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National Biology Handbook



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The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

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Mike Anderson, wildlife biologist, NRCS, Washington, DC

Steve Brady, wildlife biologist, NRA, Ft. Collins, CO

Byron Burnham, professor, USU, Logan, UT

Randall Gray, conservation biologist, NRCS, Washington, D.C.

L. Pete Heard, wildlife biologist, WHMI, Madison, MS

Ed Hackett, wildlife biologist, WHMI, Madison, MS

Hank Henry, wildlife biologist, WSSI, Raleigh, NC

William Hohman, wildlife biologist, WHMI, Ames, IA

Barry Isaacs, biologist, NRCS, Harrisburg, PA

Terrell Erickson, biologist, NRCS, Honolulu, HI

Aaron Loewer, instructional designer, USU, Logan, UT

Nancy Magee, administrative assistant, WHMI, Madison, MS

Eric Odell, Colorado Game and Fish, Ft. Collins, CO

Randy Randall, biologist, NRCS, Brighton, CO

Charlie Rewa, wildlife biologist, WHMI, Laurel, MD

Dick Rintamaki, wildlife biologist (retired), Casper, WY

Kenneth F. Sherradan, wildlife biologist, NRCS, Salina, KS

Terri Skadeland, biologist, NRCS, Lakewood, CO

Billy Teels, fisheries biologist, WSI, Laurel, MD

Kelly Wildman, administrative assistant, OSU, Corvallis, OR

National Biology Handbook

Aquatic and Terrestrial Habitat Resources

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600.00 Introduction

Biological resources include all living things from bacteria and fungi to plants, insects, and other invertebrates, reptiles, amphibians, fish, birds, and mammals, including humans. The focus of this handbook is primarily on fish and wildlife resources, how they relate to the environments in which they occur, and how these resources can be integrated into the conservation planning process.

While the environment that NRCS helps its clients conserve, maintain, and improve supports a productive generator of food and fiber for the benefit of society, it is also habitat for fish and wildlife and other biological resources. There is no inch of our environment that is not habitat for some living organism. This maxim is simple to understand. What is not so simple in a complex world of cultures, societies, human needs, and resource economics is how to integrate

fish, wildlife, and plant habitat considerations into resource conservation actions. Habitat is everywhere we are asked to go to provide technical assistance in natural resource conservation.

Today, more and more of our environment, and thus habitat, is in poor condition or unsuitable to support desirable fish and wildlife resources. Human land uses have tended to simplify, fragment, and degrade habitats and the biological communities that depend on them (fig. 600–1).

This handbook will help conservationists effectively and efficiently integrate the habitat considerations of fish and wildlife and other biological resources into conservation plans for farms, ranches, backyards, city parks, rangelands, streams, rivers, lakes, wetlands, estuaries, and riparian areas. Habitats are components of living landscapes, and their conservation is critical to all living things, including humans. Thus, humans cannot set themselves apart from impacts that result from their conservation decisions.

Figure 600–1 Poor land management leads to simplification and degradation of habitat at the site and within the broader landscape (photo courtesy USDA NRCS)



Habitats are not discrete biological units, nor are farms and ranches. These sites are immersed spatially and temporally into ecosystems and landscapes (fig. 600–2). Thus, conservation of biological resources requires a holistic approach to planning.

Animals, be they terrestrial or aquatic, move. Their food sources move or are affected by elements in the landscape. Habitats influence and are influenced by the surrounding landscape of which they are a part.

Considering landscapes when planning saves the conservationist and the landowner time and money, especially in the long term.

As conservationists provide technical assistance to landowners, they need to play the role of natural resource specialist, facilitator, and planning advisor. The needs and desires of the landowner must be respected, and the needs of the biological community within the property and beyond its borders considered.

Figure 600–2 Working lands provide habitat at the site and connect habitats to broader landscapes (photo courtesy Lynn Betts, USDA NRCS)



Technical assistance is diligently offered at a local scale with the greater landscape in mind. The needs of fish and wildlife are better integrated with the objectives of landowners if the conservationists thinks of working lands as habitats (fig. 600–3). Considering habitat components in an environmental context relevant to humans should be considered when planning at a local scale.

The scope of habitat conservation is large. National Initiatives that focus on biological resources and their habitats include those for Conservation Buffers, Invasive Species, Clean Water and Air, Threatened and Endangered Species, Wetland and Wildlife Habitat Restoration and Conservation, Drought Protection, and Upland Watershed Protection.

The purpose of this handbook is to provide field office personnel a well-organized and comprehensive compilation of key technical information needed to integrate

Figure 600–3 Habitat considerations for fish and wildlife should be linked to environmental conditions of working lands

Consider	Habitat	=	Environment of working land
	Biotic community		Farm, ranch, acreage, backyard
Evaluate	Habitat condition, ecological setting, food source, and cover	➔	Site uses, ecosystem, landscape conditions, matrix type, patch size, and connectivity
Integrate	Fish and wildlife needs	with	Landowner objectives, economics, and capability of the land

fish, wildlife, and plant habitat considerations into resource conservation on working lands. Conservation of the biological resources and stewardship of their habitats is everybody's responsibility. This cannot be carried out without the technical, financial, and regulatory support of our Conservation Partners. For this reason, an entire section (part 601) of this handbook provides information on how to develop partnerships to leverage time and money, and be as effective as possible in delivering fish and wildlife habitat conservation on working lands.

In addition, the handbook provides a framework to which state-specific technical guidance related to habitat considerations can be incorporated. This handbook should be used in conjunction with the National Biology Manual, which has the NRCS policies that guide the management of fish and wildlife resources.

The materials in this handbook are designed and presented in a format that provides the conservationist with a consistent and efficient means to determine how to plan and implement habitat-related conservation on the ground, in the environments provided by the working lands of our customers.

Timely transfer of technical resources and guidance to land managers and conservation planners is now easier with the development of online resources. This handbook is available online and will be updated periodically to reflect new science and technology associated with managing lands with fish and wildlife in mind.