

## Supplementary Materials

### **Bird count detectability**

Detectability can vary with multiple observers (Sauer et al. 1994, Alldredge et al. 2007, McClure et al. 2015) and in relation to excessive background noise (Simons et al. 2007, Pacifici et al. 2008, McClure et al. 2015). To combat the effects of multiple observer bias, our study used a single point count observer. Though our average L50 sound levels were below and just above 45 dB(A), the approximate threshold beyond which impairs human ability to detect birds (Ortega and Francis 2012), we examined potential differences in the probability of bird detection between sign absent and sign present treatment blocks using package Distance (Miller 2016) in Program R. We built several models using the different key functions and modeling detection either as intercept-only or as a function of treatment. We then ranked and compared detection models using Akaike's information criterion (AIC) (Arnold 2010). We considered there to be an effect of treatment on detection if the factor for treatment was in a model within the top 98% of cumulative model weight (Burnham and Anderson 2003) and was not an uninformative parameter (Arnold 2010). Although a treatment model was indeed within 98% of the cumulative model weight, it was an uninformative parameter because the parameters in the AIC-best model were a subset of those in the treatment model and the 95% (and 85%) confidence intervals on the treatment coefficient overlapped zero (Arnold 2010). We therefore concluded there were no differences in detectability between treatment blocks and did not adjust observation counts (Table S5).



**Fig. S1.** Enforcement and educational signage used within the experimental road corridor during treatment blocks.

**Table S1.** Speed limit counts classified by traffic counter.

Speed (mph)	Signs Absent (n)	Signs Present (n)
5-14 mph	90	154
15-19 mph	68	547
20-24 mph	125	5,145
25-29 mph	433	17,871
30-34 mph	1,395	20,447
35-39 mph	5,956	21,564
40-44 mph	22,944	20,899
45-49 mph	46,199	14,897
50-54 mph	27,785	5,589
55-59 mph	7,796	1,469

60-64 mph	1,558	343
65-69 mph	303	77
70-74 mph	87	37
75-79 mph	24	17
80-99 mph	56	34
<b>Total</b>	<b>114,819</b>	<b>109,090</b>

**Table S2.** Results of Kruskal-Wallis statistical test for driving speed between treatment blocks.

Speed (mph)	n	Kruskal-Wallis chi-squared	df	p
5-24 mph	6,129	51.62	1	<0.001
25-49 mph	172,605	6.90	1	0.009
50-74 mph	45,044	37.73	1	<0.001
75+ mph	131	0.17	1	0.68

**Table S3.** Species detected during bird survey counts (<50 m from point count center).

Common Name	Scientific Name	Count (#)
Yellow Warbler	<i>Setophaga petechia</i>	317
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	159
Warbling Vireo	<i>Vireo gilvus</i>	123
Dusky Flycatcher	<i>Empidonax oberholseri</i>	116
Green-tailed Towhee	<i>Pipilo chlorurus</i>	62
Tree Swallow	<i>Tachycineta bicolor</i>	61
Pine Siskin	<i>Spinus pinus</i>	57
Song Sparrow	<i>Melospiza melodia</i>	55
Lazuli Bunting	<i>Passerina amoena</i>	41
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	41
American Robin	<i>Turdus migratorius</i>	37
Chipping Sparrow	<i>Spizella passerina</i>	34
Common Yellowthroat	<i>Geothlypis trichas</i>	33
Audubon's Warbler	<i>Setophaga coronata auduboni</i>	32
Cedar Waxwing	<i>Bombycilla cedrorum</i>	28
Willow Flycatcher	<i>Empidonax traillii</i>	23
Gray Catbird	<i>Dumetella carolinensis</i>	20
House Wren	<i>Troglodytes aedon</i>	19
Fox Sparrow	<i>Passerella iliaca</i>	17
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	16
Western Tanager	<i>Piranga ludoviciana</i>	15
Mountain Chickadee	<i>Poecile gambeli</i>	14
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	12
Calliope Hummingbird	<i>Selasphorus calliope</i>	10
Dark-eyed Junco	<i>Junco hyemalis</i>	10
Clark's Nutcracker	<i>Nucifraga columbiana</i>	6
Northern Flicker	<i>Colaptes auratus</i>	6

MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	5
American Goldfinch	<i>Spinus tristis</i>	4
Brown-headed Cowbird	<i>Molothrus ater</i>	4
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	3
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	3
Rufous Hummingbird	<i>Selasphorus rufus</i>	3
American White Pelican	<i>Pelecanus erythrorhynchos</i>	2
Brewer's Sparrow	<i>Spizella breweri</i>	2
Common Raven	<i>Corvus corax</i>	2
Downy Woodpecker	<i>Dryobates pubescens</i>	2
Hairy Woodpecker	<i>Dryobates villosus</i>	2
Swainson's Thrush	<i>Catharus ustulatus</i>	2
Bullock's Oriole	<i>Icterus bullockii</i>	1
Mountain Bluebird	<i>Sialia currucoides</i>	1
Red-tailed Hawk	<i>Buteo jamaicensis</i>	1
Townsend's Warbler	<i>Setophaga townsendi</i>	1
<b>Total</b>		<b>1,402</b>

**Table S4.** Generalized linear mixed model results for all species combined and for individual bird species with >100 observations. Models include daily-averaged L50 and Julian Date as scaled fixed effects and a random effect for site. The conditional variance ( $R^2_{GLMM(c)}$ ) is the variance explained by both fixed and random effects. \* $p < .05$ , \*\*\* $p < .001$

Scientific Name	n		Intercept	Daily-averaged L50 (dB(A)) (scaled)	Julian Date (scaled)	Variance (Random Effect)	$R^2_{GLMM(c)}$
All Species	212	$\beta$	1.86	-0.05	-0.21	0.09	0.45
		S.E.	0.10	0.06	0.03		
		p	<0.001***	0.32	<0.001***		
<i>Setophaga petechia</i>	212	$\beta$	-0.77	-0.04	-0.32	4.21	0.79
		S.E.	0.65	0.14	0.06		
		p	0.23	0.80	<0.001***		
<i>Zonotrichia leucophrys</i>	212	$\beta$	-0.45	-0.08	-0.07	0.34	0.27
		S.E.	0.20	0.14	0.08		
		p	0.02*	0.58	0.40		
<i>Empidonax oberholseri</i>	212	$\beta$	-0.81	-0.02	-0.21	0.37	0.26
		S.E.	0.22	0.16	0.10		
		p	<0.001***	0.88	0.03*		

<i>Vireo gilvus</i>	212	$\beta$	-0.84	-0.09	-0.45	0.34	0.31
		S.E.	0.22	0.18	0.10		
		p	<0.001***	0.59	<0.001***		

**Table S5.** AIC table for bird detectability models.

Model Key Function	Formula	AIC	$\Delta$ AIC	Relative Likelihood ( $\exp(-0.5*\Delta$ AIC))	$w_i$
Uniform with cosine adjustment terms of order 1, 2, 3	NA	10108.01	0.00	1.00	0.30
Uniform with cosine adjustment terms of order 1,2	NA	10108.74	0.73	0.69	0.21
Hazard-rate	~1	10108.94	0.94	0.63	0.19
Half-normal with cosine adjustment term of order 2	~1	10110.23	2.22	0.33	0.10
Half-normal	~1	10110.64	2.63	0.27	0.08
Hazard-rate	~Treatment	10110.68	2.67	0.26	0.08
Half-normal	~Treatment	10112.53	4.53	0.10	0.03
Cumulative Model Weight				3.28	