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Subpart B—Conservation Planning

Part 611 Conservation Planning for Integrating Biological Resources

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Part 611 Conservation Planning for Integrating Biological Resources

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Cover photos courtesy Wendell Gilgert, Gary Kramer, and Dot Paul, USDA Natural Resources Conservation Service, and Jeff Rodgers, Oregon Department of Fish and Wildlife

Subpart B

Conservation Planning

Part 611

Conservation Planning for Integrating Biological Resources

611.00 Integrating fish and wildlife into cooperator's objectives

The point when a conservation planner generally establishes an effective relationship with a cooperator starts when the cooperator (used interchangeably with landowner, land manager, producer, farmer, or rancher) makes a phone call to a USDA Service Center, walks into an NRCS field office, or follows a referral from the Farm Services Agency, RC&D coordinator, or the Soil and Water Conservation District. Often this contact is made because the cooperator has a concern or a problem that requires technical assistance with resource concerns on a piece of working land.

During the introductory stages of the relationship with the cooperator, the planner begins to assess the situation in the area where the resource concern exists. Like anything new, there is a level of excitement as the process begins of working with the cooperator to develop the conservation plan, assist with the implementation of the plan, then continue to support the assessment and monitoring of the effectiveness of the conservation activities.

Hugh Hammond Bennett, the first Chief of the Soil Conservation Service, in his text, *Elements of Soil Conservation*, stated that "*consideration of the land's relationship to the entire farm, ranch, or watershed*" is the key principle of conservation planning. While the planner is comfortable with his or her general knowledge of most of the natural resources encountered on the cooperator's land, he or she is not likely to be equally knowledgeable about all of the planning elements—soil, water, air, plants, and animals (SWAPA) —that occur on the land.

The purpose of this handbook is to assist the planner who does not have extensive knowledge or experience with fish and wildlife resources, or *biological resources*, to more effectively integrate considerations of these resources into the development and implementation of the conservation plan.

Hugh Hammond Bennett's vision of natural resource planning included some key attributes of conservationists who are effective planners.

An effective planner

- ***Considers the needs and the capability of each acre***. Conservation planning is not an overnight process. It is an accumulation of knowledge, skills, and abilities acquired relative to natural resources. It requires an understanding of soil surveys, ability to read maps, and ability to understand human history of the area. The ability to read the landscape is needed. Many landscapes in North America are in some need of restoration. In other words, they have been used hard, but they could flourish and become more sustainable than they are under current land use regimes.

- ***Is cognizant of the cooperator's situation***. An effective planner understands the consequences of proposed actions and helps the cooperator clearly understand his or her impact on and off the parcel of land for which they are concerned. The cooperator has economic, social, political, and cultural constraints. The conservation planner needs to be aware of various cooperator issues.

- ***Incorporates the cooperator's aptitude to change***. Change is difficult for some, easy for others. Planners need to help people understand why a change in management may be needed for good conservation on the ground.

- ***Considers land surroundings and relationships***. An effective planner recognizes the interconnections between a site and the surrounding landscape. The adjacent property, subwatershed, river basin, watershed, state, and the region of the country should be considered. The planner must understand the land's location and its relationship to surrounding property. If a property is eroding severely, then not only is soil lost from that particular property, but water quality damage can occur in aquatic ecosystems downstream because of the sediment that originated

on that piece of property. Water quality can also be used as a starting point for discussions related to integrated pest management (IPM) aimed at reducing pesticide use. Implementation of IPM may have significant wildlife ramifications when related to habitat and water quality enhancement.

Other considerations for an effective conservation planner:

- Respect the cooperator's rights and responsibilities.
- Recognize the need for resource sustainability. Keep current on new technology by reading scientific literature and attending resource conferences and workshops.
- Consider short-term, long-term, and cumulative effects of actions. Most of the landscapes did not degrade overnight. NRCS assistance is for the long term. Conservation is a process that takes time and care to get the land back to some level of sustainability and productivity.
- Consider economic needs and goals. What will it cost and how much time does the cooperator have to invest in the action?
- Work with cooperator to consider alternative enterprises and their interactions with the site and its surroundings.
- Help the cooperator develop and articulate the desired future conditions for the planning area. What would he or she like the property to look like? Encourage new ideas, provide relevant and timely information, and offer sound conservation advice.
- Collaborate with other natural resource professionals and volunteers when collecting, assembling, and evaluating data. Use resources and expertise of others. Interact and work with people who may have a different perspective about the resource concerns being considered.

611.01 Fish and wildlife/ biological resources: different meanings for different people

A common vocabulary is important when discussing fish and wildlife or any biological resource with a cooperator. For many cooperators, the more familiar and visible fish and wildlife (e.g., white-tailed deer, mallards, black bass, raccoons, crows, rainbow trout, or prairie dogs) represent the significant biological resources on their land. A purpose of this handbook is to broaden how the planner, and thus the cooperator, thinks of the fish, wildlife, and biological communities that occur or could occur on a piece of working land. While conversations with the cooperator about the full range of biological resources on a particular property may not be possible, a general understanding of those resources by the planner can translate into an increased awareness of their values by the cooperator.

The most favorable time to incorporate biological resources into the plan discussion is during the initial conversations with the cooperator. As the planner probes the cooperator for information about their operation, it is always appropriate to ascertain the level of interest in their biological resources. Does the cooperator consider those resources to be part of the land's production capability where an economic gain is realized? How does the cooperator feel about the presence or absence of those resources on the land? Are they seeing more or less fish and wildlife than they would like to see? Do fish and wildlife contribute to the quality of their experience of working and living on the land? Is the cooperator willing to adjust how they operate their enterprise or manage their land to accommodate biological resources?

While it is preferable to integrate biological resource needs into the early conversations with a cooperator, it is *never too late* to discuss those needs with a cooperator seeking technical assistance. An experienced planner, who has not fully discussed the inclusion of the biological resources of a planning area, should make an effort to do so at any time during the planning or implementation process. Remember, all lands and most landscape features provide habitat for biological resources, and the quality of that habitat varies.

611.02 Planning to meet life history needs of fish and wildlife

Most planners know that the basic life history requirements for fish and wildlife resources can be broadly grouped into three categories: water, food, and space (including cover and special habitat areas). When planning for an individual species or group of species, the planner must provide the cooperator with more specific information about life history needs. Always consider the specific biological needs for water, food, and space by fish and wildlife (fig. 611–1 and 611–2).

(a) Water

Some species, such as snakes, tortoises, desert mammals, and many insects, obtain all of their water requirements from the foods they eat. To support most wildlife, and obviously all fish species, a reliable free water supply is necessary. Virtually every type of uncontaminated surface water source is used by a variety of fish and wildlife species. A complete inventory of those sources should be a fundamental element to any conservation plan.

Figure 611–1 Fish and wildlife require water, food, and space (photos courtesy Wendell Gilgert, USDA NRCS)

(b) Food

Food habits for fish and wildlife are variable throughout the year. Feeding behavior and habits help broadly define groups of animals. Common examples are grazers (elk, prairie dogs, grasshoppers), browsers (deer, beaver), carnivores (snakes, hawks, bobcats), omnivores (black bears, coyotes, crows), and parasites (lampreys, many insects, cowbirds).

Food requirements vary with time of year. For specific information for any particular species, numerous technical references provide food habit information (see subpart C, part 620).

(c) Space

The space in which an organism lives provides protection, or cover. Cover types include structural elements in a species' habitat that provide a means of escape from danger (escape cover), provide refuge from temperature changes (thermal cover), protect young (nesting, fawning, or brood cover), provide resting areas (loafing or refugia cover), or helps the specie hide from predators (hiding cover). A space can also be a large area where several animals or biological resources come together for breeding (lekking, breeding, spawning areas), feeding, loafing, or staging for group migrations.

Figure 611–2 A landowner and NRCS conservationist discuss plantings that provide wildlife food and cover (photo courtesy Lynn Betts, USDA NRCS)

611.03 National conservation practice standards specific to fish and wildlife resources

Currently, the National Handbook of Conservation Practices lists more than 160 practices. Virtually every conservation practice impacts fish and wildlife resources. The following 16 practices are specifically related to fish and wildlife resources. These 16 practices will, if properly implemented and/or managed, positively affect biological resources; however, the challenge to the planner may be the integration of those resources into the other conservation practices.

Aquaculture Ponds (397)—A water impoundment constructed and managed for commercial aquaculture production. To provide suitable aquatic environment for producing, growing, and harvesting commercial aquaculture products.

Constructed Wetland (656)—A wetland constructed for the primary purpose of water quality improvement; i.e., treatment of wastewater, sewage, surface runoff, milk-house wastewater, silage leachate, and mine drainage. Practice treats wastewater by the biological and mechanical activities of the constructed wetland.

Early Successional Habitat Development/Management (647)—Manage early plant succession to benefit desired wildlife or natural communities. Increase plant community diversity, provide wildlife habitat for early successional species and provide habitat for declining species.

Field Border (386)—A strip of perennial grass or shrubs established at or around the edge of a field. Field borders provide productive habitat for wildlife that favor early successional habitats on agricultural landscapes.

Fish Passage (396)—Features to eliminate or mitigate natural or artificial barriers to fish movement, such as dams or cross-channel structures, to allow unimpeded movement for fish past stream barriers.

Fishpond Management (399)—Developing or improving impounded water to produce fish for domestic use or recreation. To provide suitable aquatic environment for producing, growing, and harvesting fish or other aquatic organisms for recreational or domestic uses.

Restoration and Management of Declining Habitats (643)—Restoring and conserving rare or declining native vegetated communities and associated wildlife species to restore and manage habitats degraded by human activity, increase native plant community diversity, or manage unique or declining native habitats.

Riparian Herbaceous Cover (390)—Consists of grasses, grass-like plants, and forbs at the fringe of the water along watercourses. Provides habitat for aquatic and terrestrial organisms, improves and protects water quality, stabilizes the channel bed and streambanks, establishes corridors to provide landscape linkages among existing habitats, and fosters management of existing riparian herbaceous habitat to improve or maintain desired plant communities.

Shallow Water Management for Wildlife (646)—Managing shallow water on agricultural lands and moist soil areas for wildlife habitat. Areas provide open water areas to facilitate waterfowl resting and feeding, and habitat for amphibians and reptiles that serve as important prey species for other wildlife.

Stream Habitat Improvement and Management (395)—Create, restore, maintain, or enhance physical, chemical, and biological functions of a stream system to provide desired quality and quantity of water, fish, and wildlife habitat, channel morphology and stability, and aesthetics and recreation opportunities.

Upland Wildlife Habitat Management (645)—Creating, restoring, maintaining, or enhancing areas for food, cover, and water for upland wildlife and species that use upland habitat for part of their life cycle. Provide all of the habitat elements in the proper amounts and distribution, and manage the species to achieve a viable wildlife population within the species home range.

Wetland Creation (658)—A wetland created on a site location that historically was not a wetland or was a wetland but with a different hydrology, vegetation type, or function than naturally occurred on the site. Create wetlands that have wetland hydrology, hydrophytic plant communities, hydric soil conditions, and wetland functions and/or values.

Wetland Enhancement (659)—The modification or rehabilitation of an existing or degraded wetland where specific function and/or values are improved for the purpose of meeting specific project objectives. For example, managing site hydrology for waterfowl or amphibian use, or managing plant community composition for native wetland hay production.

Wetland Restoration (657)—A rehabilitation of a degraded wetland where soils, hydrology, vegetative community, and biological habitat are returned to the original condition to the extent practicable. To restore wetland conditions and functions that occurred on the disturbed wetland site prior to modification to the extent practicable.

Wetland Wildlife Habitat Management (644)—Retaining, developing, or managing habitat for wetland wildlife. To maintain, develop, or improve habitat for waterfowl, furbearers, or other wetland-associated wildlife.

Wildlife Watering Facility (648)—Constructing, improving, or modifying watering facilities or places for wildlife to obtain drinking water.

Table 611–1 gives examples of broad fish and wildlife groupings and lists conservation practices that directly or indirectly impact the particular group.

Table 611–1 Biological groupings and relevant conservation practices

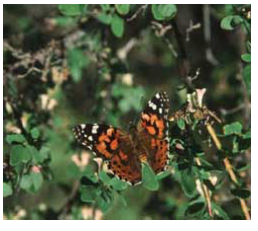
Biological group	Relevant practices
Invertebrates	
Aquatic—crayfish, snails, stoneflies, mayflies, riffle beetles (Photo courtesy Paul Fusco, USDA NRCS)	Stream Habitat Improvement and Management (395), Riparian Forest Buffer (391A), Wetland Restoration (657)
Terrestrial *(Edaphic fauna)*—earthworms, nematodes, dung beetles	Conservation Cover (327), Forest Stand Improvement (666), Prescribed Grazing (528)
Pollinators—Integrating all types of flowering plants into vegetation enhances most areas for pollinators: bees, butterflies, moths, birds  (Photo courtesy Gary Kramer, USDA NRCS)	Alley Cropping (311), Conservation Crop Rotation (328), Tree/Shrub Establishment (612), Early Successional Habitat Development/Management (647)
Integrated pest management species—lady beetles, spiders, wasps	Pest Management (595), Residue Management, Mulch Till (329B), Riparian Herbaceous Cover (390)

Table 611–1 Biological groupings and relevant conservation practices—Continued

Biological group	Relevant practices
Vertebrates	
Fish: Cold-water—trout, salmon, grayling, whitefish Cool-water—pike, pickerel, walleye, suckers Warm-water—catfish, black bass, carp, bluegill, minnows	Nutrient Management (590), Irrigation Water Management (449), Riparian Forest Buffer (391), Stream Habitat Improvement and Management (395), Wetland Restoration (657), Fish Passage (396)
Amphibians—salamanders and newts, toads, frogs	Pond (378), Stream Habitat Improvement and Management (395), Wetland Restoration (657)
Reptiles—snakes, turtles, lizards, skinks	Wetland Wildlife Habitat Management (644), Wetland Restoration (657), Restoration and Management of Declining Habitats (643)
Birds: Songbirds (resident and neotropical migratory)	Early Successional Habitat Development/Management (647), Hedgerow Planting (422), Prescribed Burning (338)
Waterfowl—ducks, geese, swans (photo courtesy Wendell Gilgert, USDA NRCS)	Wetland Wildlife Habitat Management (644), Shallow Water Management for Wildlife (646), Prescribed Grazing (528)
Shorebirds—sandpipers, plovers, stilts, avocets, dowitchers (photo courtesy Don Poggensee, USDA NRCS)	Irrigation Water Management (449), Restoration and Management of Declining Habitats (643), Wetland Restoration (657)
Raptors—hawks, falcons, eagles, owls	Field Border (386), Residue Management, No-Till and Strip Till (329A), Windbreak/Shelterbelt Establishment (380)
Colonial nesting birds—egrets, herons	Wetland Restoration (657), Riparian Forest Buffer (391), Filter Strip (393)

Table 611–1 Biological groupings and relevant conservation practices—Continued

Biological group	Relevant practices
Game birds—grouse, quail, turkey, pheasants (photo courtesy Gary Kramer, USDA NRCS)	Forest Harvest Management (511), Field Border (386), Residue Management, No-Till and Strip Till (329A)
Mammals	
Large herbivores—elk, deer, pronghorn (photo courtesy Gary Kramer, USDA NRCS)	Brush Management (314), Prescribed Grazing (528), Wildlife Watering Facility (648), Fence (382)
Large predators—cougar, bear, wolf	Forest Stand Improvement (666), Riparian Forest Buffer (391), Tree/Shrub Establishment (612)
Mesopredators—raccoon, bobcat, skunk (photo courtesy Gary Kramer, USDA NRCS)	Conservation Cover (327), Stream Habitat Improvement and Management (395), Windbreak/Shelterbelt Establishment (380)
Small mammals—mice, beaver, prairie dogs	Early Successional Habitat Development and Management (647), Prescribed Grazing (528), Structure for Water Control (587)
Bats—resident and migratory	Mine Shaft & Adit Closing (457), Forest Harvest Management (511), Pond (378)

611.04 Elements of the planning process

Step 1 Identify problems and opportunities

Field office planners are required to consider soil, water, air, plants, and animals when developing a conservation plan. Concern for fish and wildlife resources is typically not the primary motivation for producers to contact NRCS conservationists for assistance. That fact should not prevent the conservationist from including fish and wildlife resources early in the process of identifying resource problems and opportunities. Explore as many aspects as the cooperator's interest and the conservationist's time allow.

Example: When a rancher contacts the conservationist with questions about grazing management, questions about native grazers should be interspersed into conversations that are intended to obtain information on livestock type, class, and herd size. Specifically, the conservationist should work with the rancher to answer these questions:

- What native grazers (e.g., rabbits, prairie dogs, elk) must rely on the same resources as domestic livestock?
- What are their life history requirements?
- How will those requirements be integrated into the grazing plan?

Subsequent conversations could include changing pasture size or configuration, which would involve discussion of fences, water, and salt or mineral distribution. With every element of the grazing plan, opportunities allow the planner to raise questions regarding the rancher's attitude toward and aptitude for the integration of fish and wildlife resources on the property. Does wildlife currently move freely on the ranch? If not, would the rancher be open to changing the fence configuration and wire placement to facilitate nonobstructed movement of deer, elk, moose, or pronghorn? Do the livestock stand in the stream, seep, or spring where they water? If so, could it be more efficient and improve herd health if the watering areas were fenced and the water piped into a storage tank for distribution to multiple troughs (with design provisions for wildlife access and egress)?

Step 2 Determine goals and objectives

A producer's motivation to initiate and work through the process of developing and then implementing a conservation plan can come from a concern and/or multiple concerns about the resources on their land or on lands affecting their operation. The step to assist the producer in determining the desired products of a plan may not be as simple as it sounds. It may take time to establish trust between the producer and the conservationist, which can entail many separate visits with the producer, especially if the conservation of the fish and wildlife resources was or is not a primary motivation for the conservation plan.

The planner can help the producer break down the conservation goals into three parts: productivity, quality of life, and the landscape. A discussion of production goals on their land is probably the most difficult and delicate topic of the three. A discussion of land, herd, or crop size with a producer is tantamount to a discussion of bank accounts or wills. Yet, unless the planner has a clear understanding of what the producer needs to produce, an honest conversation about the conservation elements that can be applied to the land is difficult. Armed with the productivity information, the planner can do a more complete job of formulating alternatives that can more fully integrate biological resources.

Example: A row crop and orchard producer in California was using up to 10 annual pesticide applications on his crops each year. Since more than 15 species of insect feeding bats are in his region, the planner suggested that the strategic placement of bat boxes could increase the local bat population to a level where crop insect pests could be controlled. Several years and bat boxes later, the producer's pesticide applications were reduced by more than two-thirds by the integrated pest management provided largely by the bats. This is an example of a previously unrecognized resource that enhanced habitat quality for the bats and other farm wildlife, improved water and soil quality on and off the farm, and reduced expensive inputs that allowed the producer more management flexibility.

The other elements of the overall plan goal are the quality of life and the landscape goal. Those goals are critical to understanding what motivates a producer to stay involved in a business that is often marginally productive. What is it that motivates the cooperator to face each day on the land? Is it the smell of newly

swathed hay? Is it the sounds of resident or seasonal wildlife, the elk herd passing through on the way to winter or summer range? Is it the sound of the brook trout breaking water chasing a mayfly near the stream edge? Or is it the yearly proliferation of butterflies at the field's edge as they follow the nectar corridor? If it were entirely within the cooperator's ability, would the land have more trees, more open expanses, lush riparian areas, more songbirds, or more water?

Within the context of working with the cooperator to articulate his or her goals, the planner, through probing and timely questions, finds that the cooperator has or can have a much broader role for fish and wildlife resources on their land.

Step 3 Inventory resources

For the planner, the resource inventory is often one of the more eagerly anticipated steps of the planning process. During this process the planner is fully engaged with the cooperator to explore extensive information and gain an understanding of the cooperator's land and those lands that surround it. Numerous tools can assist the planner with this inventory. The following are considered essential for a thorough field inventory:

- Series of maps to locate the property in the proper landscape context
  - 71/2 minute quadrangle topographic map
  - aerial photos
  - soils maps
  - habitat maps
  - various layers of geographic information system (GIS) maps
- Camera
- Binoculars
- Notebook
- Field guides, soil survey
- Hand lens
- Safety kit
- Soil knife
- Daypack to keep materials in one location

Investigating and analyzing the resources gathered from the land can be as exhaustive as time allows. The planner must walk or ride with the cooperator to read the landscape, and should take legible notes their discussions. A comprehensive resource assessment may, therefore, require several visits to the property, which allows additional conservation opportunities with every trip. This, too, is an opportunity to locate specific and critical habitat elements for the fish and wildlife using the property. Water features are especially critical not only because of their relationship to biological resources, but because they are often indicators of wetland and cultural resource locations.

During the inventory process, it is critical to think beyond the property boundary in terms of both space and time. Some spatial scales that can be useful are the hemispheric, regional, watershed or subwatershed scale, and a field or tract level. A description of each follows.

Hemispheric scale—This scale is important for wildlife and fish that migrate long distances, such as salmon, waterfowl, neotropical migratory birds, bats, and various insects. Virtually all lands planned by NRCS conservationists are visited by transitory or migratory fish or wildlife at least once a year. Whether the animal spends a few days or an entire season on the cooperator’s land, it is an important component for that species’ overall life history and should be accommodated.

Regional scale—Steelhead, salmon, and other migratory fish; wide-ranging mammals including wolverines, jaguars, and elk; and many other species use a smaller, but critical, subset of a region in which the cooperator's land is located.

Watershed or subwatershed scale—Some species of fish and/or wildlife live their entire life cycles in discrete areas where cooperation and coordination among land managers are critical to their sustainability. These species include endemic species that are found only in a particular watershed or field office area. Also, local species are those that live their entire lives on individual farms or ranches. Typical examples include northern bobwhite, ring-neck pheasant, eastern cottontail, chickadees, titmice, and cardinals.

Field or tract level—This spatial scale is important for dispersal-sensitive species, such as frogs, chipmunks, native fish, or insects, that may never move past the boundary of a field or tract within a farm or ranch.

Time scales, or temporal scales, are also important considerations for fish and wildlife and their habitats. For example, the intervals of time between disturbance events, such as floods, fires, or hurricanes, affect species and their habitats. Some questions to ask:

- Is it a 2-year, 5-year, or 10-year flood that will most likely create the sediment point bar that will allow for a new generation of cottonwood seedlings to germinate in the riparian zone?
- Will a prescribed burn in brush cover cause a water release that will benefit the local amphibian population and at the same time favor early successional forbs for the migratory pollinators?
- How long will the effects last?

Step 4 Analyze resource data

The field office technical guide (FOTG) offers a template for organizing resource concerns. Many effective tools for analyzing data are available in the NRCS office or from wildlife agencies if you do not have appropriate wildlife habitat evaluation protocols readily available. The conservationist should work with State, Federal, or non-governmental fish and wildlife organizations to secure as much information as possible. Exhibit M in subpart C, part 630 is an example of a habitat evaluation from Utah. Every state has species habitat evaluations or habitat evaluations. In addition, the U.S. Fish and Wildlife Service has Habitat Suitability Index (HSI) models for many fish and wildlife species. The guides are relatively comprehensive and examine various aspects of habitat for a variety of fish and wildlife. Different habitat evaluation guides are available in each state or territory.

Step 5 Formulate alternatives

Develop alternatives that include a spectrum of conservation practices to use on the cooperator's land. These practices, when implemented, should achieve cooperator's objectives, solve identified problems, take advantage of opportunities, and prevent additional problems.

Achieve cooperator's objectives—Virtually all of the practices used to address the broad range of natural resource issues and concerns that producers encounter are in the FOTG and the nearly 160 conservation practices standards. Of these standards, only 16 are strictly fish and wildlife practices. Of the remaining practices, virtually all have the potential to address the needs of fish, wildlife, and other biological resources. For all practical purposes, every practice and management action taken on the land has some effect on biological resources. The conservationist's creativity, experience, education, and training can provide an opportunity to engage other people's expertise for incorporating fish and wildlife into the planning process. The planner must ensure that the natural resource conservation objectives of the cooperator are met. While working with the cooperator, conservation planners are uniquely positioned to inform them of the effects of various management alternatives on terrestrial and aquatic species and the opportunities to effectively integrate fish and wildlife objectives into the conservation planning process.

Solve identified problems—By now the problems that initiated development of the conservation plan in the first place should be clearly spelled out. During this step, the conservationist can explain how the resource problem more than likely began. The cooperator will begin to realize the consequences of various management actions on the land and the surrounding landscape. It is during this process of conservation planning and application that the planner can help the cooperator more fully understand stewardship obligations to the land.

Take advantage of opportunities—When it comes to economics, most cooperators are receptive to and qualify for cost-share programs or related assistance, such as grants, building materials, labor, or other resources needed to apply the necessary conservation practices (fig. 611–3). The planner needs to be aware

Figure 611–3 This fishway was funded in part by the NRCS-WHIP program to provide passage to spawning habitat for migratory fish (photo courtesy Paul Fusco, USDA NRCS)

of the array of technical and financial resources available to the cooperator. The cooperator may indicate a sincere desire to apply a conservation practice, but lack the resources to do so. At that point, the planner can offer cost-share programs, grants, and assistance from partner groups. The planner must facilitate development of partnerships (see subpart A, part 601, Conservation Partnerships) to help the cooperator take advantage of all available opportunities.

Prevent additional problems—Many tools are available to assist the planner with motivating the cooperator to think about alternative management or business practices that avoid generation of new natural resource management problems.

Example: A hay operator chooses to explore equipment modifications, such as a flush bar, to move nesting ducks, pheasants, or songbirds out of the swather or mover path so they are not destroyed during hay harvest activities. Perhaps harvest actions can be delayed for a couple of weeks to allow the nesting birds time to fledge their young and move out of the field. Think creatively and help the cooperator to think of ways to apply different cultural practices relating to agriculture, and, for example, the habits of migratory shorebirds. During the shorebird migration, the birds may be onsite for only a few days. In some cases the shorebirds may stay and nest. The cooperator can alter irrigation management practices by providing additional soil moisture or altering planting dates and can benefit these species by providing soil foraging resources through this process.

Step 6 Evaluate alternatives

The planner should provide sufficient information about each alternative or combination of alternatives so that the cooperator can make decisions that work towards the stated goals. Potential positive as well as negative outcomes should be discussed. Each step of conservation planning is critical. In step 6, it is critical to display the alternatives in a way that is clear and sensible.

Clear communication and understanding between the planner and the cooperator regarding the range of alternatives and the effects of implementing them must exist. In turn, this leads to intelligent choices that provide long-lasting benefits to biological resources.

Step 7 Make decisions

Decisions are the prerogative of the cooperator. The planner should provide sufficient information to assist and influence acceptable choices by the cooperator. Conservation planning is dynamic; it is an ongoing and likely lifelong process for the cooperator. On occasion, the cooperator takes a conservative approach to the plan that can lead to disappointment for the planner. Resist the urge to influence the cooperator to act outside of his or her comfort zone. Remember, it is his or her decision.

Example: A producer contacts the NRCS conservationist to request assistance on improving irrigation efficiency. The producer replaces an open ditch with a pipeline and engages in irrigation water management. From a wildlife perspective, there seems to be little benefit. However, the planner has a foot in the door and has planted the conservation seed. Perhaps the next logical step is the inclusion of a tailwater return system. The design of the sump for that system could benefit waterbirds, perhaps fish, and if adjacent cover is provided, small mammals.

Step 8 Implement the plan

The planner should work with the cooperator to adopt new ideas and concepts with the goal of finally implementing those ideas or practices on the land. Once the practices are applied to the land, the client will require support to ensure proper installation and management of the conservation practices. If cost-share programs are involved, the practice must be certified as meeting standards and specifications. All subsequent visits with the cooperator provide an opportunity to make adjustments relative to the management of the particular practice on the land.

Step 9 Monitor and evaluate

Monitoring and evaluation are another critical step in conservation planning. However, this step is one of the most neglected phases of the process. Monitoring must be integrated so that the cooperator and the planner know that the desired conditions are occurring on the land. Many cost and time effective monitoring tools are available.

One source is *Inventory and Monitoring of Wildlife Habitat* compiled by Allen Cooperrider, Raymond J. Boyd, and Hanson R. Stuart, available through the U.S. Department of Interior, Bureau of Land Management (September 1986). The reference has inventory and

monitoring protocols for most major habitat types and for all vertebrate fish and wildlife species.

Example: One straightforward monitoring technique is photo monitoring. Cameras are inexpensive and easy to use. A date-back camera (where the date is printed on the photo image) is preferred. While a photo may not be quantitative data, it can contain a wealth of information. To assure that the responsible person can go back to the same locations, previous photographs must be in the planner's or cooperator's possession. Use of a 7.5-minute topographic map or global positioning system (GPS) ensures continuity of photo point location through time. Marking with rebar or flagging can also help ensure relocating fixed photo points.

Monitoring allows replanning—Like construction of a building from a blueprint, a conservation plan must invariably be modified. As the cooperator learns and acquires a more thorough understanding of the consequences of various management activities on the land, the natural progression is that the plan needs to be modified. It is a dynamic process. The application of the plan begins with the establishment and management of the array of conservation practices on the land. As the cooperator recognizes what is and is not effective, then modifications of both management and practices are often necessary.

611.05 Summary

The conservation plan enables the planner to engage cooperators, their beliefs, values, and attitudes relative to natural resource conservation. The planner then works with the cooperator to move toward a conservation ethic. However, the planner cannot be available at every step.

At some point, the cooperator will hopefully embrace a conservation ethic so that when the conservationist moves or retires, the cooperator will have the conservation ethic embedded as a way of life. Whatever conservation measures are applied to the land will benefit the land. That is the true value of the conservation plan and that is what the planner can expect as the ultimate outcome.

> *There are two ways to apply conservation to land. One is to superimpose some particular practice upon the pre-existing system of land-use, without regard to how it fits or what it does to or for other interests involved. The other is to reorganize and gear up the farming, forestry, game cropping, erosion control, scenery, or whatever values may be involved so that they collectively comprise a harmonious balanced system of land use.*
>
> **Aldo Leopold**
> Coon Valley: An adventure in Cooperative Conservation
> (1935)