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Avian Monitoring in the Lassen and Plumas National Forests

Ryan D. Burnett & Diana Stralberg

Plumas-Lassen Symposium – 4/10/2009

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PRBO 2008 Northern Sierra Report

PRBO Avian Monitoring in the Lassen and Plumas National Forests - 2008

Chapter 3. Pileated Woodpecker Monitoring on the Lassen National Forest



Dennis Jongsomjit, Ryan D. Burnett, and Diana Stralberg
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Chapter 4. Resident and Neotropical Migratory Bird Monitoring in Mountain Meadows on the Almanor Ranger District



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http://www.fs.fed.us/r5/hfqlg/monitoring/resource_reports/wildlife/Landbird_Monitoring-2008.pdf

or

Google – HFQLG wildlife reports

Today's Focus

PRBO Avian Monitoring in the Plumas & Lassen National Forests - 2008

Chapter 1. Short-term response of avian species to HFQLG fuel treatments in the Northern Sierra Nevada



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5 Treatment Types...

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Defensible Fuel Profile Zones



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Group Selection



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Pre-commercial Thinning



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Mastication

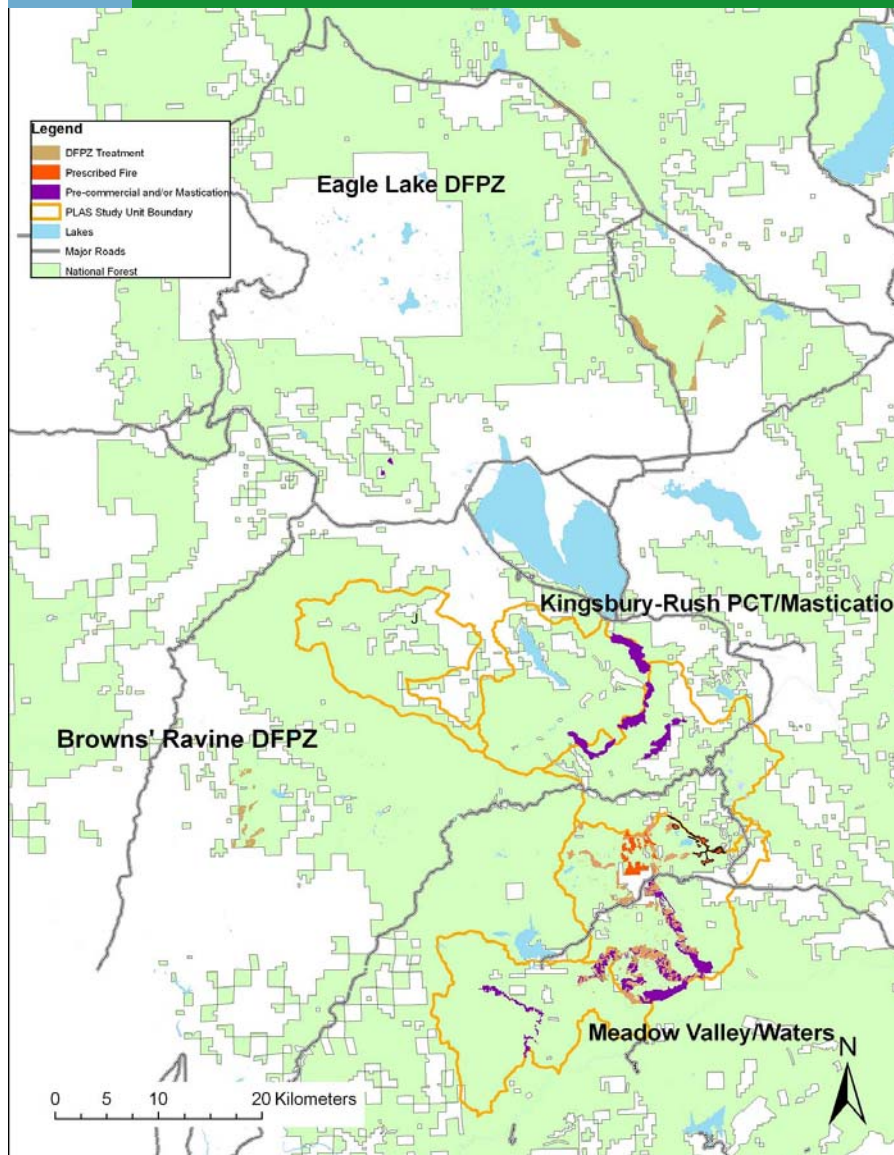


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Prescribed Fire

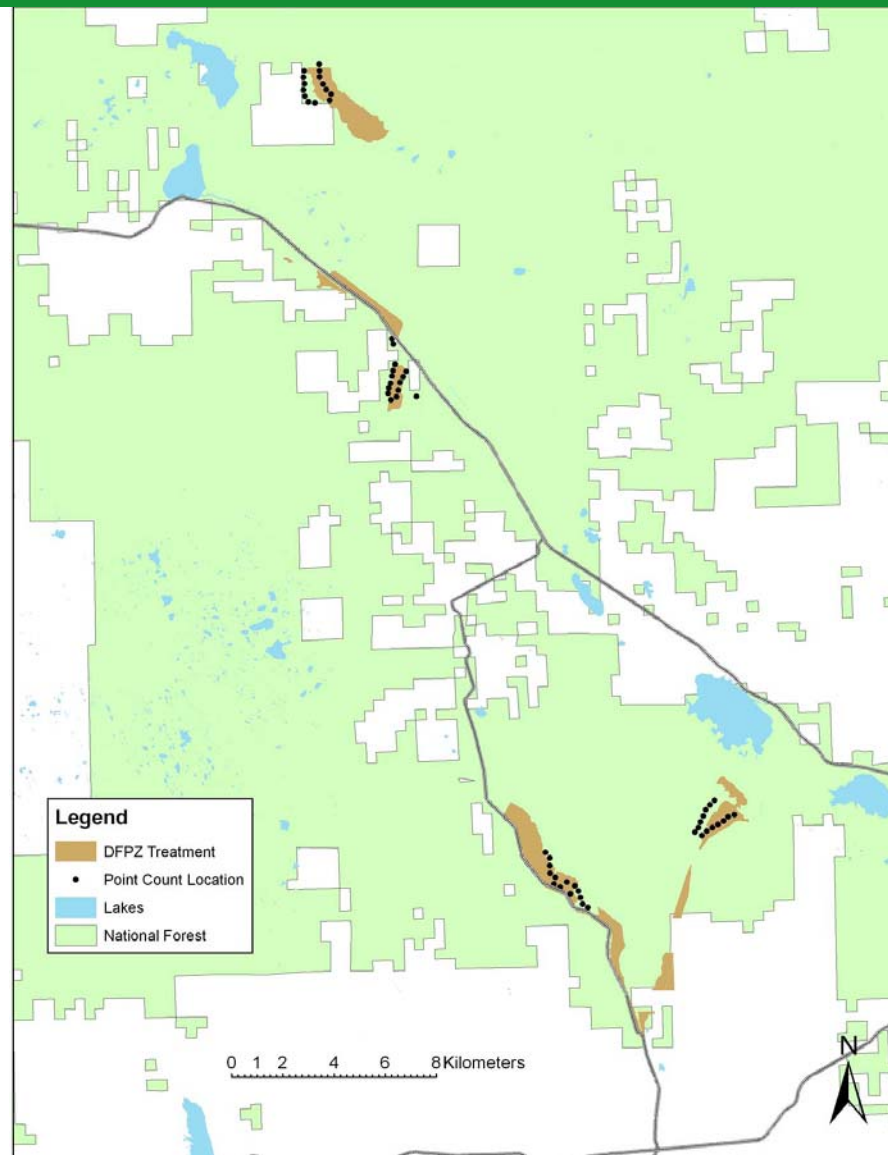


Study Area

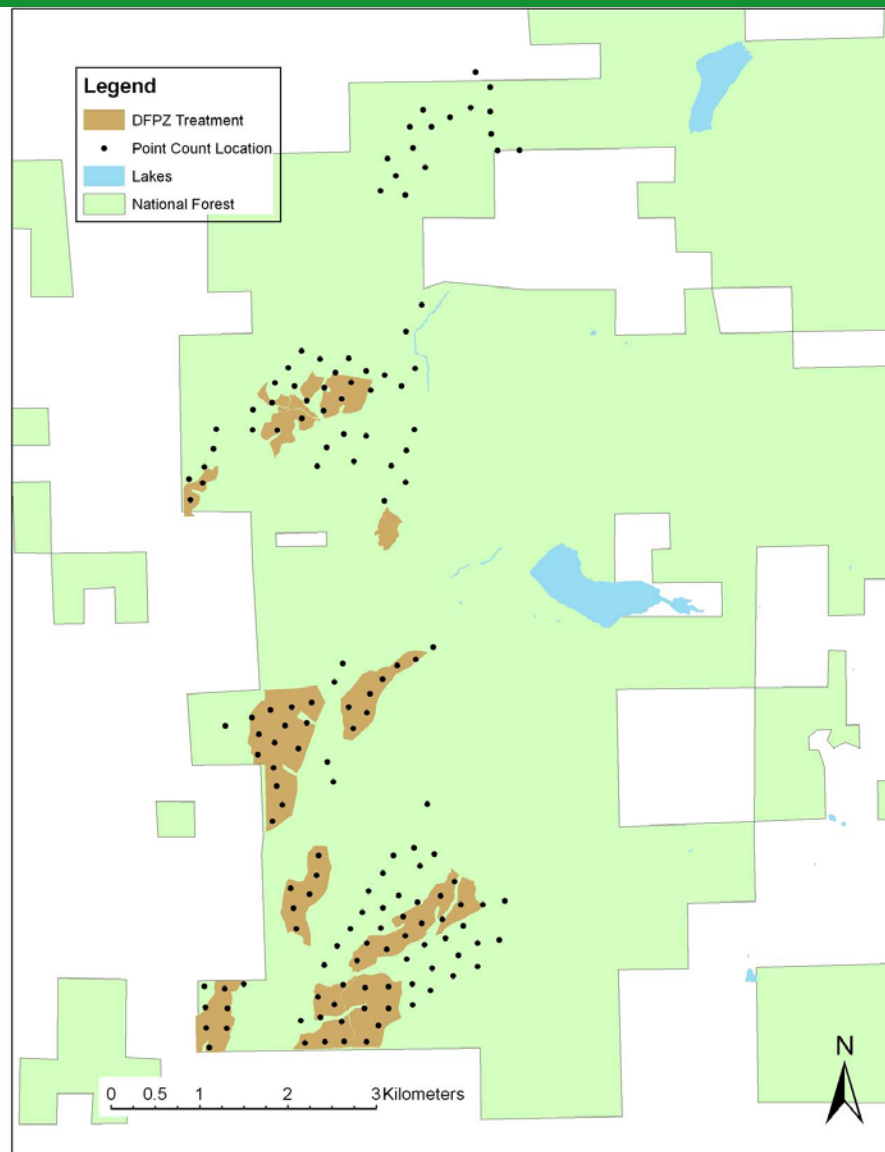


Treatment Type		Almanor	Eagle Lake	Mt. Hough
Total	# of points	165	71	958
	# of point visits	787	264	4775
DFPZ	# of points	57	29	30
	# of post-treatment point visits	284	112	148
Group Selection	# of points	0	0	19
	# of post-treatment point visits	0	0	78
Pre-commercial Thin	# of points	26	0	24
	# of post-treatment point visits	52	0	208
Mastication	# of points	4	0	32
	# of post-treatment point visits	8	0	242
Prescribed Burn	# of points	0	0	40
	# of post-treatment point visits	0	0	344

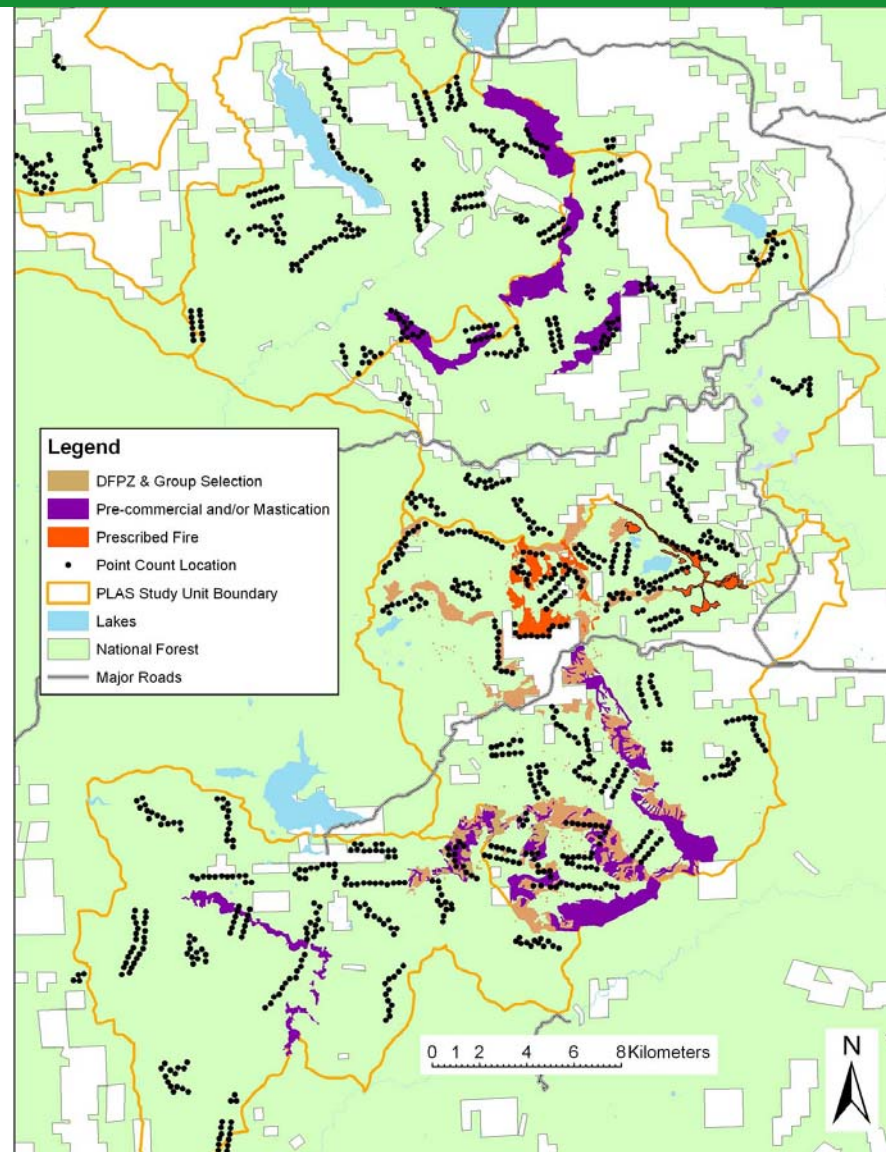
Eagle Lake DFPZ's



Brown's Ravine (Almanor R.D.)



Meadow Valley-Kingsbury Rush



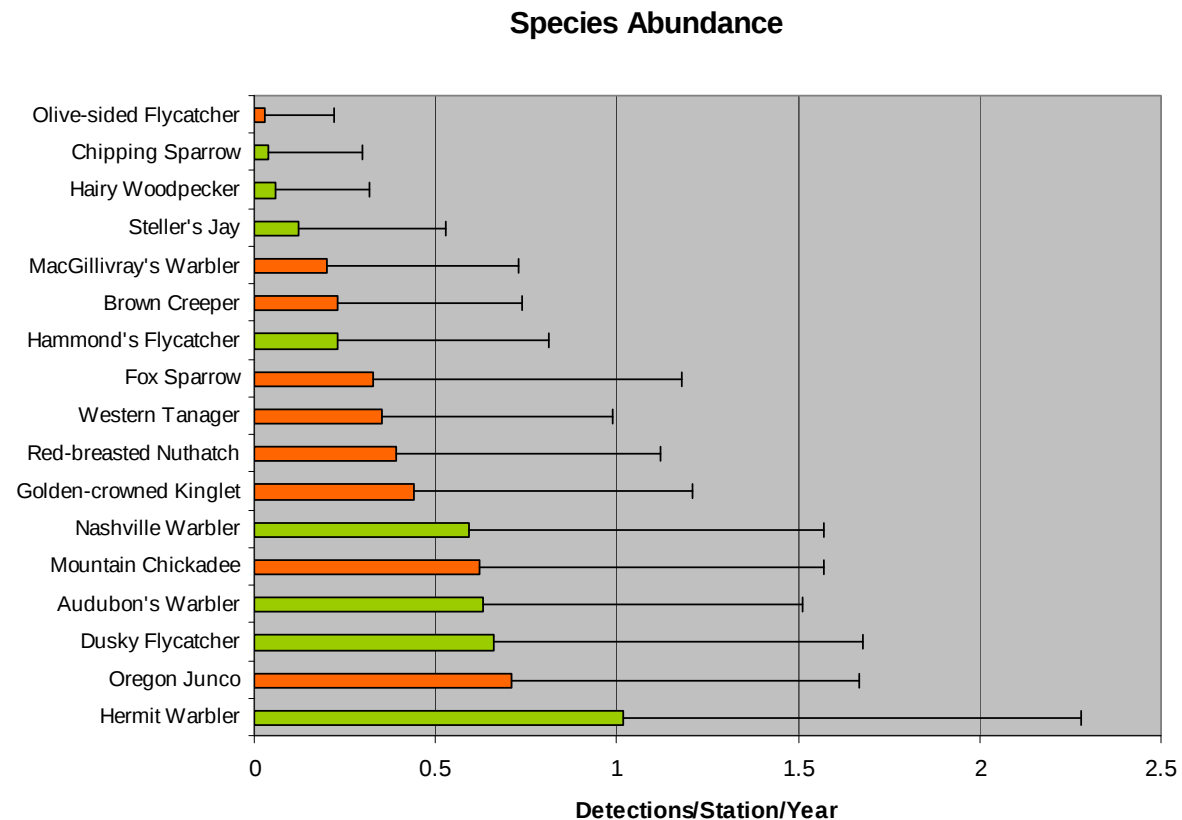
Methods

- 50m radius point counts
- Almanor, Eagle Lake, and Mt. Hough Ranger Districts
- 1194 point count stations
- 2002 – 2008
- 2 visits per year

Analysis

- Abundance indices of 17 species, species richness, Shannon diversity
- Time since treatment
- Untreated sites time since treatment (fire = 75, mechanical = 35)
- Mixed effects models
- Linear (w/Gaussian Distribution) for species richness/diversity
- Generalized linear (w/negative binomial distr.) for individual species
- Covariates (elevation, solar radiation, veg. type, slope, RHCA)
- Site included as a random effect
- Treatment effect value set at 1 year post-treatment for predictions

A suite of species as management indicators



Species Richness and Diversity

<u>Metric</u>	<u>DFPZ</u>	<u>Group</u>	<u>PCThin</u>	<u>Mast</u>	<u>Burn</u>
Focal Richness	-0.0025	0.0005	0.0135**	0.0079	-0.0047
Species Richness	0.0033	-0.0131	0.0283***	0.0175*	-0.0086
Shannon Diversity	0.0003	-0.0037	0.0069***	0.0039*	-0.0017

* = $p < 0.05$, ** = $p < 0.005$, *** = $p < 0.0005$

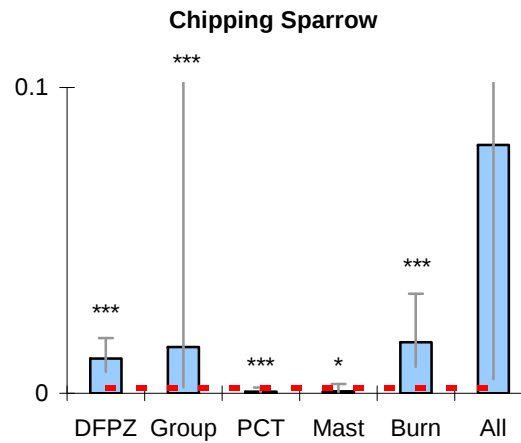
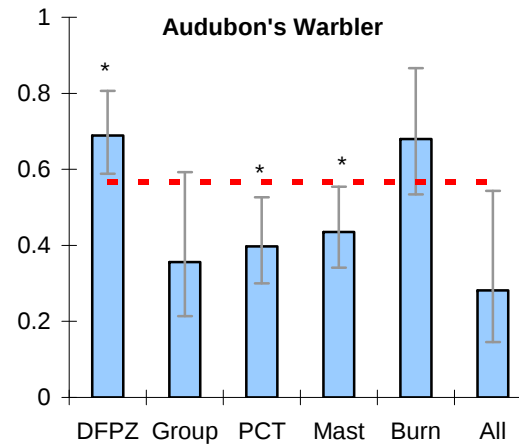
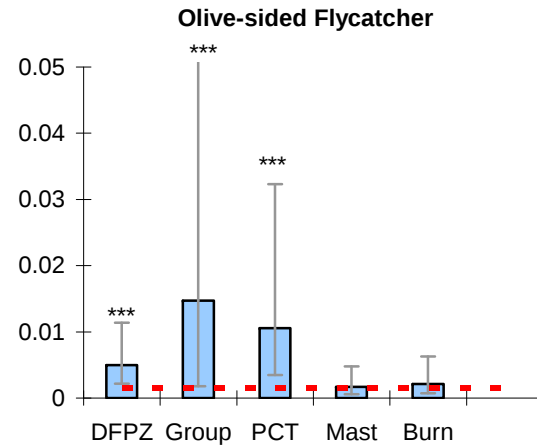
Summary of Species Responses to Treatment

Treatment	Positive Response	Negative Response	No-effect Detected
DFPZ	3	4	10
Group Selection	4	1	12
Pre-commercial	1	5	11
Mastication	0	7	10
Prescribed Fire	6	1	10

DFPZ - Positive



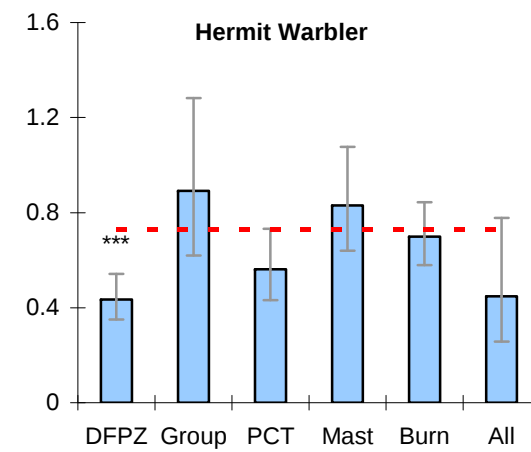
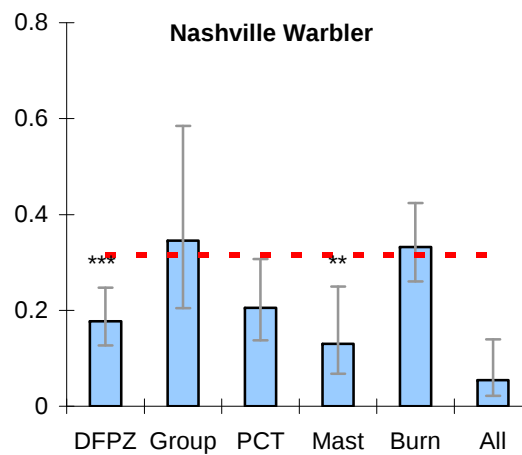
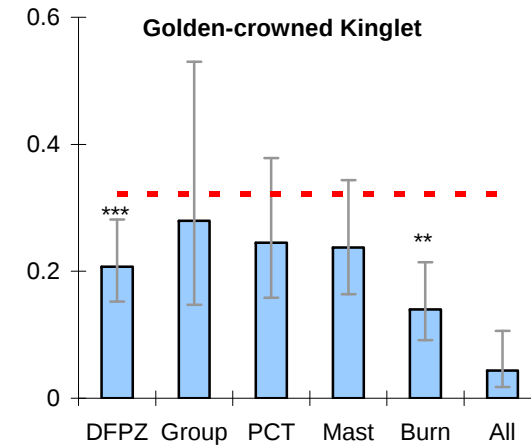
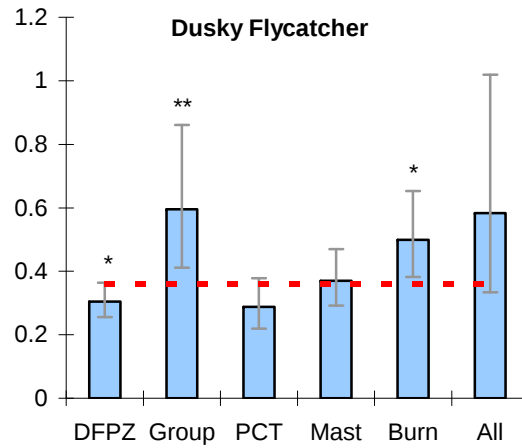
Predicted Abundance/Point



DFPZ - Negative



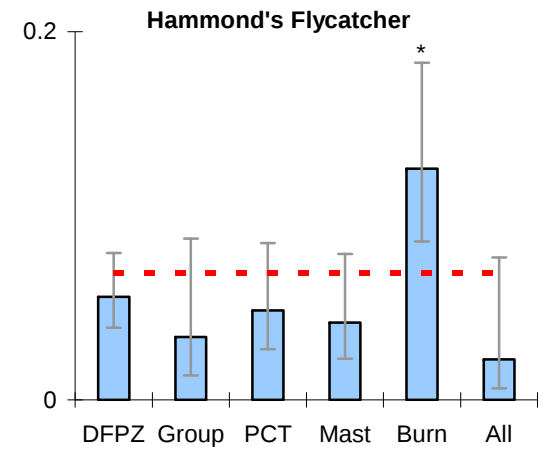
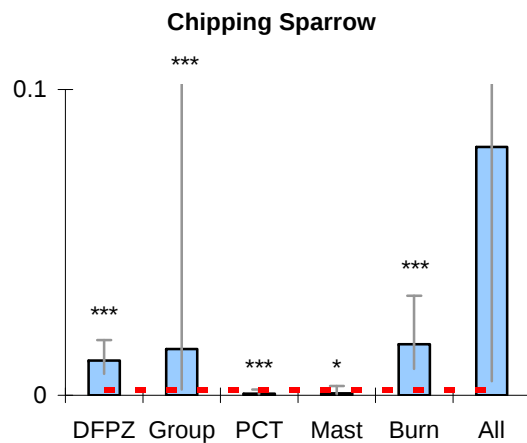
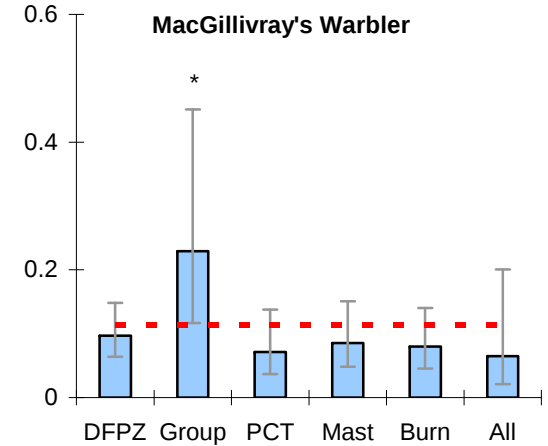
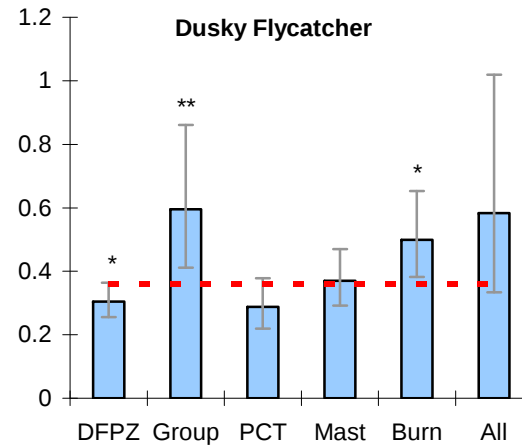
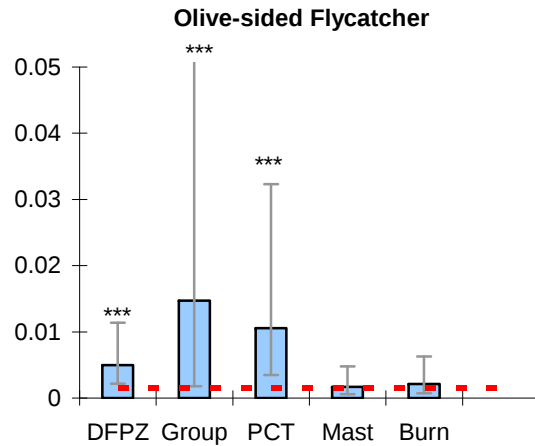
Predicted Abundance/Point



Group Selection



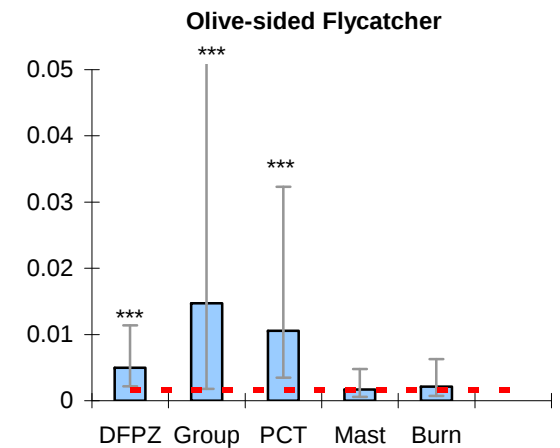
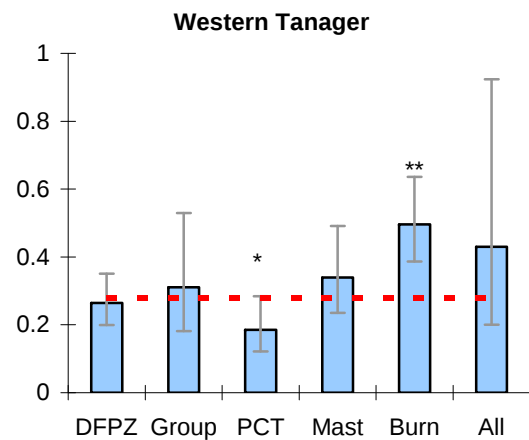
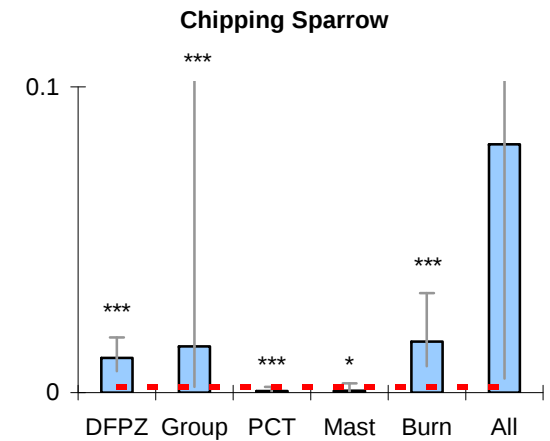
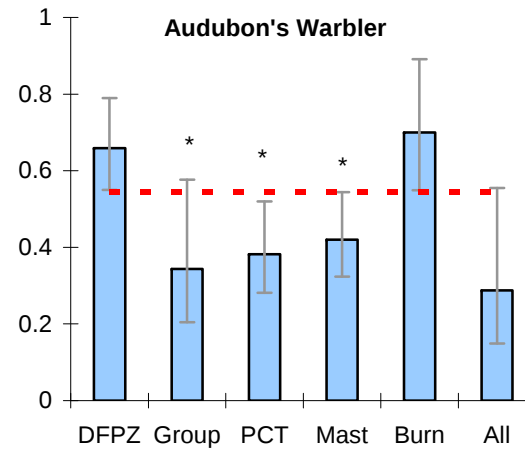
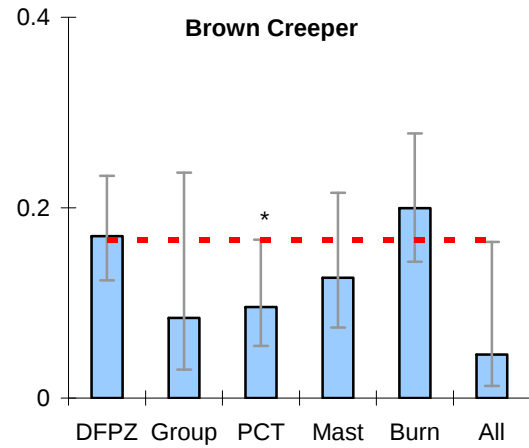
Predicted Abundance/Point



Pre-commercial Thinning



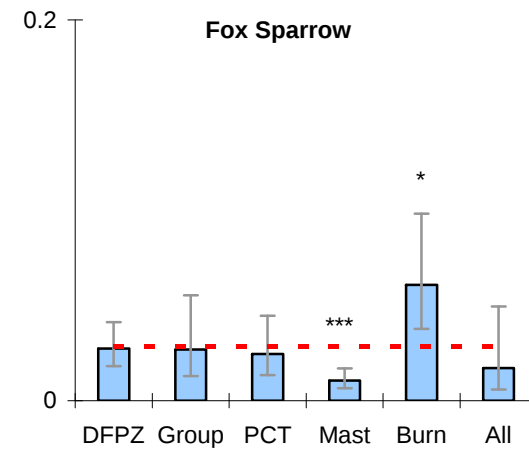
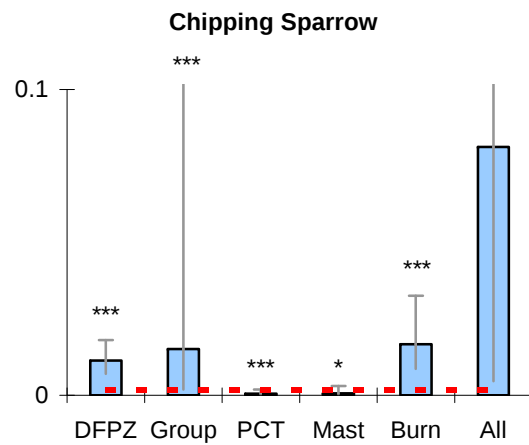
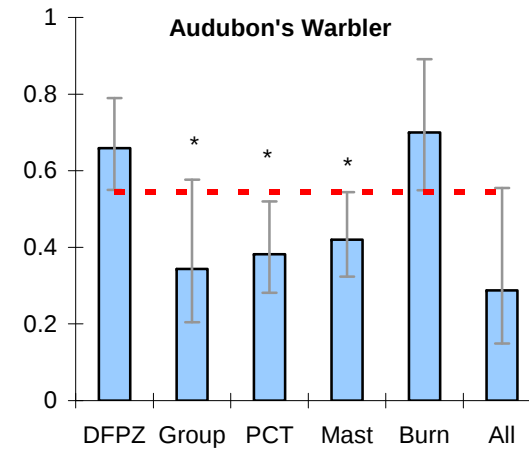
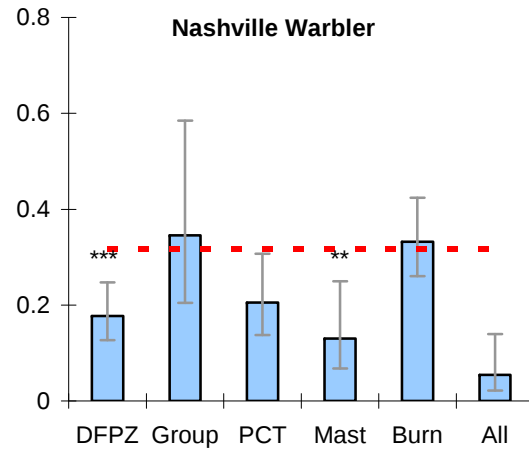
Predicted Abundance/Point



Mastication



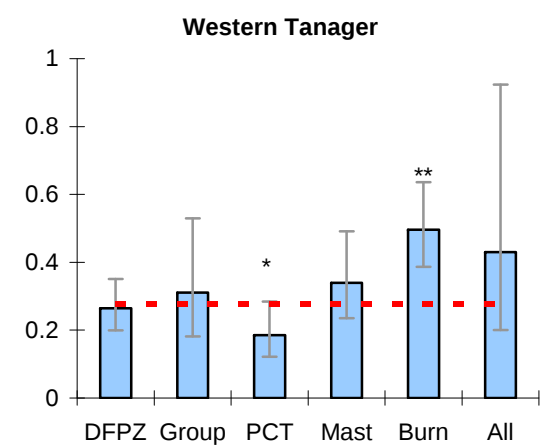
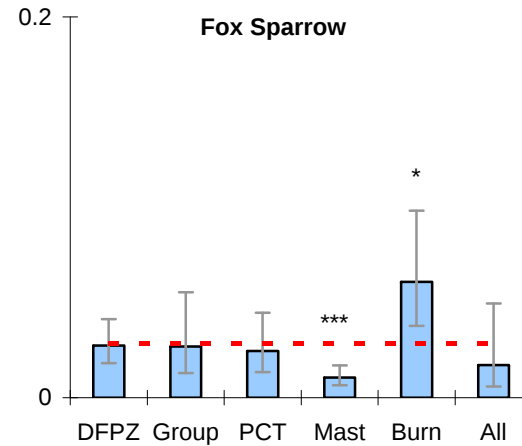
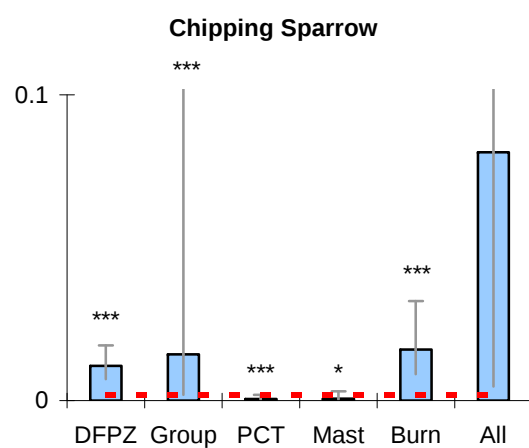
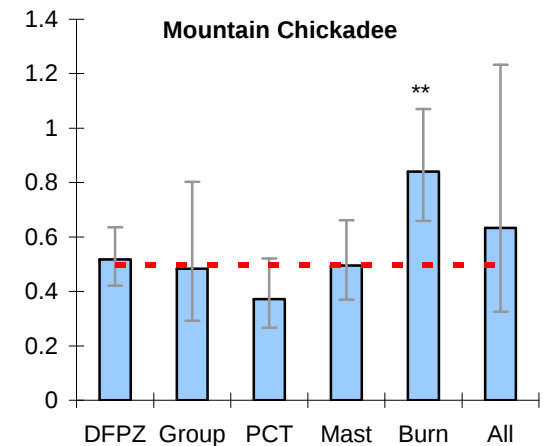
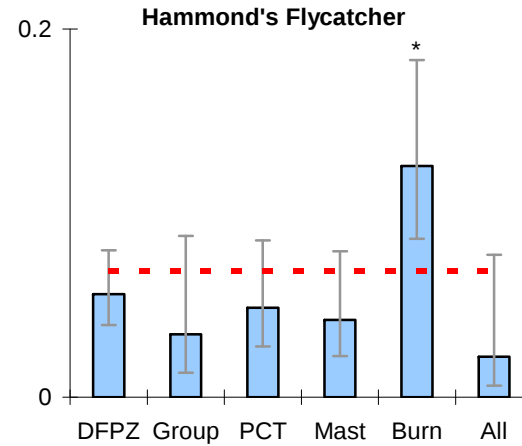
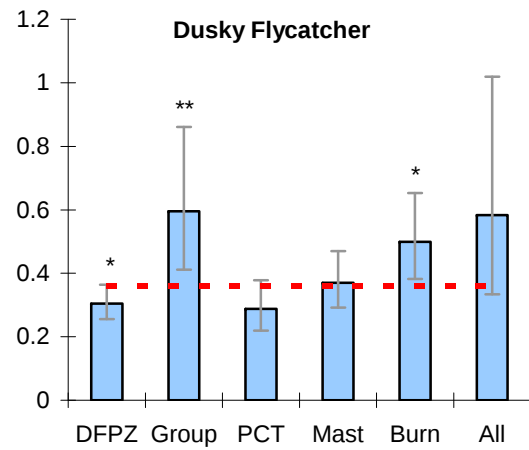
Predicted Abundance/Point



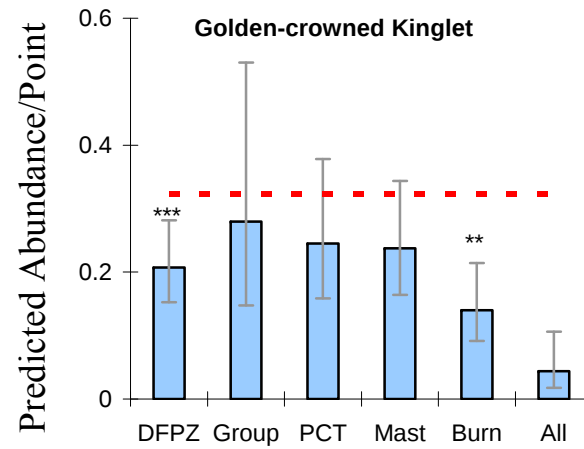
Prescribed Fire - Positive



Predicted Abundance/Point



Prescribed Fire - Negative



Fuel Treatment Effects Summary

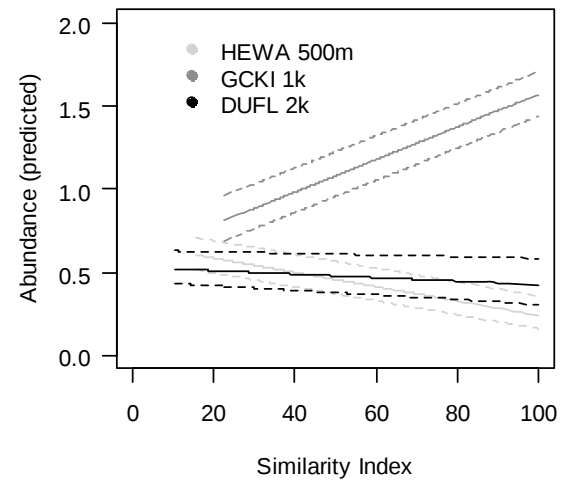
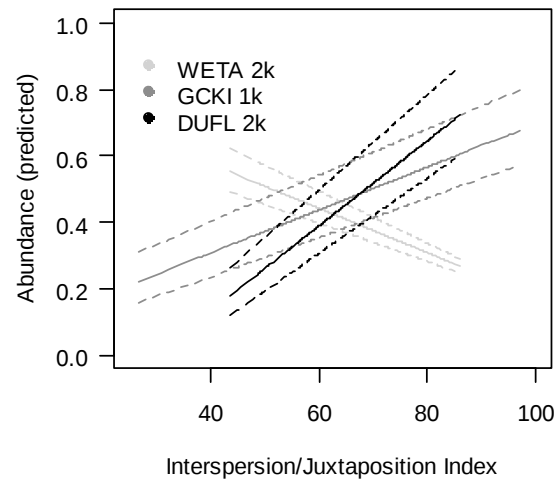
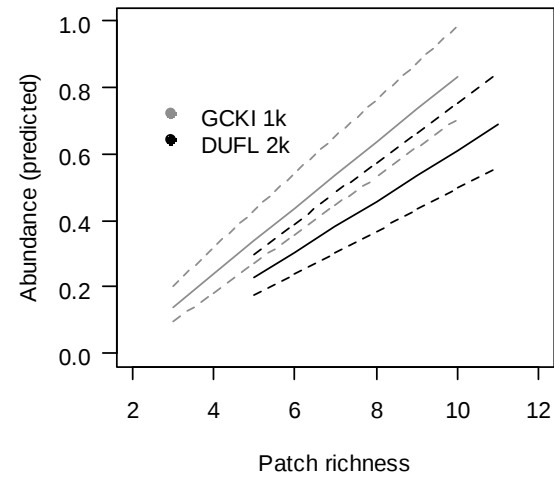
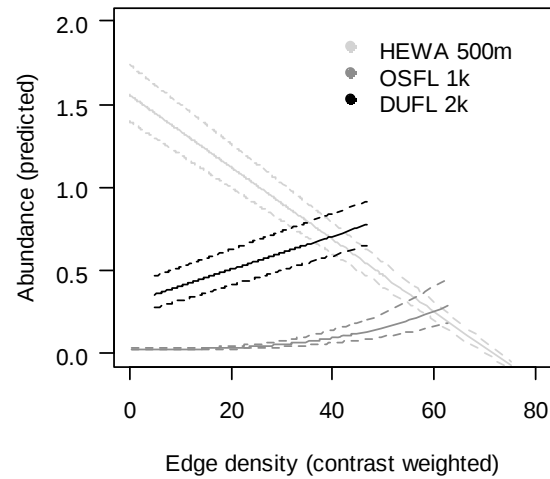
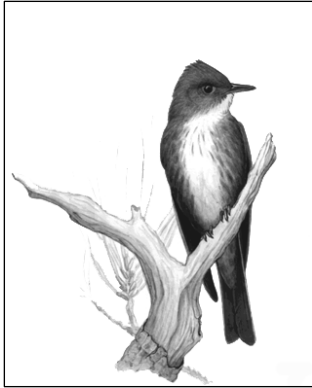
- Fuel treatments significantly influences abundance of most species investigated
- Prescribed fire positive, Mastication & Pc-thin negative
- Group selections mostly positive
- DFPZ's have mixed effects

Shaping Future Forests

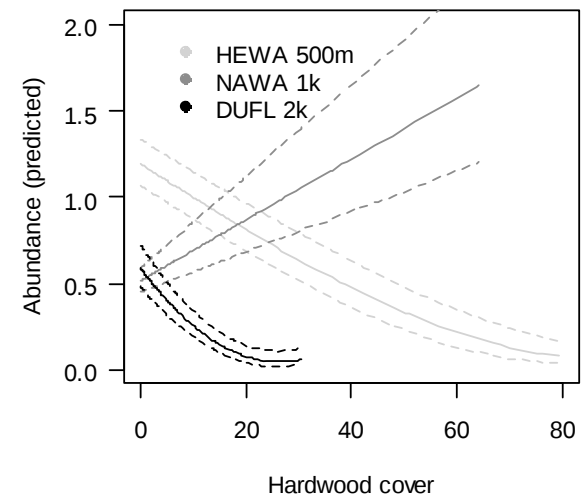
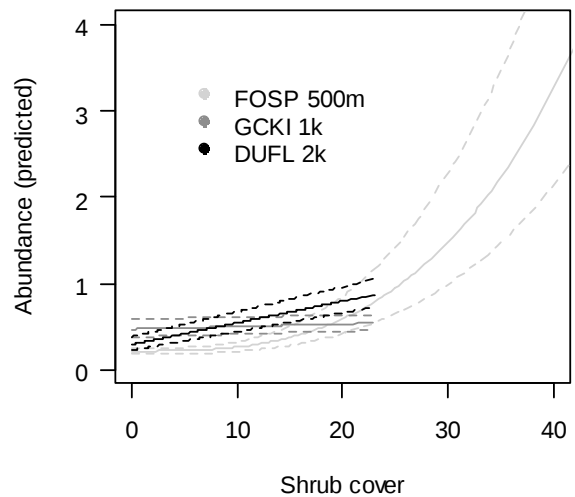
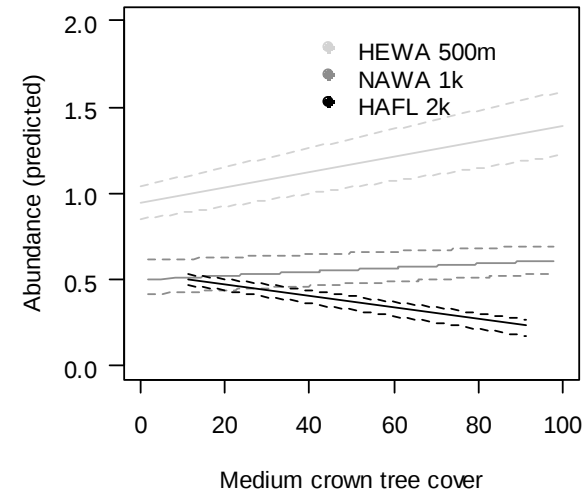
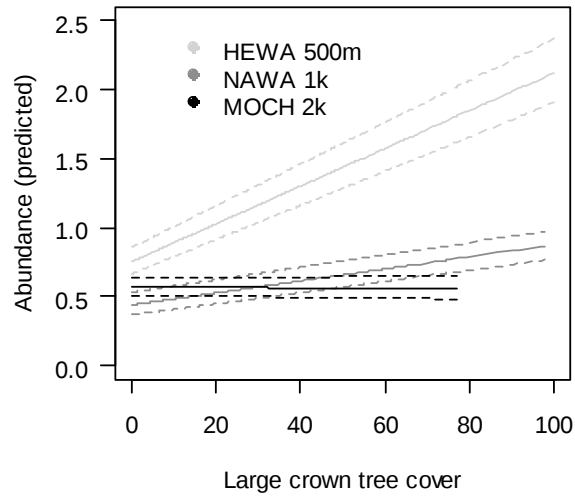


← Desired Condition →

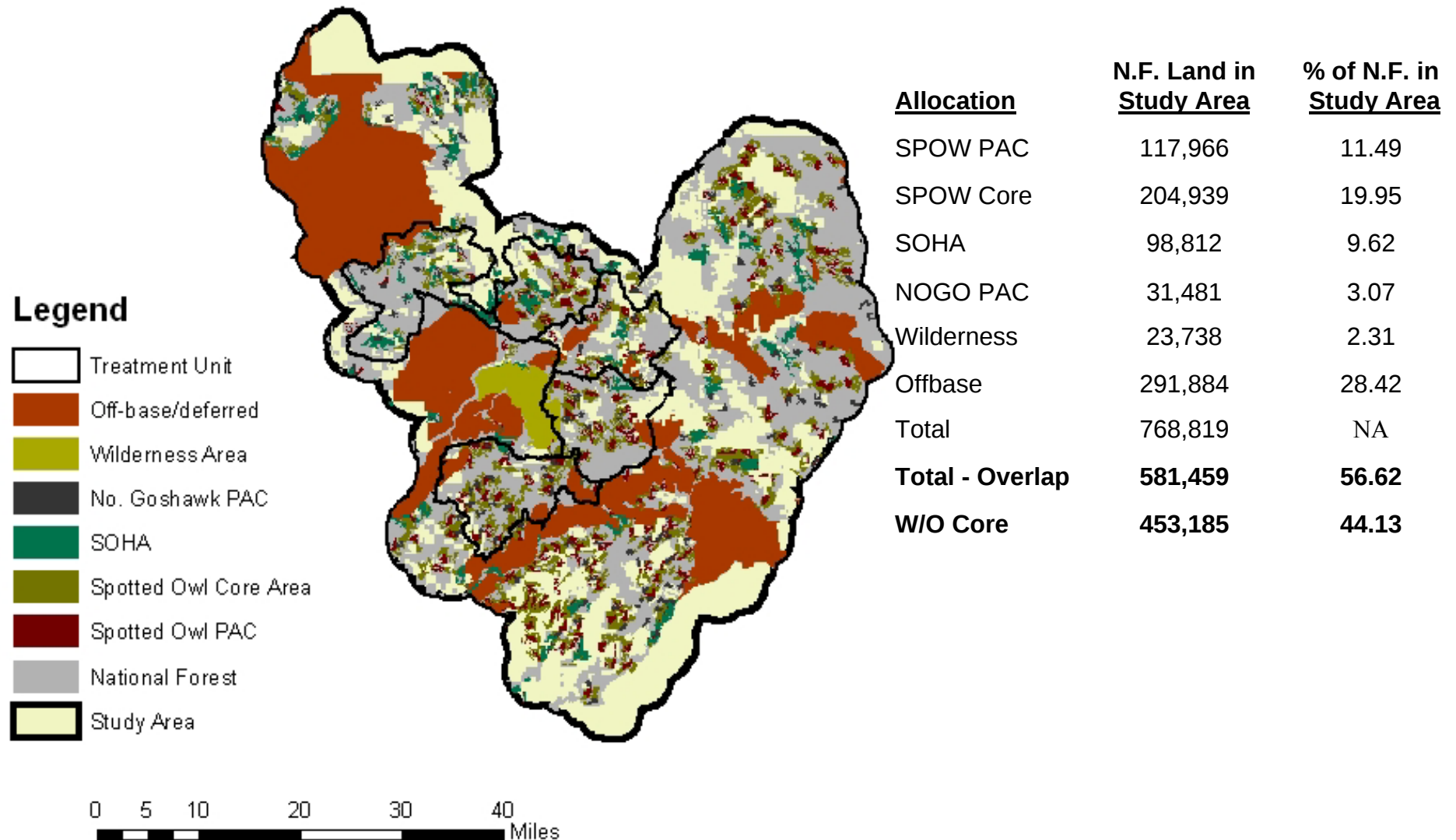
Landscape Configuration (from Howell & Burnett *In review*)



Landscape Cover Variables



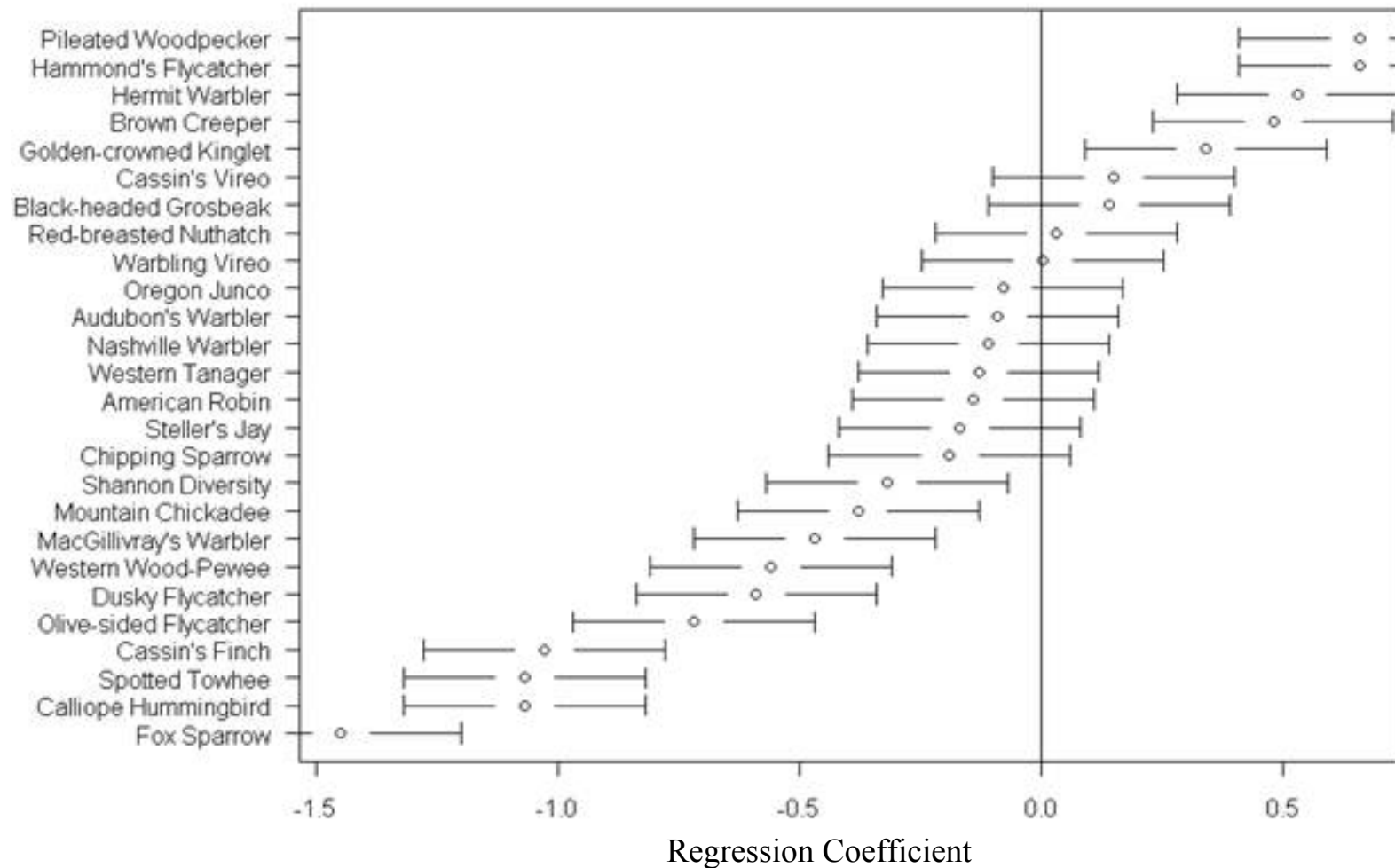
Land Allocations in the PLAS



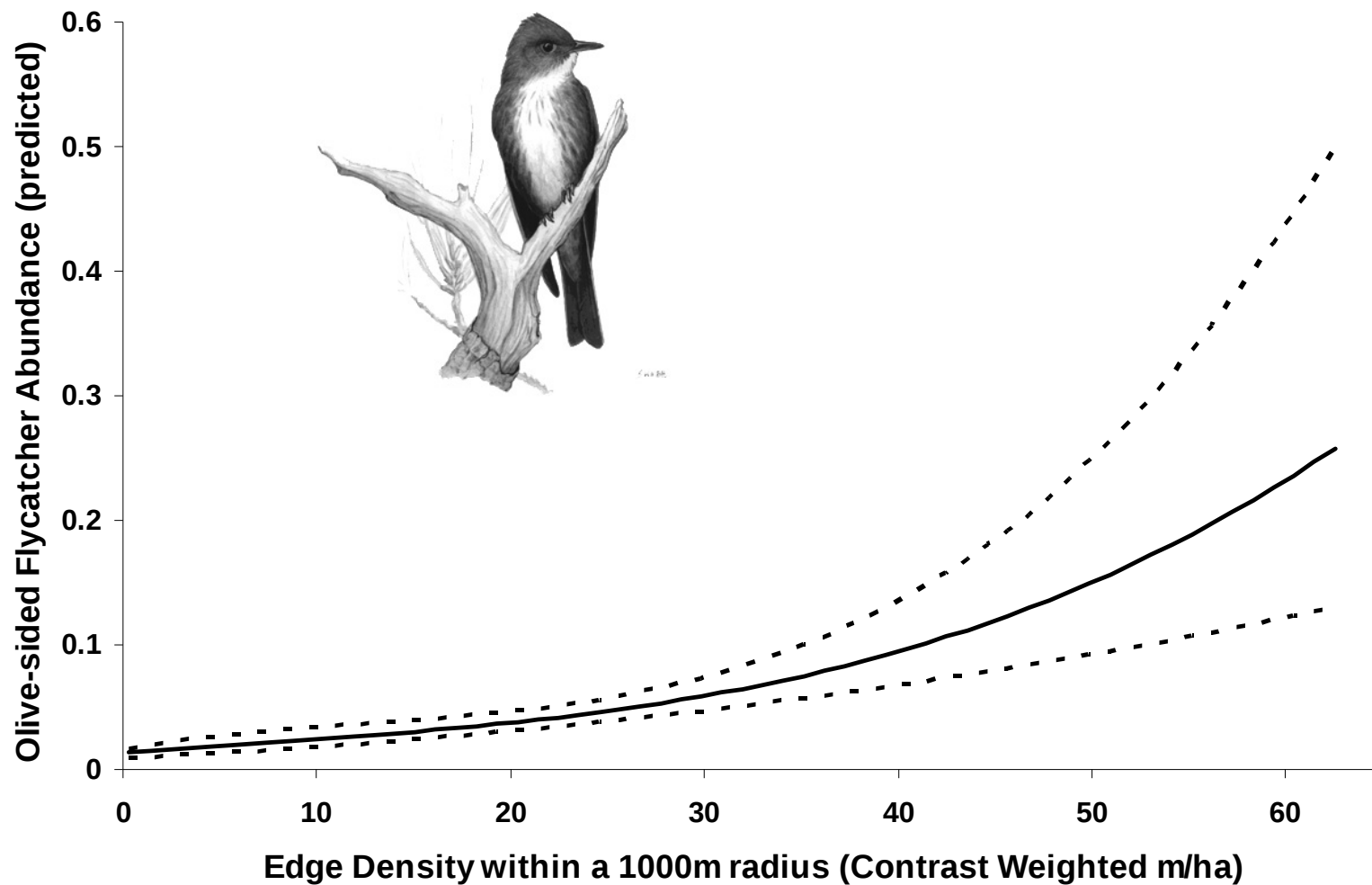
Landbirds in Spotted Owl Habitat (from Burnett et al. *in review*)

←Negative

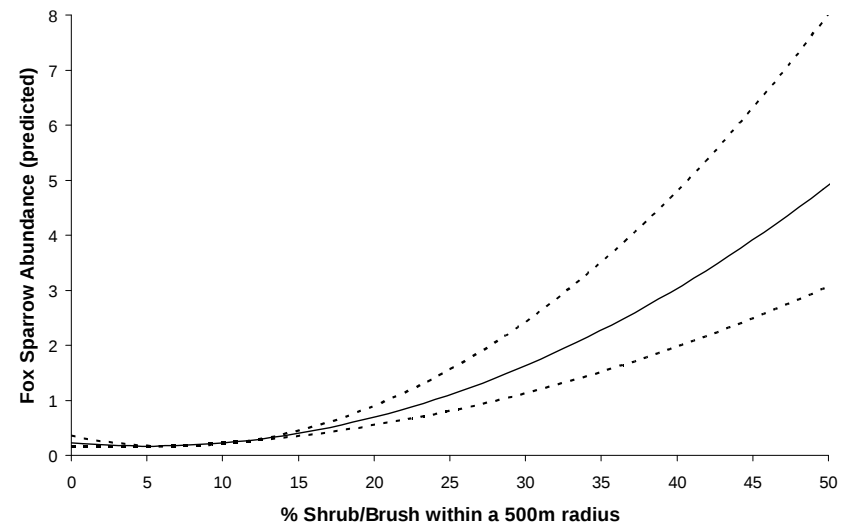
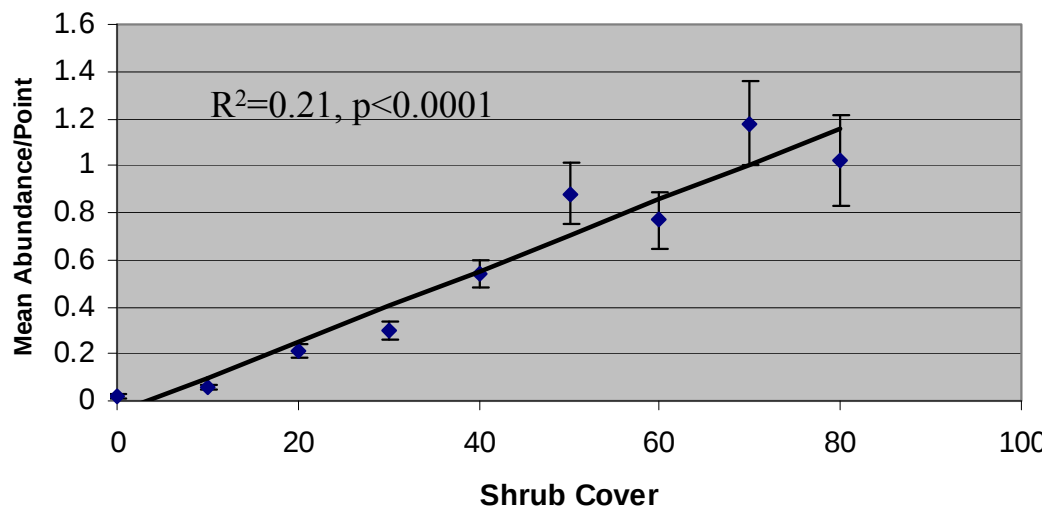
Positive→



Olive-sided Flycatcher and Edge Habitat

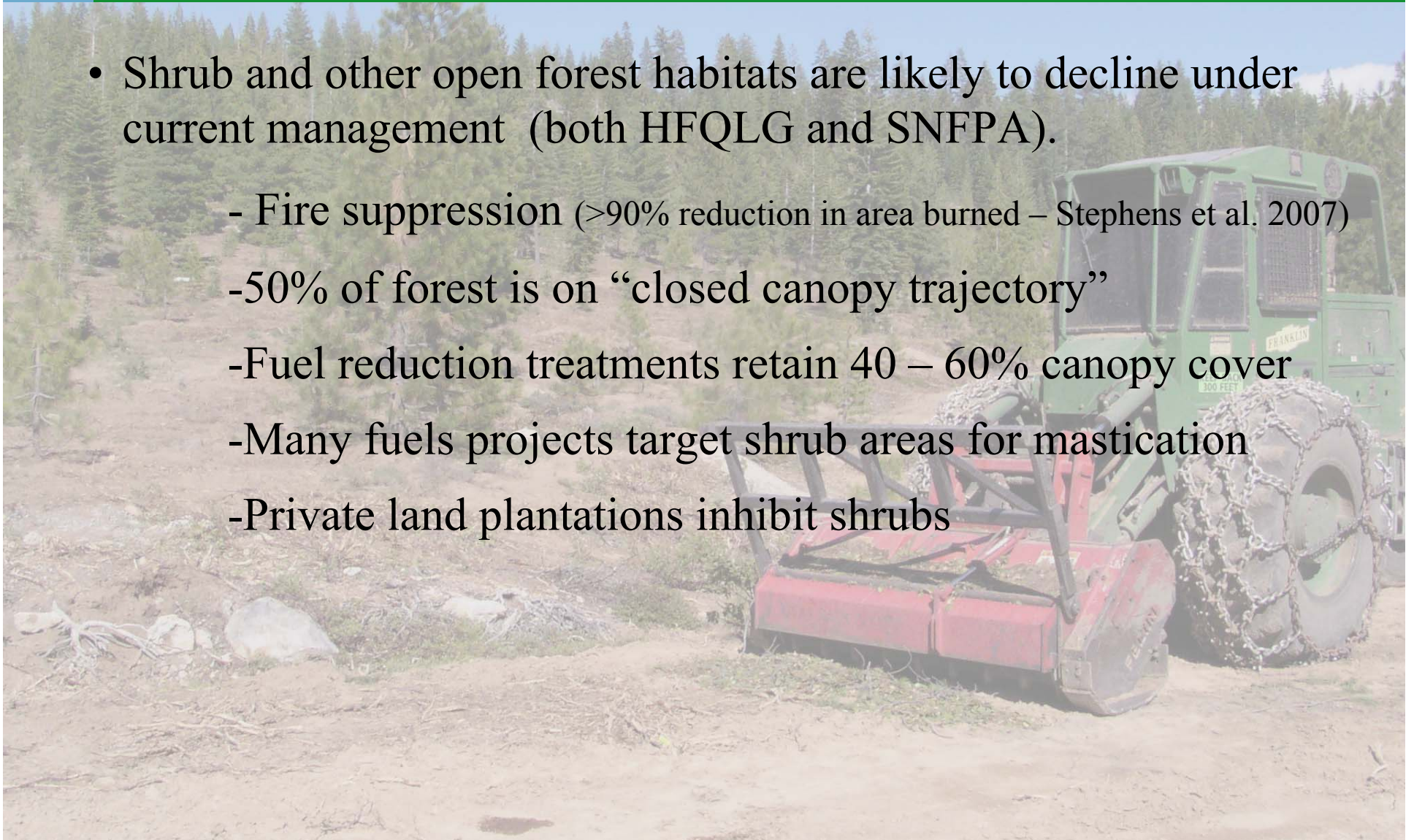


Fox Sparrow and Shrub Cover



Open Forest and Shrub Limiting Factors

- Shrub and other open forest habitats are likely to decline under current management (both HFQLG and SNFPA).
 - Fire suppression (>90% reduction in area burned – Stephens et al. 2007)
 - 50% of forest is on “closed canopy trajectory”
 - Fuel reduction treatments retain 40 – 60% canopy cover
 - Many fuels projects target shrub areas for mastication
 - Private land plantations inhibit shrubs



Conclusions

- **Balanced ecosystem approach is necessary to meet the needs of the full compliment of wildlife**
 - **Disturbance dependent species should be a priority along with late seral species**
 - **Integrate Local & Landscape scales and consider cumulative effects**
 - **Look to the past but manage for the future**
- 

Next Steps

- **Incorporate Vegetation Data into models (collect post-treatment data in Meadow Valley in 2009)**
- **Continue monitoring treated sites and subset of untreated in PLAS, Brown's Ravine, and ELRD**
- **Add more treated DFPZ's to monitoring in the LNF**
- **Incorporate post-fire habitat monitoring (Storrie, Moonlight, Cub)**
 - landbird abundance in post-fire habitats
 - cavity use

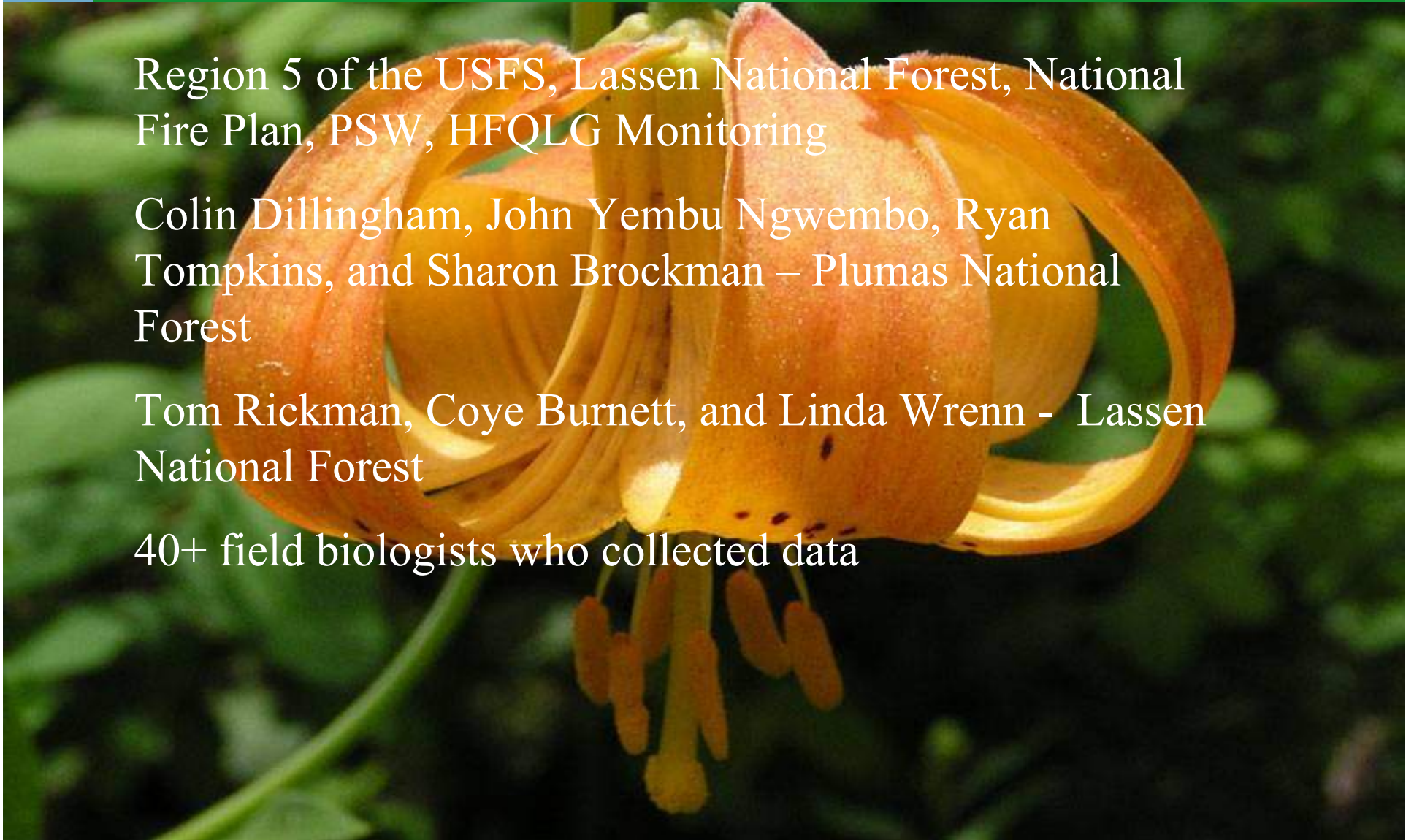
Acknowledgements

Region 5 of the USFS, Lassen National Forest, National Fire Plan, PSW, HFQLG Monitoring

Colin Dillingham, John Yembu Ngwembo, Ryan Tompkins, and Sharon Brockman – Plumas National Forest

Tom Rickman, Coye Burnett, and Linda Wrenn - Lassen National Forest

40+ field biologists who collected data



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