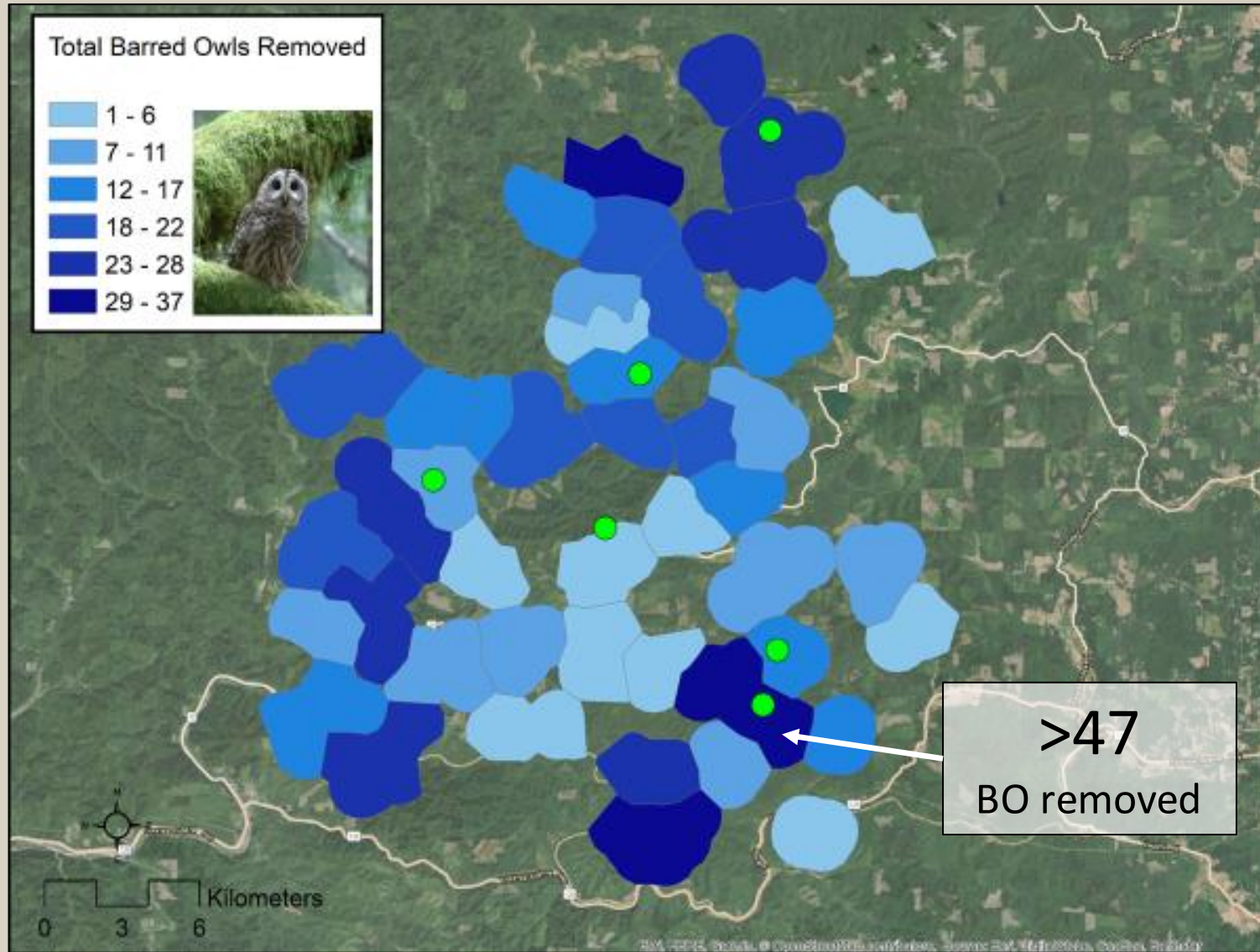
Effectiveness of Removals in Controlling Barred Owls

(OR and WA study areas, 2015 – 2020)

Post-removal extinction and recolonization of Barred Owls



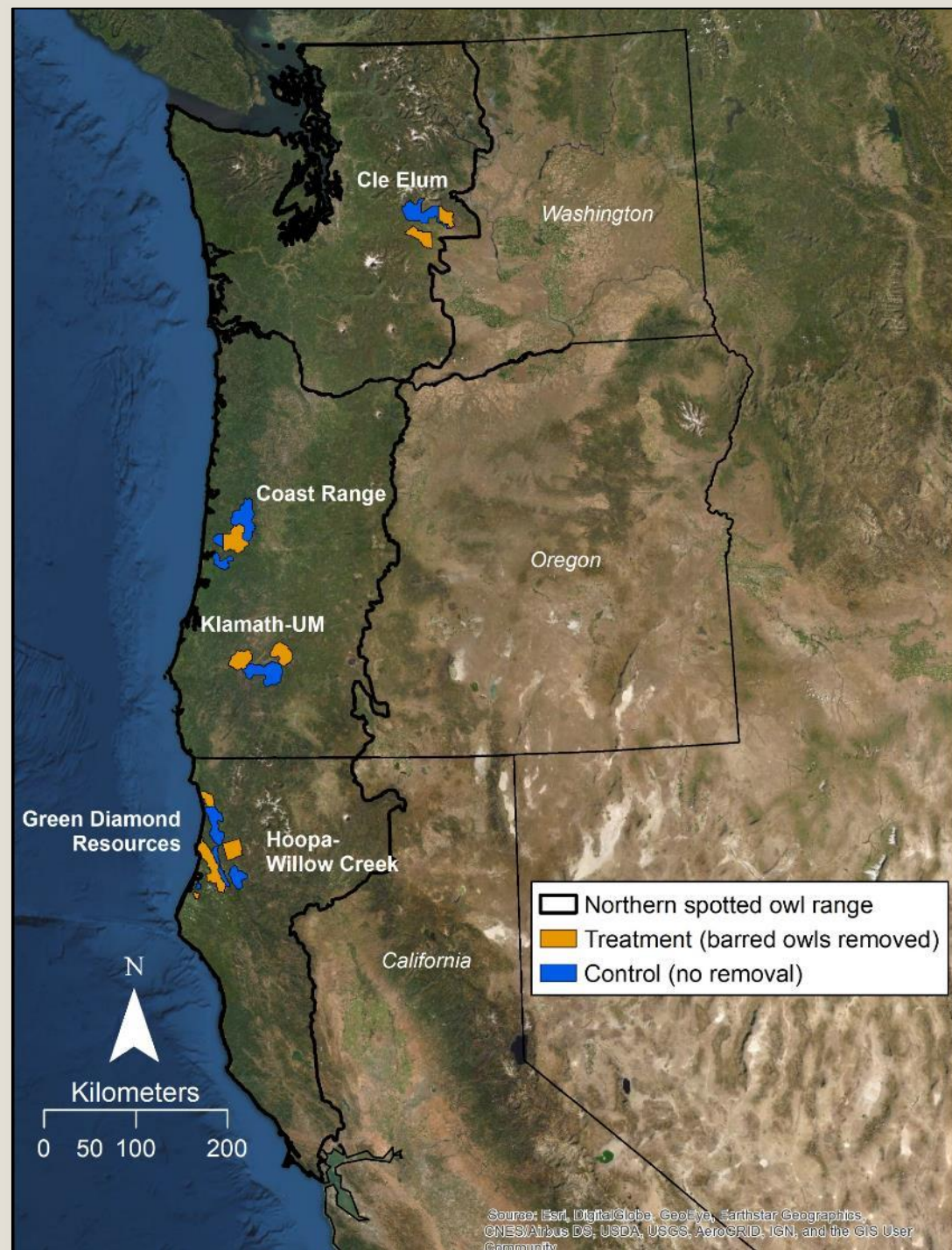
Barred Owl Recolonization of NSO Territories



Can Barred Owl removal
improve declining
population trends of
Northern Spotted Owls?



Spotted Owl Demographic Monitoring: 2002 – 2020



Janice Reid



Allan Branscomb

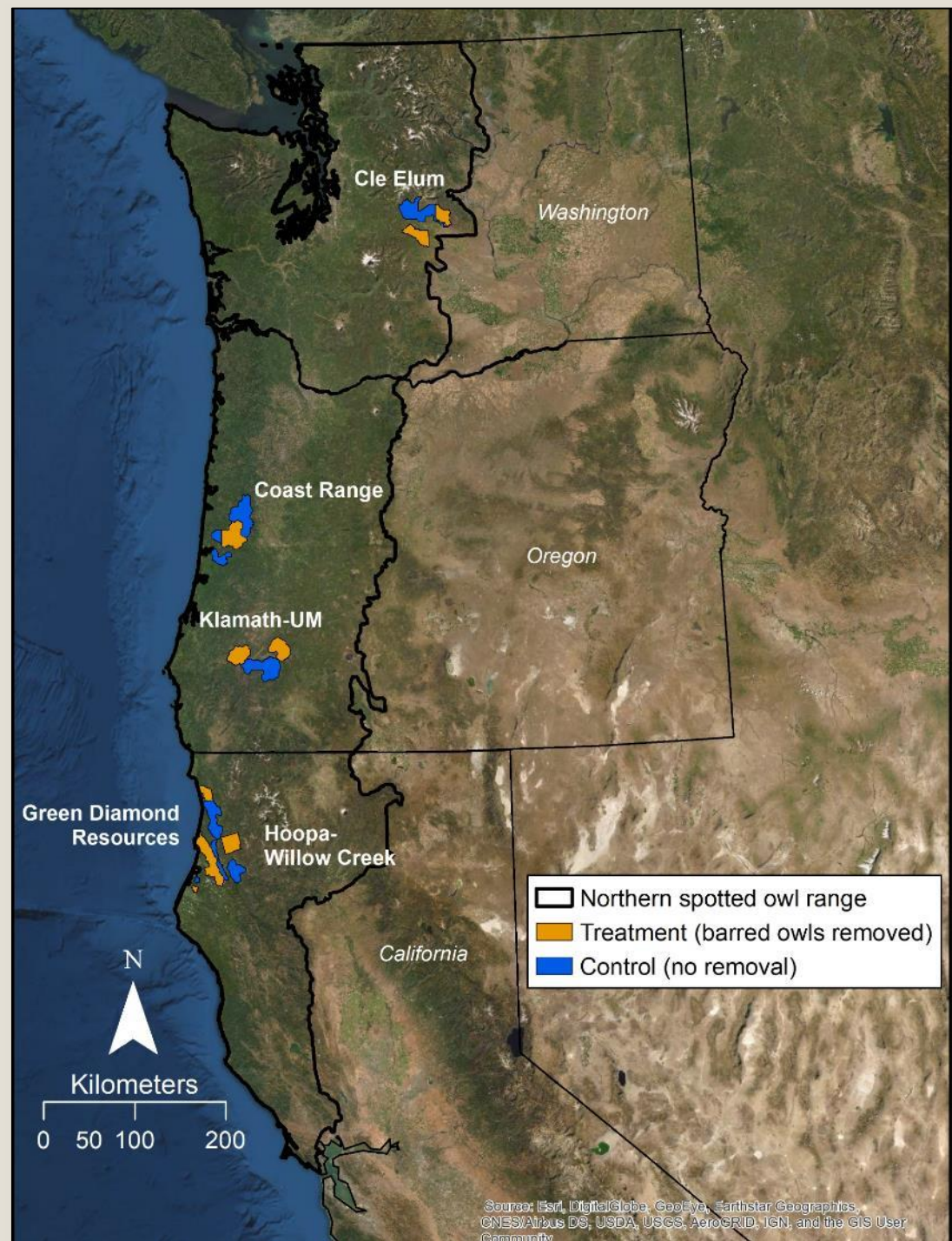


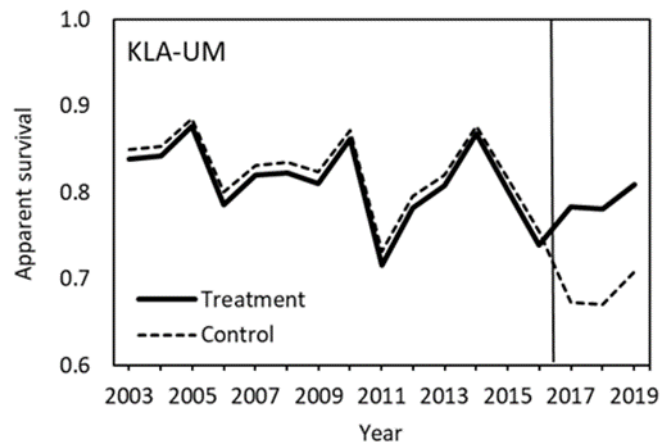
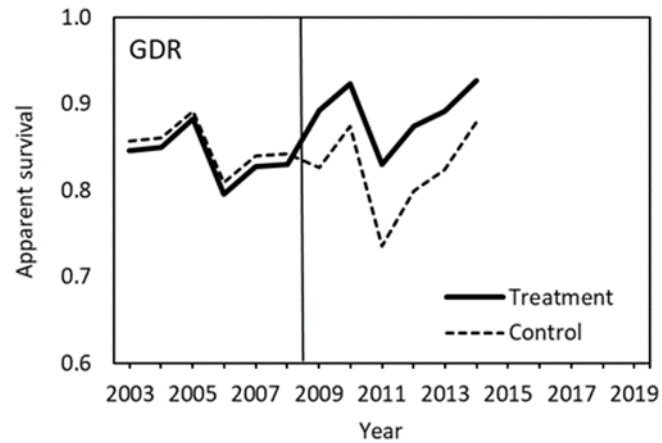
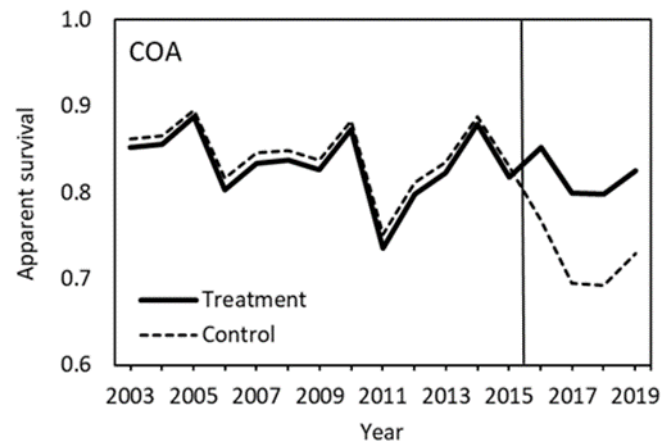
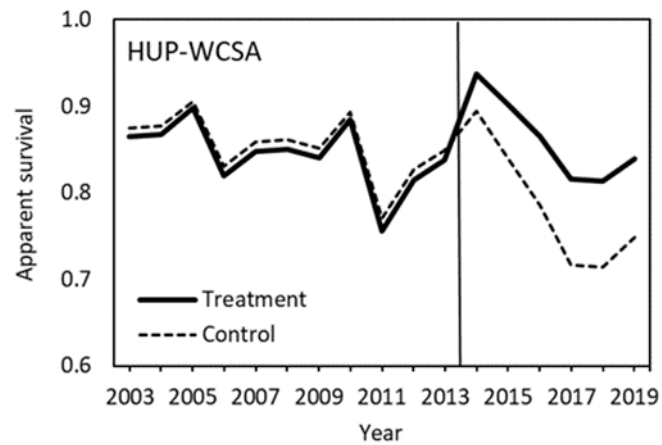
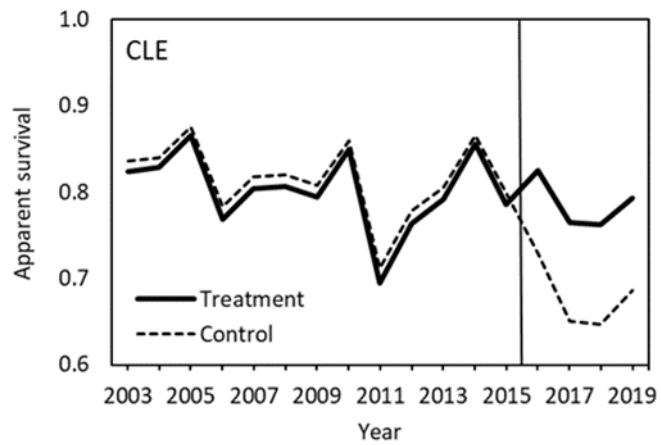
Peter Carlson

Meta-analysis of NSO Population Response to Barred Owl Removal

Estimate mean change in NSO vital rates attributed to Barred Owl removal across all study areas

- Survival
- Recruitment
- Annual rate of population change
(increasing, decreasing, or stable population?)





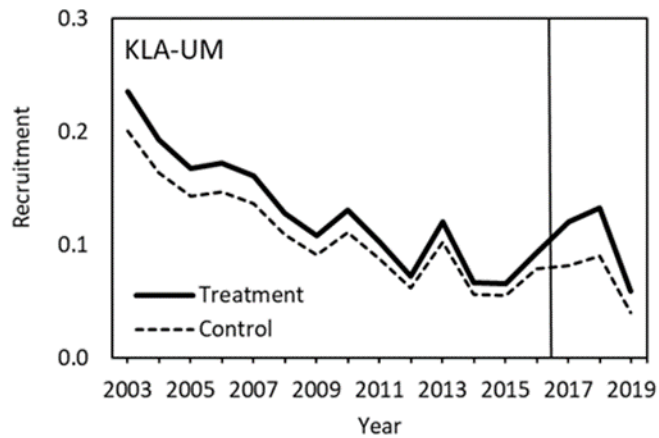
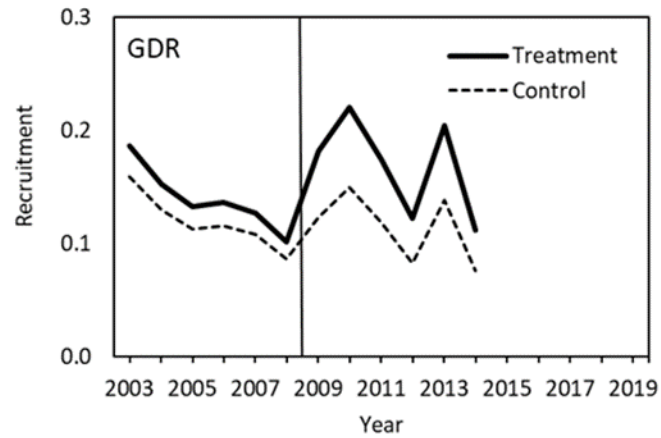
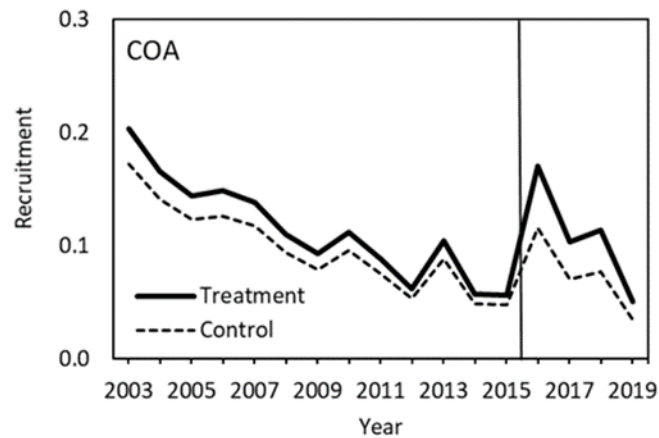
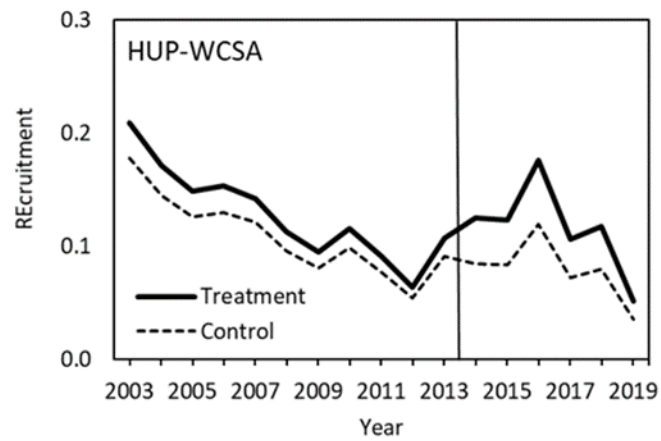
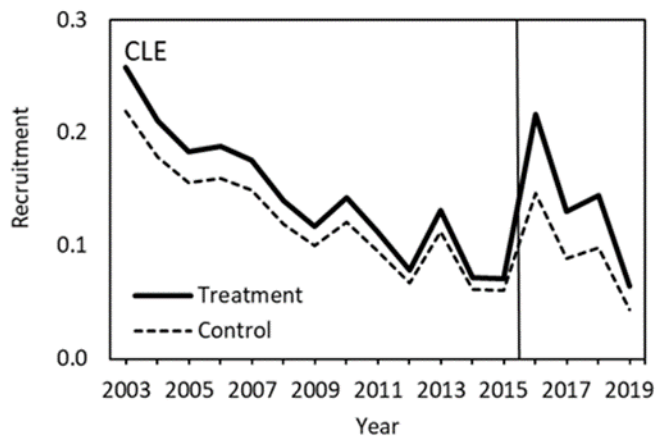
Spotted Owl Survival



Preliminary information-subject to revision
Not for citation or distribution



Photo by Patrick Kolar



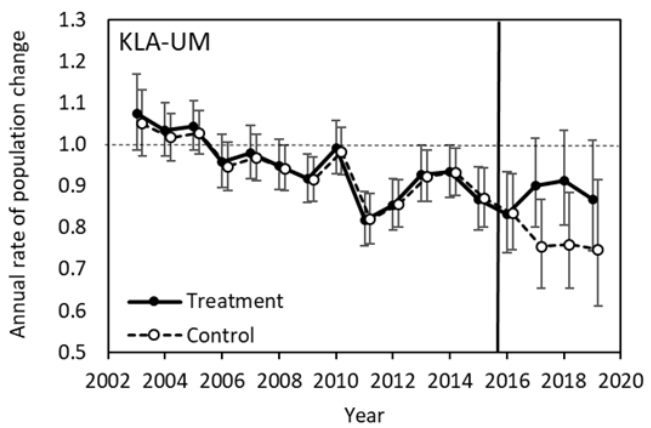
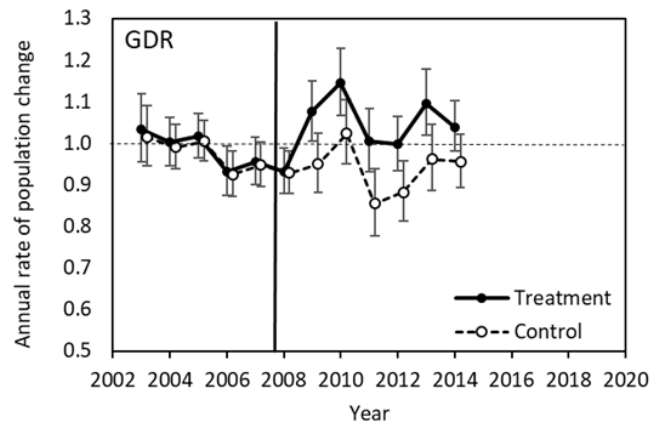
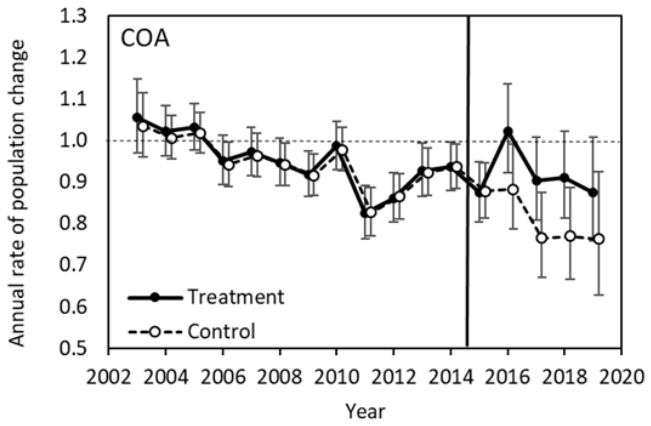
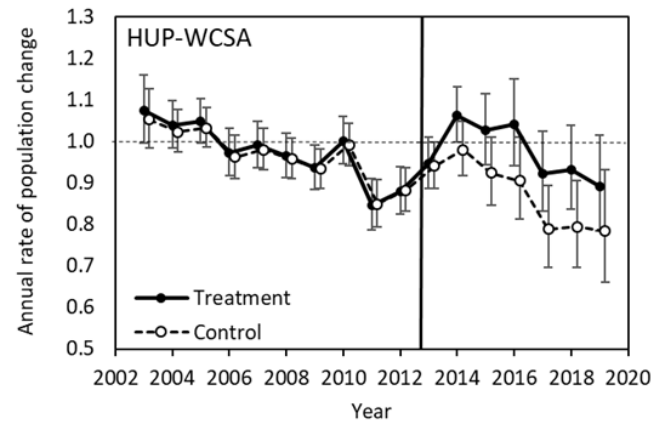
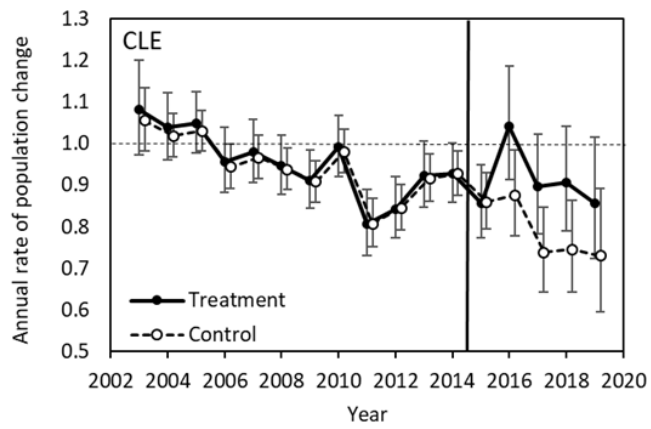
Spotted Owl Recruitment



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Photo by Patrick Kolar



Rate of Population Change



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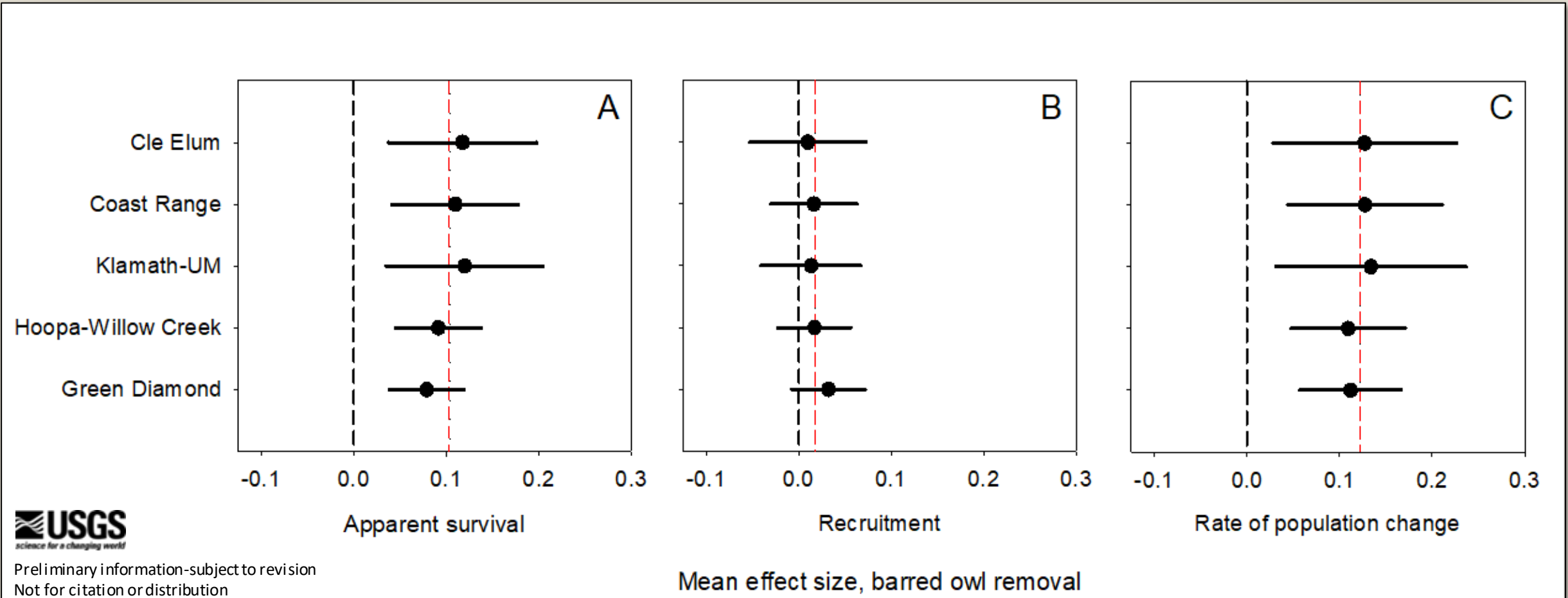
Photo by Patrick Kolar

Mean Effect Size of Barred Owl Removal

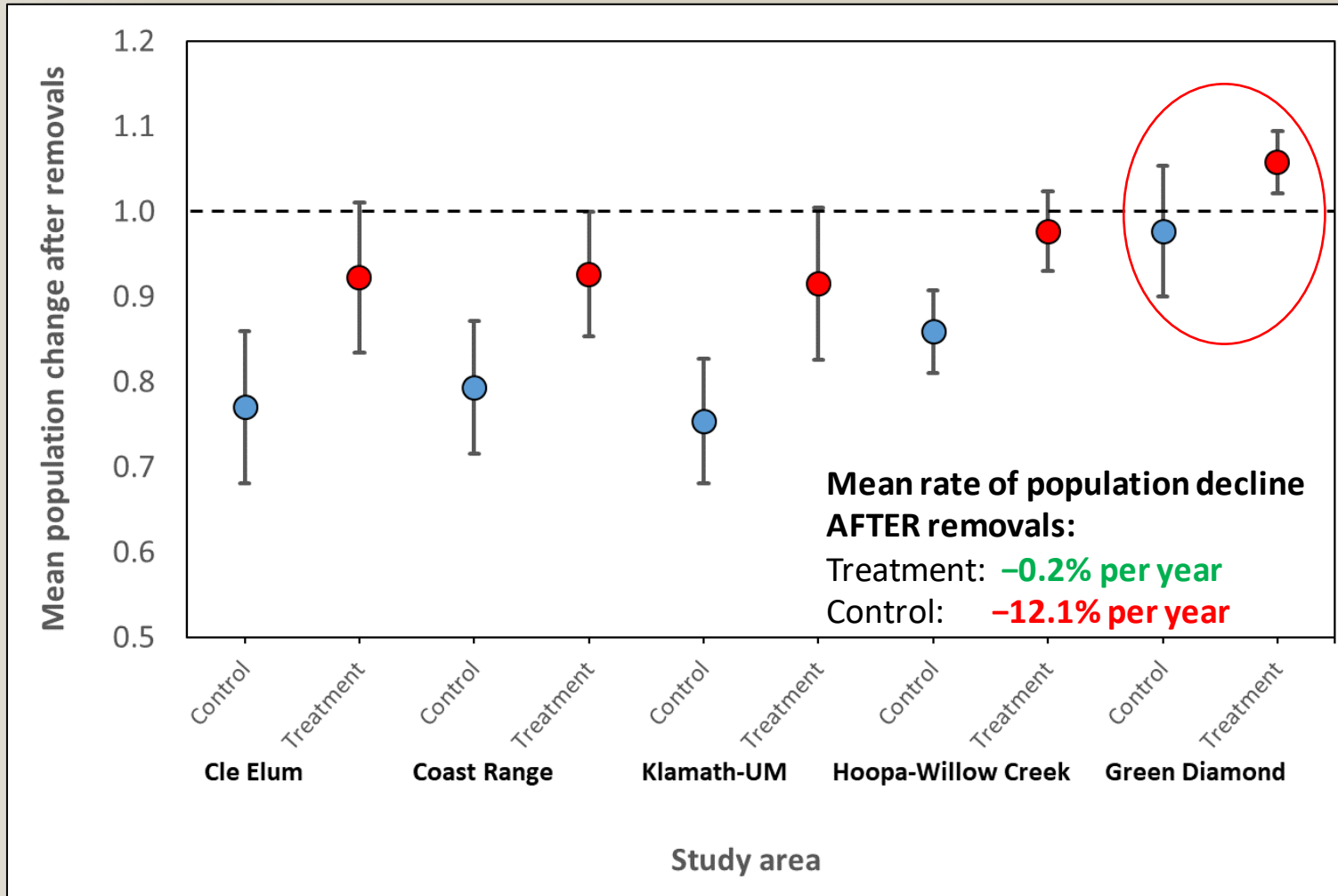
Strong evidence of
8 – 12% increase in **Survival**

Positive, but weak effect
on **Recruitment***

Strong evidence of
10 - 12% increase in
Annual rate of population change



NSO Population Status AFTER Removals



Key Findings

Effectiveness of removals in reducing Barred Owl populations

- BO use of removal areas reduced by 15 – 60% over 3 – 4 years
- BO recolonization highly variable among study areas (highest in COA)
- BO recolonization strongly dependent on landscape/forest conditions (*forthcoming in 2021*)

Effectiveness of removals in benefitting NSO

- Strong evidence of 8 – 12% increase in NSO **survival**
- Weaker evidence of a positive effect on **recruitment** **does not include 2020 data*
- Strong evidence that Barred Owl removal **arrested** population declines
- Barred Owl removal **reversed** population declines in Green Diamond, CA

