

occupy areas of similar size on islands at Isle Royale and on the mainland in Maine (Table 2). Although these data are consistent with the hypothesis that certain species experience competitive release on islands at Isle Royale, they may also reflect the use of multiple islands by breeding males. Concurrent use of several islands would cause underestimation of area requirements, and might create the appearance of competitive release. Thus, studies of competitive release on archipelagoes of very small islands should include detailed observations of marked birds to determine individual patterns of island use.

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Avoidance of acoustic interference by Ovenbirds.—Two birds singing at the same time may mask each others' signals. In order to have their signals heard, birds should actively avoid both intraspecific and interspecific interference through temporal changes in the delivery of advertisement songs (Ficken et al., *Science* 183:762–763, 1974; Wasserman, *Anim. Behav.* 25:949–952, 1977), although experimental evidence is scarce (Schroeder and Wiley, *Auk* 100:414–423, 1983). Here, we report on the use of playbacks to investigate whether Ovenbirds (*Seiurus aurocapillus*) actively avoid intraspecific acoustic overlap. Lein (*Wilson Bull.* 93:21–41, 1981) has previously suggested that intraspecific avoidance occurs in this species.

The study site, at the University of Wisconsin–Milwaukee Field Station, Saukville, Ozaukee County, Wisconsin, was in an original growth, upland beech-maple forest. The playback tape consisted of 50 Ovenbird songs played at randomly determined intervals (6–48 sec) over a 12-min period. The response of the Ovenbirds was recorded with a Sennheiser MKH 104 omnidirectional condenser microphone connected to a Nagra III tape recorder placed 3 m from the speaker and 1.5 m off the ground. Recordings were made on five days (one experiment per day, with a different Ovenbird each day) between 15 June and 2 July 1968. All five Ovenbirds were color-banded. The Ovenbirds were in the nestling period of the nesting cycle during the study.

To determine the relative timing of songs, the tapes were analyzed using a Bruel and Kjaer 2305 graphic level recorder with a 2000 Hz high pass filter. The length of each song and the interval between songs were then measured. The predicted number of Ovenbird songs begun during a stimulus song is:

$$F = p(s)f$$

where f is the total number of nonstimulus songs and $p(s)$ is the portion of recording time during which the stimulus tape was playing (Ficken et al. 1974). For this study $p(s)$ equals 0.135.

A replicated goodness of fit test (G -statistic) was used for the statistical analysis (Sokal and Rohlf, *Biometry*, W. H. Freeman, San Francisco, California, 1981). This test permitted comparison of observed and expected values for each individual replicate as well as for the pooled results. In addition, a test of the heterogeneity of the ratios of the replicates was performed.

TABLE 1
OBSERVED AND EXPECTED NUMBERS OF OVERLAPS

Individual	Total number of songs	Observed overlaps	Expected overlaps	G	P
1	62	3	8.3	5.001	<0.05
2	66	4	8.9	3.850	<0.05
3	52	1	7.0	8.875	<0.005
4	60	1	8.1	10.946	<0.001
5	11	1	1.5	0.215	>0.05
Tests		df		G	P
Pooled		1		25.760	<0.001
Heterogeneity		4		3.094	>0.05
Total		5		28.854	<0.001

Ovenbirds should rarely mask stimulus songs if they are avoiding interference. During 251 songs the Ovenbirds overlapped the stimulus song only 10 times. The observed number of overlaps was significantly less than the expected number for the pooled sample and for four of the five replicates (Table 1). The test of heterogeneity was not significant, indicating there was little variation among individuals in overlap avoidance.

One way for Ovenbirds to avoid song interference would be to sing during the other individual's refractory period (the silent period following a song). In support of this hypothesis a greater percentage of Ovenbird song occurred during the first tenth of the silent interval between stimulus songs than would be predicted by chance for four of the replicates and for the pooled sample (Table 2). Once again there was little variation among individuals.

Experimental evidence from this study indicates Ovenbirds avoid intraspecific acoustic interference. Schroeder and Wiley (1983) also indicated male Tufted Titmice (*Parus bicolor*)

TABLE 2
PERCENT OF SONGS OCCURRING IN THE FIRST TENTH OF THE SILENT PERIOD BETWEEN STIMULUS SONGS

Individual	Observed	Expected	G	P
1	33.3%	10.0%	14.490	<0.001
2	34.4%	10.0%	13.899	<0.001
3	15.4%	10.0%	0.732	>0.05
4	34.4%	10.0%	13.899	<0.001
5	66.7%	10.0%	11.204	<0.001
Tests		df	G	P
Pooled		1	47.252	<0.001
Heterogeneity		4	6.971	>0.05
Total		5	54.223	<0.001

seldom overlapped songs, especially during playback experiments, although they provided no actual data or results of statistical tests. In addition, Wasserman's (1978) and Todt's (Z. Tierpsychol. 57:73–93, 1981) descriptive studies show that White-throated Sparrows (*Zonotrichia albicollis*) and European Blackbirds (*Turdus merula*) avoid intraspecific masking. Ovenbirds at least partially avoid masking by singing immediately after hearing conspecifics. This response could be the result of direct selection for overlap avoidance or the result of individuals answering the stimulus of a singing conspecific. Unlike the results Hultsch and Todt (Behav. Ecol. Sociobiol. 11:253–260, 1982) obtained for Nightingales (*Luscinia megarhynchos*), there was no evidence for individual variation among Ovenbirds in the tendency to avoid overlap. These results demonstrate the influence that singing conspecifics may have on the temporal patterning of song.

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Gila Woodpecker stores acorns.—The Gila Woodpecker (*Melanerpes uropygialis*) has not been observed to store food, although close relatives, such as the Red-bellied Woodpecker (*M. carolinus*), are known to do so (Roberts, *Am. Nat.* 114:418–438, 1979; Short, Woodpeckers of the World, Delaware Mus. Nat. Hist. Monogr., 4, 1982). On 26 December 1984, near the main library at the University of Arizona, Tucson, Arizona, we watched a male Gila Woodpecker picking acorns from oaks (*Quercus* sp.), flying with them to a group of palm trees (*Washingtonia* sp., *Phoenix* sp.) about 75 m away, and storing them among the fibers at the bases of cut and broken fronds. We watched the bird store about eight acorns in 30 min. The storing behavior of this bird was identical to that of Acorn Woodpeckers (*M. formicivorus*) when the latter are not storing in prepared holes (MacRoberts and MacRoberts, *Ornithol. Monogr.* 21, 1976). A number of oak seedlings had sprouted in the “storage palms” indicating that acorns had been stored there in previous years.—M. H. MACROBERTS AND B. R. MACROBERTS, *740 Columbia, Shreveport, Louisiana 71104*. *Accepted 31 May 1985.*

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Brown Noddy attacks mouse.—Predation upon live mammals is not common in terns (Sterninae), and the only dietary items reported previously for the Brown Noddy (*Anous stolidus*) are fish and marine invertebrates (Serventy et al., *The Handbook of Australian Sea-Birds*, A. H. and A. W. Reed, Sydney, Australia, 1971; Frith, *The Complete Book of Australian Birds*, Reader's Digest Services, Sydney, Australia, 1976; Brown, *J. Anim. Ecol.* 44:731–742, 1975; Ashmole and Ashmole, *Peabody Mus. Nat. Hist. Bull.* 24:1–131, 1967).

On 20 June 1981, during a vegetation survey of Long Island, a coral cay on Chesterfield