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LINES TO SELECTIVELY REPEL HOUSE SPARROWS FROM BACKYARD FEEDERS

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Abstract: House sparrow (*Passer domesticus*) flocks are often disliked at backyard feeding stations because they use space and food intended for other species. Monofilament lines, spaced 30 or 60 cm apart, have been shown to repel house sparrows from certain feeders, but responses of many backyard bird species to lines are unknown. Three experiments were conducted at 2 sites during winter and repeated in spring using feeders with and without lines. Four pole-mounted feeders were used at each site, with an 80-cm-diameter tray on the ground below each feeder. Two feeders at each site were controls (C) without lines and 2 were treated with monofilament lines (L) spaced 60 cm apart. Lines were stretched between the tray and an 80 cm diameter wire hoop attached to the lid of the hopper. Food in hoppers was always available but food in trays was either limited (-) or unlimited (+). Results of morning bird counts with sites combined indicate that house sparrows and blue jays (*Cyanocitta cristata*) consistently avoided feeders with lines regardless of ground food availability ($P < 0.0150$). When ground food was unlimited on control trays (C+L+ and C+L- experiments), common grackle (*Quiscalus quiscula*) counts were always

higher on control feeders ($P < 0.0661$). When ground food was limited at controls (C-L+), grackles showed no preference in winter ($P = 0.7783$), indicating influence by both lines and food availability, but were higher on C- in spring ($P = 0.0002$). Reasons for this seasonal difference in grackle behavior remain unclear. Northern cardinals (*Cardinalis cardinalis*), when offered C+L+, were higher on C+ in spring ($P = 0.0558$) but not in winter ($P = 0.2557$), apparently because of large winter grackle flocks that preferred controls (grackles: 4849 in winter, 546 in spring). When offered C-L+, cardinals were higher on C- in winter ($P = 0.0226$) (grackles: 651) but showed no preference in spring ($P = 0.4028$) (grackles: 3636), again apparently responding to lines and grackles. When offered C+L-, cardinals preferred controls in winter ($P = 0.0029$) but lines in spring ($P = 0.0015$), apparently preferring L- over large grackle flocks (grackles winter: 209; spring: 6249). Overall, grackles and cardinals generally preferred feeders without lines, but grackles appeared to be influenced by ground food availability, and cardinals by large grackle flocks. Harris sparrows (*Zonotrichia querula*) and dark-eyed juncos (*Junco hye-*

malis) showed no preference when offered C+L+ in the spring ($P > 0.6978$). During winter, however, the 2 sites differed in that these two species showed no preference at the garden site ($P > 0.3000$) but a preference for feeders with lines at the house site ($P < 0.0043$). As with the cardinals, this difference appears related to high grackle numbers at the house site (grackles: house 4654; garden 195). In the C+L- and C-L+ experiments, Harris sparrows and juncos preferred feeders with unlimited food in the trays ($P < 0.0568$), except during the spring C+L- experiment ($P > 0.4505$) where large numbers of grackles may have influenced feeder preference. European starlings (*Sturnus vulgaris*) showed no treatment preference in any of the 6 experiments

($P > 0.2171$). Brown-headed cowbirds (*Molothrus ater*), black-capped chickadees (*Parus atricapillus*), and morning doves (*Zenaida macroura*) were not repelled by lines, and occasionally preferred feeders with lines, apparently due to food availability, species interactions, or both. Observations of American goldfinches (*Carduelis tristis*), house finches (*Carpodacus mexicanus*), and downy woodpeckers (*Picoides pubescens*) were too few for reliable analysis (<100 counts for most experiments), but there was no evidence that these species were repelled by lines. The techniques used have potential for selectively repelling house sparrows from backyard feeding stations, but further work is needed on options for manipulating impacts on blue jays, northern cardinals, and common grackles.

