Chapter II

Introduction

Chapter I

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Throughout America's history, agricultural activities on cropland, rangeland, and forest land have affected wildlife habitat in both positive and negative ways. The quality of wildlife[1] habitat is interrelated to the quality of the 1and base. Agricultural practices that diminish the land or water resource quality (e.g., tillage that increases soil erosion beyond an established tolerance level) tend to decrease wildlife and fish habitat quality as well. Conversely, wildlife and fish habitats of many species generally are improved by agricultural practices that sustain land productivity, such as soil conservation or water pollution abatement practices (National Academy of Sciences, 1982).

Recent scientific evidence suggests that some wildlife and fish populations are either declining or are in jeopardy on many agricultural lands, due primarily to the loss or extensive alteration of habitat associated with modern agricultural practices (Warner, 1984; Warner, et al., 1984; Menzel, 1983; Klimstra, 1982; Ferris and Cole, 1981; Burger, 1978). Modern agricultural practices tend to produce fields with one or two crops that are dependent on high levels of fertilizers, pesticides, and frequent tillage to sustain production.

Coupled with a reduction in suitable habitat is a growing public concern for maintaining or enhancing wildlife and fish resources for economic, recreational, and esthetic reasons. Each year, approximately 100 million American adults spend some $40 billion on wildlife-related recreation—e.g., hunting, bird watching, and photography (USDI Fish and Wildlife Service, 1982),

Landowner attitude surveys indicate that many private landowners place a high, although unquantifiable, value on wildlife. A survey of landowner attitudes toward wildlife in Minnesota found that the opportunity to observe wildlife was ranked very high (Svoboda, 1984). An analysis of the Fish and Wildlife Service's 1980 National Survey of Hunting, Fishing, and Wildlife-Associated Recreation indicated that approximately one-half of the U.S. adult population participated in activities where the *primary* purpose was involvement with wildlife in the vicinity of their residence (Lyons, 1982). Still another study found that wildlife had broad appeal to many, if not most, Americans and that diverse and healthy wildlife populations seem to contribute to a high standard and quality of life in the minds of many Americans (Kellert, 1980). This impression supports the premise in the U.S. Department of Agriculture Policy on Fish and Wildlife (1982, p. 1), that states:

> Fish and wildlife have inherent value as components and indicators of healthy ecosystems. They often demonstrate how altered environments may affect changes in the quality of life for humans,

Private agricultural 1ands provide the bulk of the Nation's food and fiber crop production. Products from agricultural lands are critical components of local, national, and international economies. Food and fiber needs from the Nation's agricultural lands and the private landowner's desire to maintain or improve his way of 1ife preclude his willingness to shift these lands from agriculture production to ex*clusively* wildlife habitats,

Agricultural production and wildlife and fish conservation interests, however, need not be mutually exclusive. Farmlands and croplands have long been recognized *as* major wildlife habitat. Crops and associated vegetation provide food and cover for certain birds and mammals typically referred to as farm wildlife. While certain advances in farming technology have resulted in an overall deterioration of

[1] Wildlife, for the purposes of this proceeding, will include any wild, free-ranging, nondomesticated animal, such as mammals, birds, and fish.

wildlife habitat, others have occurred that favor wildlife.

OTA was asked by the Subcommittee on Soil and Water Conservation, Forestry, and the Environment of the Senate Committee on Agriculture, Nutrition, and Forestry to: 1) identify technologies that could be beneficial to both agricultural production and wildlife and fish habitats, and 2) identify opportunities and constraints to the further development and adoption of these technologies by the landowner.[2]

[2]In this proceeding, landowners include both in-title owners of agricultural property and renters or tenants of agricultural lands.

The proceeding is the result of information gathered from: a) 15 researchers, field specialists, policy makers, and congressional staff at a 2-day OTA workshop, b) telephone interviews with experts, and c) OTA staff research. This proceeding presents only a brief overview of the opportunities, constraints, and potential of new or emerging agricultural or wildlife technologies that benefit both agricultural production and wildlife conservation.

Brief analyses of some technologies that benefit agriculture and wildlife, and discussion of major issues involved in integrating agriculture and wildlife interests follow. The technical papers presented at the OTA workshop are contained in appendix B.