Appendix B. Supplementary results including CARW model tables for time dependent survival and model results for the effect of citizen scientists on detectability.

Table B1. Summary statistics for a simplified candidate model set that includes time dependent survival and its interaction with impervious surface for Carolina Wren in greater Washington, D.C., USA.

Model	k	AICc	ΔAICc	w	−2LogLik
ϕ(time), p(.)	13	735.91	0	0.411	709.29
ϕ(IMP * time), p(.)	25	737.58	1.67	0.177	685.33
ϕ(IMP + time), p(.)	14	737.75	1.84	0.163	709.04
ϕ(IMP + IMP^2 + time), p(.)	15	738.31	2.40	0.123	707.49
ϕ(IMP * time + IMP^2), p(.)	26	738.70	2.79	0.101	684.27
ϕ(.), p(.)	2	742.74	6.83	0.013	738.72
ϕ(IMP), p(.)	3	744.48	8.57	0.005	738.44
ϕ(IMP + IMP^2), p(.)	4	745.36	9.45	0.003	737.30

B.1 Detectability and Citizen Scientists

Active participation of citizen scientists had a strong influence on detectability estimates across all of our species (Table B2). Of the 925 birds that were reencountered over the course of this study, over 65% were reencountered at sites where citizen scientists report resight data ("active" sites). Substantial empirical support was found for models that included citizen scientist participation within the detectability parameter across species (with the exception of Carolina Wren, for which the effect of participation on detectability could not be evaluated due to model instability (Table B2). For each of these species, the probability of detecting a marked individual was higher from sites that actively reported resights, with American Robin and Northern Cardinal exhibiting substantially higher detection probabilities (Fig. B1).

There was also substantial empirical support for models that included the interaction term between citizen scientist participation and sex on detectability estimates for four of our seven species. Active NN participation more positively influenced the probability of detecting female than male American Robin ($\bar{\beta} = 0.70 \pm 1.14$) and Northern Cardinal ($\bar{\beta} = 0.42 \pm 0.56$) and had a greater effect on the detection of male Gray Catbird ($\bar{\beta} = -0.28 \pm 0.59$) and Song Sparrow ($\bar{\beta} = 0.26 \pm 0.72$).

Table B2. Beta estimates for detectability averaged across models by model weight. Participation values represent the effect of inactive participation sites relative to sites in which citizen scientists actively report data.

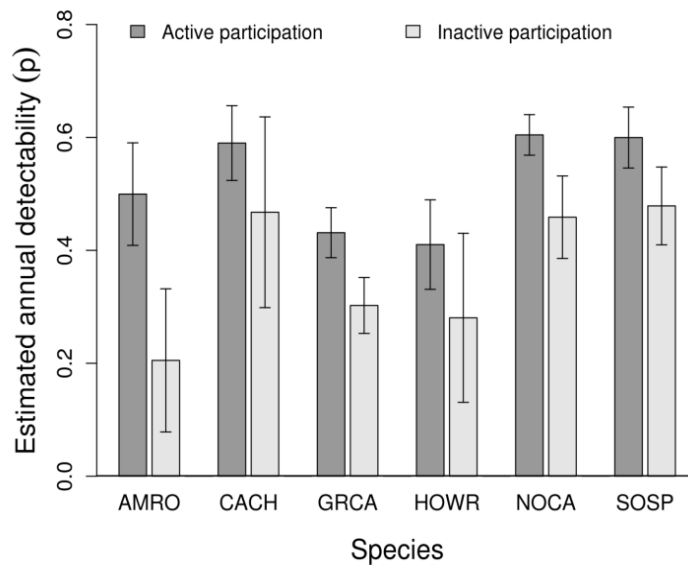|	Participation, p	
Species	$\bar{\beta}$	$\overline{SE}$
AMRO	-1.78	0.71
CACH	-0.53	0.64
CARW	na	na
GRCA	-0.49	0.33
HOWR	-0.79	0.66
NOCA	-0.72	0.36
SOSP	-0.48	0.41

Fig. B1. Annual detection probabilities and survivorship estimates for sites in which participants report resighting data ("Active"), and those in which only technicians conduct resighting. The effects of participation on the detectability of the Carolina wren were unidentifiable.