Appendix

METHODS

Details about identifying units as HQH or LQH

We surveyed points within seven predicted HQH units (mean = 4.1 surveys per point, range = 2–6) and points within six predicted LQH units (mean = 5.7 surveys per point, range = 5–6). Surveys failed to detect a focal species at 5 of 6 predicted LQH units that we, therefore, categorized as LQH for the remainder of the study. We categorized the one unit where our LQH prediction was wrong (a focal species was detected) as HQH and deemed it appropriate for that category because of the perennial, herbaceous emergent vegetation in part of the unit. We detected ≥1 individuals of a focal species at six of the seven predicted HQH units surveyed and so categorized those six units as HQH for the remainder of the study. We categorized the one unit where our HQH prediction was wrong (no focal species were detected) as LQH, though did not survey there in 2022 due to its apparent similarity to habitat at HQH units.

We also identified two HQH units that were not formally surveyed during the control year. These two HQH units, which were not surveyed in 2021, were opportunistically identified based in one case on repeatedly hearing a focal species in a unit (which we considered HQH) while traveling between survey points and in the other case on our observation that a unit (which we considered 'presumed HQH') appeared vegetatively similar to HQH units. We ultimately excluded the presumed HQH unit from analysis, after overnight playback occurred there, because no focal species were detected in that unit during the experimental year. During the experimental year, we also monitored two sites in the HQH playback zone that we presumed to be LQH (seasonally inundated agricultural fields), but from which no audio was played back. No focal species were detected at either unit, though we excluded these units from analysis because unlike other LQH units they did not experience moist-soil management

Details about audio broadcast overnight

The recording that was broadcast overnight included four, 15-minute subsequences consisting of different call types from unique rail individuals downloaded from xeno-canto (www.xeno-canto.org) with periods of silence meant to reduce habituation and randomize which segment would be initially encountered by migrating rails. Generally, there was one individual vocalizing at a time in the recording, though occasionally two or more individuals were simultaneously calling. Each subsequence included the following segments which were each separated by 1 minute of silence: 1 minute of Yellow Rail ('kik-kik-kik…') calls, 1 minute of Sora ('whinny' and occasional 'per-weep') calls, 1 minute of Virginia Rail ('kik-kik' and 'grunt') calls, 1 minute of King Rail ('kek' and 'grunt') calls, 1 minute of Sora and Virginia Rail calls, and 5 minutes of silence. All calls within a particular segment originated from the same location, though between segments locations of origin were chosen from across the breeding range of focal species. No Black Rail calls were broadcast due to their federally threatened status. We confirmed that maximum decibel (dB) readings immediately outside of the plastic boxes containing the speaker consistently ranged from 80 to 99, though the Yellow Rail section tended to be quieter (~75 dB).

Field tests demonstrated that the broadcast was audible to us at the boundaries of point count circles (125 m from playback station).

Placement of survey points

Although our 125-m radii for in-person surveys included adjacent units, ~95% of focal species detections occurred within the units where surveys took place. We assumed that individuals detected at the edge of adjacent units also used the unit in which surveys occurred.

A note about survey periods

Periods used in our study differ from those stipulated by the SNAMBM protocol (Conway 2011) because our goal was to begin surveys sufficiently early to establish arrival dates for our focal species.

Figure A1. An audio playback station used to broadcast rail calls overnight.

Table A1. Analyses completed, using linear mixed models, at three spatiotemporal scales that tested for differences between the year when playback occurred and the year it did not as well as effects of proximity to overnight playback regarding rail abundance. Experimental (E) and control (C) treatments varied based upon the associated scale, as described in the summary column. Comp. = comparison. Rel = relative. Abund. = abundance. HQH = higher-quality habitat, LQH = lower-quality habitat.

Spatiotemporal Scale	Predictor	Response(s)	Summary
Within-year (2022), **within-unit**	E vs. C	Rel. water depth (cm), Rel. herb. cover (%), Rel. rail abund. (E minus C for each)	Comp. of water depth, herbaceous emerg. veg. cover, and rail abund. between E and C within units in 2022
"	Relative water depth (cm)	Relative rail abund.	Regression. Did rel. water depth predict rel. rail abund. within units?
"	Relative herb. cover	Relative rail abund.	Regression. Did relative herbaceous veg. cover predict rel. rail abund. within units?
"	Habitat	Relative rail abund.	Comp. of rel. rail abund. between HQH and LQH units
"	Period	Relative rail abund.	Comp. of rel. rail abund. between three survey periods
Within-year (2022), **between-unit**	Habitat	Water depth (cm), Herb. cover (%)	Comp. of water depth and herbaceous veg. cover between HQH and LQH units
"	Habitat in E	Rail abundance	Comp. of rail abund. between HQH, E and LQH, E units
	E in LQH vs C in HQH	Rail abundance	Comp. of rail abundance between HQH, C and LQH, E units
"	E vs C in HQH	Water depth (cm), Herb. cover (%), Rail abundance	Comp. of water depth, herb. veg. cover, and rail abund. between E and C units in HQH
"	E vs. C	Rail abundance	Comp. of rail abundance between E and C units
Between-year (2022: E, 2021: C), **within-unit**	E vs. C	Rel. water depth (cm), Relative rail abund. (E minus C for each)	Comp. of water depth and rail abund. between 2022 (E) and 2021 (C) within units.
"	Relative water depth (cm)	Relative rail abundance	Regression. Did relative water depth predict rel. rail abund. within units?
"	Habitat	Relative rail abundance	Comp. of rel. rail abund. between HQH and LQH units
"	Period	Relative rail abundance	Comp. of rel. rail abund. between three survey periods
"	Habitat* Period	Relative rail abundance	Test for interaction between habitat category and period regarding rel. rail abund. to confirm trend seen in plot

RESULTS

Details about King Rail observation

On 1 June, an eBird contributor reported a King Rail ~1 km away from where we previously detected a King Rail, in the HQH unit immediately to the south. The ARU in this HQH unit was malfunctioning at the time. A King Rail in this unit was later identified photographically by several eBirders and a copulation event was reported second-hand. However, we only detected one King Rail in that HQH unit, immediately after a survey there on 6 June, and no nest was found during a search on 1 July. Reports of a King Rail in this unit continued to be contributed on eBird until 4 July 2022.

Table A2. Overview of linear mixed model results at the within-year, within-unit spatiotemporal scale which is relevant to our determination of how proximity to overnight playback affected rail abundance. Mean difference was calculated by E (experimental/playback) – C (control). Standard error is in parentheses. S.F. = singular fit. HQH = higher-quality habitat, LQH = lower-quality habitat.

Predictor	Response(s)	Mean Difference	β	t, df	F[df]	P
"E vs. C"	Rel. water depth (cm),	-1.7 (3.3)	-	-0.5, 6	-	0.62
	Rel. herb. cover (%),	1.2 (1.7)	-	0.7, 6	-	0.52
	Rel. rail abundance	0.1 (0.4)	-	0.4, 6	-	0.70
"Relative water depth (cm)"	Rel. rail abundance	-	S.F.	S.F.	-	S.F.
"Rel. herb. cover (%)"	Rel. rail abundance	-	0.01 (0.1)	0.2, 18.2	-	0.83
"Habitat"	Rel. rail abund. LQH	-0.3 (0.4)	-	1.4, 5	-	0.23
	Rel. rail abund. HQH	0.7 (0.5)				
"Period"	Relative rail abund.	-	-	-	0.7[2, 12]	0.53

Table A3. Overview of linear mixed model results at the within-year, between-unit spatiotemporal scale which is relevant to our determination of how proximity to overnight playback affected rail abundance. Standard error is in parentheses. S.F. = singular fit. Significant *P* values bolded. E = experimental/playback, C = control, HQH = higher-quality habitat, LQH = lower-quality habitat.

Predictor	Response(s)	HQH Mean	LQH Mean	E Mean	C Mean	*t*, df	*P*
"Habitat"	Wat. depth (cm), Herb. cover (%),	30.1 (4.1) 21.1 (2.6)	5.4 (5.1) 15.9 (3.2)	-	-	3.8, 8 1.3, 8	**0.01** 0.24
"Habitat in E"	Rail abundance	2.6 (0.7)	0.4 (0.6)	-	-	2.5, 5	**0.06**
"E, LQH vs C, HQH"	Rail abundance	-	-	0.4 (0.3)	1.1 (0.3)	1.7, 5	0.16
"E vs. C in HQH"	Wat. depth (cm), Herb. cover (%), Rail abundance	-	-	28.2 (7.9) 21.4 (3.5) 2.6 (0.8)	32.1 (7.9) 20.8 (3.5) 1.1 (0.8)	0.8, 4 0.1, 4 1.4, 4	0.75 0.92 0.24
"E vs. C"	Rail abundance	-	-	1.3 (0.5)	0.6 (0.6)	0.9, 10	0.41

Table A4. Overview of linear mixed model results at the between-year, within-unit spatiotemporal scale which is relevant to our determination of how rail abundance varied between the year when overnight playback occurred compared to the year it did not. Mean difference was calculated by E (experimental/playback) – C (control). Standard error is in parentheses. S.F. = singular fit. Significant *P* values bolded. HQH = higher-quality habitat, LQH = lower-quality habitat.

Predictor	Response	Mean Difference	*B*	*t*, df	*F*[df]	*P*
E vs. C	Rel. water depth (cm), Rel. rail abund.	5.5 (2.2) 0.9 (0.4)	- -	2.5, 6 2.3, 6	- -	**0.05** **0.07**
Rel. water depth (cm)	Relative rail abund.	-	0.03 (0.03)	0.6, 15.9	-	0.53
Habitat	Relative rail abund.	S.F.	-	S.F.	-	S.F.
Period	Relative rail abund.	-	-	-	4.5[2, 12]	**0.04**
Habitat* Period	Relative rail abund.	-	-	-	2.9[2, 10]	**0.1**