

A NEW PUBLICATION ON migratory shore and upland game bird (MSUGB) management is available, free of charge, to wildlife managers and researchers. The International Association of Fish and Wildlife Agencies has recently published *Migratory Shore and Upland Game Bird Management in North America*. This book is an updated version of their 1977 publication entitled, *Management of Migratory Shore and Upland Game Birds in North America*. The 1977 version was updated because substantial changes had occurred in the status of several MSUGB species and important new published literature had become available since 1977. For those NPS units that manage one or more of these species, this book can provide a wealth of material. The book covers 14 species: mourning dove, white-winged dove, white-tipped dove, band-tailed pigeon, sandhill crane, American woodcock, common snipe, American coot, common moorhen, purple gallinule, clapper rail, king rail, Virginia rail, and sora.

Each chapter covers a single species and is written by one or more authors having years of experience studying that particular species. Chapters are, for the most part, similarly organized. As an example, chapter seven discusses the biology and management of the American woodcock, *Scolopax minor*. This chapter begins with a description of the species and provides methods for aging juveniles and adults. It continues with life history information on spring migration, courtship, nesting, fall migration, and winter survival. Discussions on breeding and winter habitat use, distribution and abundance, harvest data, and management and research needs round out the chapter. The biggest drawback with this new pub-

lication is the decision to exclude nonhunted species. This means that none of our 40 or more migratory, breeding, non-game species are included.

If interested in obtaining a copy of this book, send requests to MSUGB Book, Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville, Campus Box 218, Kingsville, Texas 78363.

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Results of published studies vary on which live traps are most effective in capturing small mammals. An unpublished M.S. thesis by Sonia Najera of New Mexico State University compared the effectiveness of Havahart and Sherman live traps in capturing lightweight rodents. Using 7.5 x 9.0 x 23 cm Sherman live traps (2.9 x 3.5 x 9.0 in) and 7.6 x 7.6 x 25.4 cm Havahart live traps (3.0 x 3.0 x 9.9 in), New Mexico biologists set traps in alternating sequence in 50-trap grids or transects. Traps were spaced 5 m apart (16.4 ft) and placed in moist-soil impoundments, sloughs, croplands, and along canals and ditch banks. The biologists set all the traps so that a minimum amount of pressure on the treadle would trigger the release mechanism, allowing capture of lighter weight rodents. After 600 trap nights, they moved the traps.

The authors trapped 4,889 rodents (including individuals of nine species) during 29,259 trap nights. The most common species captured (including recaptures) were white-footed mouse (*Peromyscus leucopus*-2,141), cotton rat (*Sigmodon hispidus*-2,127), western harvest mouse (*Reithrodontomys megalotis*-267), and meadow jumping mouse (*Zapus hudsonius*-164). Havahart live traps caught more mice weighing under 30 grams (1 oz). Conversely, Sherman traps cap-

tured more cotton rats, whose weights ranged from 70-200 grams (2.5-7.0 oz). Based on these results, the authors believe Havahart live traps are more effective in capturing lighter weight rodents, whereas Sherman live traps are more effective in capturing heavy rodents. However, Havahart traps comprised 85% of the 2,834 traps that malfunctioned (most were sprung, but empty). Sherman live traps could greatly reduce the time required to run trap grids and trap lines (they require less resetting due to malfunctions and collapse, making them easier to move).

REFERENCE

Najera, S.R. 1994. Meadow jumping mice habitat affinities and capture success in two trap types at Bosque del Apache National Wildlife Refuge. Unpublished M.S. thesis. New Mexico State University. Las Cruces, New Mexico. 86 pp.

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Biologists have often had trouble determining the causes for variations in wildlife populations and plant abundance and their interrelationships. In the wild, food chains prevail and transfer nutrients from the sun to plants, from plants to herbivores, and from herbivores to carnivores. A classic ecological chicken or egg question has always been whether plant abundance determines herbivore (and later carnivore) populations, or vice versa. A problem in finding the answer to this question is the difficulty in first finding an intact food chain that has a large predator, like the wolf.

Wildlife ecologist Rolf O. Peterson of the Michigan Technological University at Houghton, Michigan, and a research partner reported in the December 4 issue of *Science* (as excerpted from *Science News*) that they may have found an answer. Studying the interrelationships of moose and wolves at Isle Royale National Park for the past 35 years,

biologists have learned much about the interactions of predator and prey. Recently, Peterson research team member Brian McLaren began to add vegetation to the analysis.

Specifically, McLaren noticed that balsam fir (a primary food of moose) growth rings narrowed periodically, indicating cycles of low growth that corresponded to high moose numbers. After graphing the suppressed tree growth periods with both wolf and moose population fluctuations, the scientists found an interesting correlation. Tree rings appear to narrow only after wolves decline and moose increase. More importantly, a 1-2 yr time lag occurs between a decline in wolves, an increase in moose, and suppressed growth in the balsam firs. In the early 1980s, Isle Royale wolves declined markedly, probably due to disease. After a few years, the moose population increased and browsed more heavily on the trees. A year or two later, the trees showed signs of stress.

Accordingly, the researchers have ruled out the idea that vegetation availability regulates moose on the island. Rather, they have subscribed to the notion of top-down regulation. Of course, the study requires more data, but Peterson commented that the study illustrates the broad "repercussions of a few top-level carnivores in an ecosystem."

Editor's note: It will be interesting to watch for changes in the Yellowstone quaking aspen groves following wolf release there.

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