natural wetlands more frequently than man-made wetlands.

In a number of places minelands have been restored as wetlands with mixed success. In one study, while the number of species in the reclaimed wetlands was as high as in natural wetlands, there were fewer guilds (e.g. dabblers, waders, divers) because of the relative absence of aquatic feeders (Lacki et al. 1991). A guild is a group of species that share a resource in similar ways.

Recently, there has been cause for hope about the waterfowl population

in the United States. Some 83 million ducks migrated south in the fall of 1995, 12 million more than 1994 and 24 million more than 1993, in part because of governmental influence in restoring prairie potholes, in part because of substantial rain in the prairies (Stevens 1995).

Conclusion

Many reasons exist for the dramatic decline of wetland bird populations in North America. Not surprisingly, the basic cause is habitat disappearance. In the case of wetland birds, the concept of "habitat" has a special meaning and implies specific kinds of management policies. The proper habitat is in most instances a complex of wetlands playing multiple roles. Proper habitat also means the correct size of a wetland and individual wetlands sufficiently close to one another to meet the complicated needs of a species. Restoration management of wetlands is therefore a complicated task, although not without the possibility of success.

ments for wildlife: a habitat management workshop. USDA, Forest Service, St. Paul, MN.

Galatowitsch, S. M. and A. G. van der Valk. 1994. Restoring prairie wetlands: an ecological approach. Iowa State University Press, Ames.

Gilmer, D. S., I. J. Ball, L. M. Cowardin, J. H. Reichmann, and J.R. Tester. 1975. Habitat use and home range of Mallards in Minnesota. J. Wildl. Manage. 39:781-789.

Hickman, S. C. and V. J. Mosca. 1991. Improving habitat quality for migratory waterfowl and nesting birds: Assessing the effectiveness of the Des Plaines River Wetlands Demonstration Project. Technical Paper No. 1.

Johnston, C. A. 1994. Cumulative impacts to wetlands. Wetlands 14:49-55.

Lack, D. 1969. The numbers of bird species on islands. Bird study. 16:193-209.

Lacki, M. J., J. W. Hummer, and H. J. Webster. 1991. Avian diversity patterns at a constructed wetland: Use of ecological theory in the evaluation of mine land reclamation technique. International Journal of Surface Mining and Reclamation 5:101-105.

Losito, M. P. and G. A. Baldassarre. 1995. Wetland use by breeding and postbreeding female mallards in the St. Lawrence River Valley. Wilson Bull. 107:55-63.

McCoy, E. D. 1983. The application of island bio-geographic theory to patches of habitat: how much land is enough? Biol. conser. 25:53-61.

Mitsch, W. J. and J. G. Gosselink. 1993. Wetlands, 2nd ed. Van Nostrand Reinhold, NY.

Noss, R. F., E. T. LaRoe III, and J. Michael Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degradation. U.S. Department of the Interior, National Biological Service, Washington D.C.

Page, G. W. and R. E. Gill, Jr. 1994. Shorebirds in western North America: late 1800s to late 1900s. In J.R. Jehl, Jr. and N. K. Johnson, eds. A century of avifaunal change in North America, Studies in Avian Biology, no. 15, pp. 147-160.

Payne, N.F. 1992. Techniques for wildlife habitat management of wetlands. McGraw-Hill, NY.

Piersma, T. 1987. Hop, skip, or jump? Constraints on migration of

arctic waders by feeding, fattening, and flight speed. Limosa 60:185-194.

Price, J., S. Droege, and A. Price. 1995. The summer atlas of North American Birds. Academic Press, San Diego, CA.

Rave, D. P. and G. A. Baldassarre. 1989. Activity budget of green-winged teal wintering in coastal wetlands of Louisiana. J. Wildl. Manage. 53:753-759.

Skagen, S. K. and F. L. Knopf. 1994. Residency patterns of migrating sandpipers at a midcontinental stopover. Condor 96:949-958.

Stevens, William K. With habitat restored, ducks in the millions create fall spectacle. The New York Times, November 14, 1995.

Weber, M. J., Pa. A. Vohs, and L. D. Flake. 1982. Use of prairie wetlands by selected bird species in South Dakota. Wilson Bull. 94:550-554.

Weller, M. W. 1994. Seasonal dynamics of bird assemblages in a Texas estuarine wetland. J. Field Ornith. 65:388-401.

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