1 **Supplementary Figures and Tables**

2 **Title** Passive acoustic monitoring reveals the limited distribution of an indicator species, the

3 White-headed woodpecker (*Picoides albolarvatus*), in the northern Blue Mountains
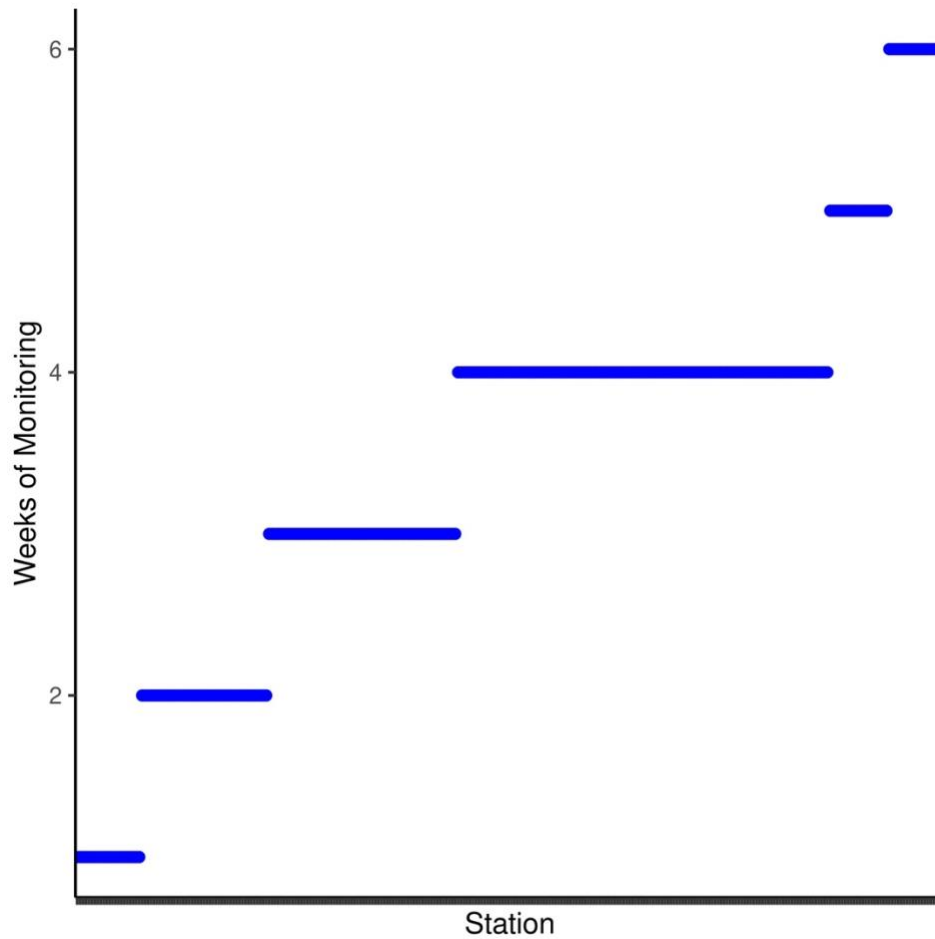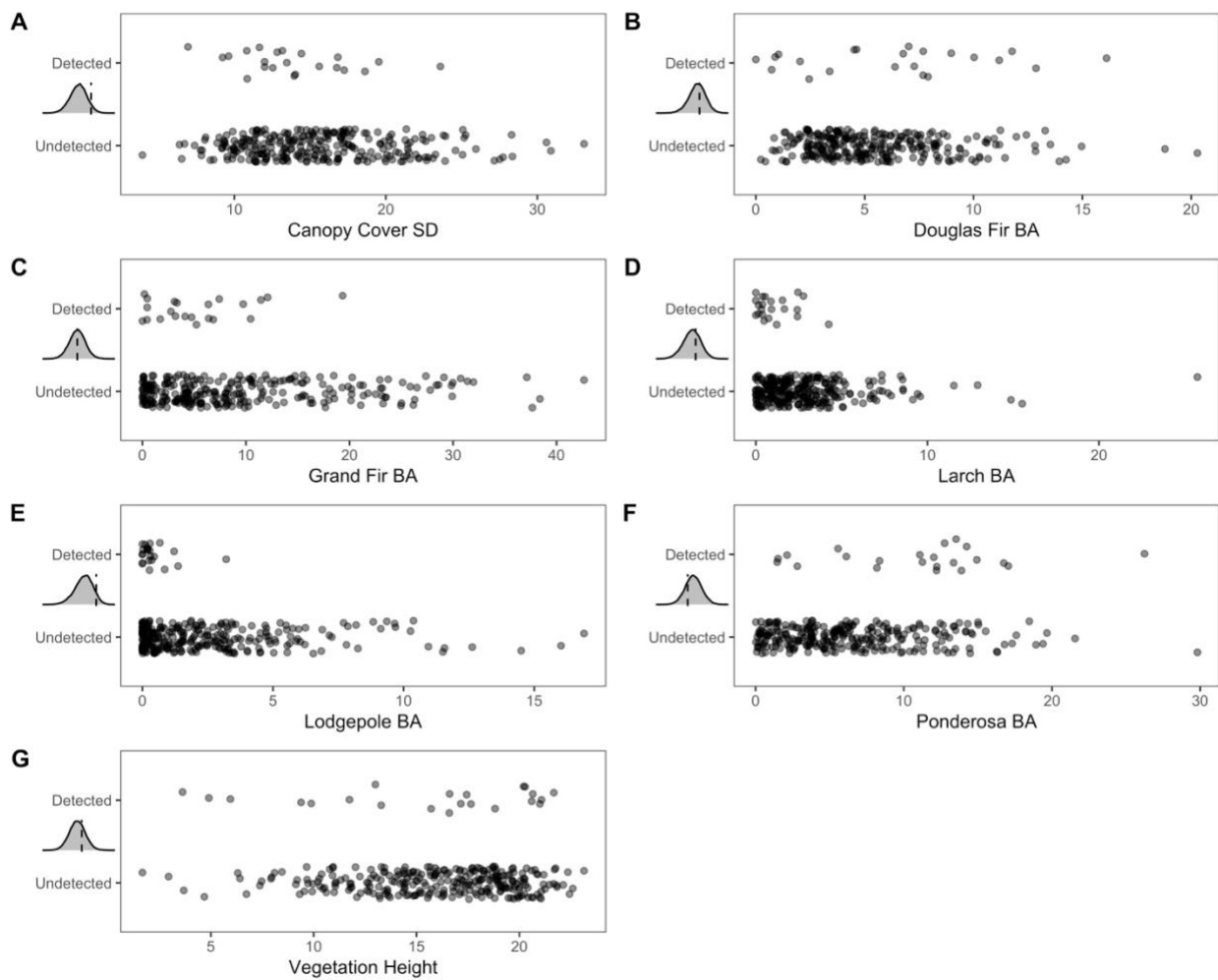
4 **Table of Contents**

9   **Figure A.1.** Weeks of monitoring for White-Headed Woodpeckers per station in the Umatilla and
10   Wallowa-Whitman National Forests. The majority of station were monitored for 4 weeks
11   (42.9%), followed by 3 weeks (21.8%), 2 weeks (14.6%), 1 week (7.5%), 5 weeks (6.8%), and 6
12   weeks (6.5%).

13

14 **Figure A.2.** White-headed Woodpecker occurrence and the observed relationships with
15 covariates considered in the global model. Within each graph, the top row of points are those
16 stations considered occupied by White-headed Woodpeckers while the bottom row are
17 unoccupied stations. Histograms show the posterior distribution of the slope estimates relative
18 to zero, indicated by the dotted line. See Supplementary Table 2 for a summary of the
19 associated model. Additional details related to covariates can be found in Table 1 and the
20 Methods section of the main text.

21

22 **Table A.1. Environmental covariate values and descriptions.** All variables were measured on a 30-m pixel resolution within 200
23 m radius, circular buffers centered on each station. Basal area was measured in m^2/ha. Covariate data were generated from the
24 2021 gradient nearest neighbor (GNN) data created by the Landscape Ecology, Modeling, Mapping & Analysis (LEMMA) research
25 group (Bell et al. 2024) and the LANDFIRE database (LANDFIRE 2016).

Covariate Name	Mean	SD	Min	Max	Description
Western Larch Basal Area	2.76	2.78	0	25.73	Basal area of Western Larch (*Larix occidentalis*) within each buffer
Douglas Fir Basal Area	5.53	3.22	0	20.28	Basal area of Douglas Fir (*Pseudotsuga menziesii*) within each buffer
Ponderosa Pine Basal Area	6.68	5.04	1.74	29.81	Basal area of Ponderosa Pine (*Pinus ponderosa*) within each buffer
Lodgepole Pine Basal Area	2.39	2.88	0	16.91	Basal area of Lodgepole Pine (*Pinus contorta*) within each buffer
Vegetation Height	15.91	4.07	1.67	23.14	Average height of all vegetation, measured in meters
Canopy Cover	45.89	14.62	3.72	77.66	Average percent canopy cover of all live trees
Canopy Cover SD	15.40	4.87	3.93	33.08	Average standard deviation in percent canopy cover of all live trees
Elevation	1416.65	175.26	990.28	1866.09	Average elevation of survey station, measured in meters above sea level

26

27 **Table A.2.** Global model summaries (means, standard deviations (SD), and upper/lower credible
28 intervals) showing detection and occupancy probability estimates for White-Headed
29 Woodpeckers on the Umatilla and Wallowa-Whitman National Forests, 2022 and 2023 breeding
30 seasons. Estimates are presented on a logit scale. Relationships between each covariate and
31 the occurrence data are displayed in Supplementary Figure 2.

Detection Model

Variable	Mean	SD	2.50%	97.50%
Intercept	0.195	0.758	-1.222	1.756
Monitoring Hours	-0.427	0.228	-0.882	0.007
Day of Year	-0.476	0.311	-1.072	0.139
Canopy Cover	-0.977	0.482	-1.970	-0.075
Elevation	0.167	0.405	-0.636	0.951
Year - 2023	0.713	0.814	-0.946	2.243

Occupancy Model

Variable	Mean	SD	2.50%	97.50%
Intercept	-4.843	0.750	-6.415	-3.469
Grand Fir BA	0.005	0.653	-1.292	1.293
Larch BA	-0.343	0.777	-1.942	1.116
Lodgepole Pine BA	-1.142	0.826	-2.900	0.335
Ponderosa Pine BA	0.350	0.507	-0.649	1.352
Douglas Fir BA	-0.130	0.485	-1.141	0.793
Canopy Cover SD	-0.720	0.477	-1.687	0.181
Average Vegetation Height	-0.312	0.557	-1.396	0.775
Random Effect of Hexagon	2.719	0.752	1.460	4.385

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