
Chapter 8

Wildlife Management on Grazing Lands

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600.0800 General

Grazing lands support many species of wildlife as well as domestic livestock. As residents and consumers of vegetation on grazing lands, wildlife and their habitat must be properly managed if the land and associated resources are to be used wisely and efficiently. Wildlife, in the broadest sense represent all vertebrate species that are undomesticated (e.g., mammals, birds, reptiles, and amphibians). When providing technical assistance on grazing land resources, consideration of fish and wildlife in general will be guided by the desires of the cooperators, Natural Resources Conservation Service policy, the Endangered Species Act, sound resource management, and compliance with State laws and coordination with individual State policies and management goals.

The NRCS involvement in wildlife management is basically in the area of assisting private landowners and managers plan and apply conservation practices and resource management systems that create, maintain, or improve habitat for game and nongame wildlife species. The development of a wildlife habitat management plan is an integral part of the overall conservation plan as NRCS employees bring to the attention of the land manager all the soil, water, air, plant, and animal resource needs and concerns. All wildlife management planned and applied is the decision of the land manager in keeping with his or her overall objectives.

When it is the desire of the land manager, a wildlife management component of the conservation plan can be developed and implemented on almost any grazing land area. On rangeland or grazed forest, the native plant community can be managed to allow for healthy wildlife populations. On pasture, native or introduced species of vegetation that provide food, cover, or both, for the wildlife species being managed can be used as the primary forage species or as an overseeded species for seasonal use. A fence row or field corner might be developed as a source of wildlife food or cover on hayland or grazed cropland and a modified cropping system could provide food or cover for some target wildlife species throughout the field. A wildlife management plan provides food, cover, and water for the species of concern throughout appropriate areas of the farm or ranch.

For grazing land conservation planning, herbivorous wildlife species need to be considered as they impact forage resources, affect livestock management, or offer economic opportunities. Ruminant wildlife species are selective consumers whose degree of selectivity varies depending upon morphological and physiological adaptations. Diet composition for wildlife varies by season and location in response to the variability of the quantity and quality of food sources available.

Potential livestock impacts on fish and wildlife habitat as well as on wildlife social interactions need to be considered in conservation planning.

Some species of wildlife have become so greatly reduced in number, have such specialized habitat, or are so limited in distribution that they are threatened with extinction. The disappearance of any species is an ecological, cultural, and, in some cases, an economic loss. Productive wildlife populations in balance with available food, cover, and water resources fill a niche on grazing land ecosystems and can contribute to the overall environmental quality of the area. NRCS shall assist in the preservation of threatened and endangered species and their habitat, and avoid activities detrimental to them or their habitats. The Endangered Species Act requires NRCS to assess its activities that may affect a listed species.

Some wildlife species have expanded in number and range of occurrence as a result of improved conservation treatments and increased knowledge of wildlife management. Other changes in wildlife populations, both positive for some and negative for others, have resulted because of changes in landscape characteristics and plant community structure. Alteration of the natural fire regime, hydrologic parameters of wetland sites, and improper grazing practices have had a significant impact on some wildlife habitats. Some areas are experiencing habitat loss because of urban encroachment. In some locations game species are providing economic returns in excess of that received from traditional livestock operations.

NRCS helps landowners evaluate resource potential of their lands for wildlife habitat enhancement and sustainability. When providing assistance for enhancement of their grazing lands resources, including assessment of current conditions of the plant community, a description and methods for achieving the

desired plant community for the wildlife species of concern is provided. NRCS planners assist landowners in planning for the maintenance or improvement of the habitats for the kinds and amounts of wildlife desired by the cooperators.

Biologists, range conservationists, foresters, plant material specialists, agronomists, and soil scientists need to work as a team to prepare local technical information. Information, such as plant lists interpreted for wildlife dietary preference and such other values as cover (i.e., escape, screening, nesting, or thermal), provides knowledge for effective conservation planning to meet wildlife resource concerns. Wildlife habitat interpretations are to be included in ecological site descriptions of rangeland, grazed forest, and native or naturalized pasture. Habitat attributes associated to site descriptions shall consider, but are not limited to breeding, fawning and calving, bedding, foraging, nesting, roosting, and dusting.

600.0801 Technical assistance to landowners and managers

NRCS policy and procedures for assisting landowners and managers, local units of government, and others in planning and applying wildlife and fish habitat management on private and other non-Federal land are in the *National Biology Manual*.

Technical assistance is provided according to the provisions in the *National Planning Procedures Handbook* (NPPH) and the nine-step planning process. The NPPH aids NRCS planners in providing alternatives and assistance to address all resources, including wildlife, during the conservation planning process on all land units. Procedures for providing wildlife management assistance are described in the following sections.

(a) Determine objectives

Every farm and ranch operation is different, and seldom are the long-range plans and objectives of different landowners the same. A good understanding of the livestock, wildlife, economic, and management aspects of the ranch or farm is necessary. The planner needs ask the landowner or manager which wildlife species they want to include in the plan and the intensity and extent of the management desired. The landowner may wish to manage the grazing lands with wildlife as a primary or secondary use. The landowner's objectives should be clearly defined.

The planner will discuss the present capability and potential opportunity for producing and sustaining wildlife populations on the farm or ranch. General discussion should be centered on ecological sites, habitat suitability, and land uses identified in the planning objectives. Neither livestock grazing nor wildlife production can be maximized without affecting the other, and tradeoffs are necessary to optimize either or both. Therefore, the landowner's or manager's goals should be realistic.

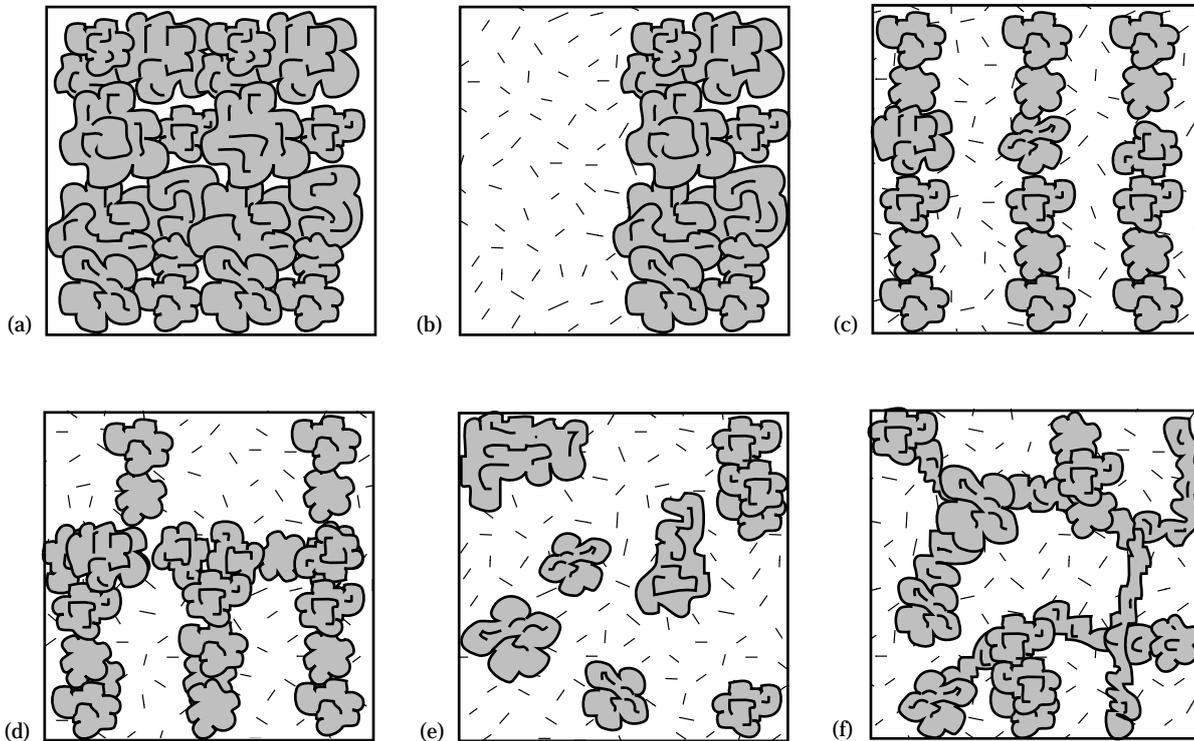
(b) Inventory the wildlife and habitat components

The quantity, quality, availability, and distribution, both seasonally and spatially, of all habitat elements (food, cover, and water) determine the carrying capacity of a given area of land for a given wildlife species. When one or more of these factors is limiting, it should be identified and appropriate plans developed to improve it.

(1) Plant community information

The planner will:

- Determine the ecological sites and their present status or condition for rangeland, grazed forest, native or naturalized pasture, pastureland, and hayland.
 - Use soil surveys and ecological sites for rangeland, grazed forest, native or naturalized pasture, and pasture suitability group descriptions for interpretations of wildlife use and preferences for specific plant species.
 - Appraise the condition and potential for wildlife habitat, giving special attention to food, cover, water, and space, and to their location and season of availability.
- Compare livestock grazing preferences and food requirements with preferences of wildlife species.
 - Consider the critical periods for food, water, cover, nesting, and reproduction and parturition of resident and migratory wildlife species as they relate to management objectives (i.e., winter, lactation).
 - Consider other spatial needs, such as interspersions of habitat types, and travel corridors between specific land use cover types and ecological sites. The diversity of plant species and plant communities is greater along the area where two habitat types come together; this is referred to as *edge effect*. When the amount of edge effect can be increased, wildlife populations (numbers and species) also generally increase. However, for some interior species, such as certain songbirds, an increase in edge may decrease their habitat and the value of remaining habitat. The size, shape, and location of various habitat types determine the amount of edge present. Interspersions of habitat elements in close proximity is important for some species. Example 8-1 describes design alternatives to provide edge in a rangeland pasture dominated by brush species.

Example 8-1 Alternative design of rangeland pasture to provide edge

A landowner wishes to apply brush management and range seeding on a rangeland pasture dominated by brush species. Many alternative designs can be considered in planning and implementing the practices (fig. 8-1). The five alternatives shown provide for half of the pasture (a) to be cleared and seeded and half to remain in brush.

Alternative b is the simplest approach and provides for some edge between the grass and brush halves of the pasture.

Alternative c provides six times the linear edge effect.

Alternative d provides even more edge plus wildlife travel corridors between the brush strips.

Alternative e provides a greater amount of edge and leaves brush motts that provide a natural appearance.

Alternative f provides for the greatest amount of edge and interspersions of habitat types, a natural appearance, and wildlife travel corridors between brush motts.

The concept displayed in this example can also be applied with pasture, hay, and croplands. Which alternative is the most favorable depends on the species being managed for and the plant community diversity.

(2) Animal information

The interactions between species of wildlife and between wildlife species and domestic livestock can present the land manager with a complexity of problems and opportunities. Ecologists have identified eight interactions that can occur between species populations. To appropriately manage the plant community and forage species, the landowner or manager and the planner need to be aware of and understand which of the interactions are applicable to the species of wildlife and livestock being managed. These interactions are:

- Neutralism, where neither population is affected.
- Competition, where each population affects the other.
- Mutualism, where interaction is necessary for the survival of both populations.
- Protocooperation, where both populations benefit, but it is not necessary for species survival.
- Commensalism, where one population benefits, but the other is not affected.
- Amensalism, where one population is inhibited and the other is not affected.
- Parasitism, where one species population is dependent upon the other and directly affects the other.
- Predation, also where one species population is dependent upon the other and directly affects the other.

The term competition is generally used to refer to any interaction where there is a negative outcome for one or more species. Competition occurs when a number of individuals use common resources that are in short supply or when they seek a resource that may not be in short supply, but cause harm to one another as they use the resource, or both situations. Competition between wild and domestic grazing animals can occur as forage competition, habitat competition, or both. Some grazing animals are more adaptable in their choice of forage and habitat than others. Several factors have been identified concerning competition between grazing animals, including:

- The grazing animals use the same range, sometimes simultaneously, sometimes not.
- Plant species are important to at least one species of animal and are used by both species of animals, either as forage or as a habitat element, such as nesting or cover.

- The plant species or water resources show deterioration as a result of overuse by one or more animal species.

Competition for space must also be considered. It may continuously occur or may occur only seasonally. Competition may occur during some years and not during others because of climatic and other conditions.

All wildlife species require food, cover, water, and space. The planner must know the requirements of each wildlife species of concern to provide the landowner with the proper technical assistance. The planner, along with the landowner, must determine the qualities and quantities of habitats throughout the farm or ranch and the general habitat conditions of surrounding areas. As the conservation plan is developed, the following habitat factors, some of which may be critical limiting factors, should be evaluated and planned for as needed:

- permanent food and cover
- edge effects, interspersions of habitats
- diversity
- season of use
- carrying capacities
- travel lanes to connect habitats (both on and off the farm or ranch)
- fencerow developments
- proper control of plant structure and succession
- use of native plants
- use of plantings
- water quantity (permanent source)
- water quality
- other appropriate factors, such as nesting, fawning, and calving sites

Each element can be provided in a variety of ways. The presence and condition of each element can vary depending upon the time of the year and the current conditions. The habitat elements need to be present in a favorable pattern that varies with species of concern. Food, cover, and water requirements of each species can vary seasonally as well as daily.

Just as the grazing land manager must keep livestock in balance with food and water, wild ungulate numbers must also be in balance with the habitat elements. Failure to maintain a proper balance of wildlife numbers with their habitat can severely damage the habitat, reduce forage for livestock, and affect the quality

of the individual animals within the wildlife population. The NRCS planner, with prior agreement or assistance from the state wildlife agency, will assist the landowner or manager to estimate wildlife population numbers. The planner will provide techniques to estimate the density (number per area) or abundance (one population relative to another) for the primary wildlife species of concern. Techniques for determining wildlife population density or abundance include, but are not limited to the following:

Abundance:

- Number of animals seen per hour of observation or per area
- Number of animals seen per linear distance
- Number of tracks counted per hour of observation or per linear distance
- Number of calls heard per hour
- Pellet group transects

Density:

- Line transect—After the area being sampled is known, a line transect can be run and the number of animals observed or heard can be converted to the number per unit area.
- State wildlife agency estimates. In many states, the state wildlife agency can provide a general population density estimate for specific geographical areas of the state. This can be used when no site specific data is available or attainable.

Since wildlife species belong to the people of the state, the state wildlife department within each state has the responsibility of administering and managing the state's fish and wildlife resources. The U.S. Fish and Wildlife Service has lead responsibility for migratory and Federally listed threatened and endangered species. NRCS responsibility lies in assisting the landowner or manager with habitat management in a manner that is compatible with the overall farming or ranching operation and other resource management objectives. When population management is needed, the landowner is to be encouraged to contact state and local wildlife agency personnel to determine what course of action may be possible within a given state. An agreement between the participants on methods used should be reached in the beginning.

Other factors that assist sound decisions concerning wildlife populations consider annual productivity and condition status of the species. Knowing the annual recruitment of new individuals into the population; their seasonal habitat needs, behavior; breeding, fawning, and nesting requirements; and the health of the species help identify important factors concerning their habitat and sustainability. NRCS planners should be aware of natural fluctuations in population numbers resulting from drought, wildfire, and other natural events. These changes are generally short-term phenomenon, and planners should encourage cooperators to consider referring to long-term data collected on their farm or ranch before making decisions that may have negative consequences.

Planners should encourage cooperators to include state and local game and fish agency personnel as well as NRCS biologists when emphasis of wildlife management is a major objective in the conservation plan. State and local fish and wildlife agency personnel have resources and knowledge that can be extremely beneficial to achieving the landowner or manager's objectives. When providing assistance on tribal lands, U.S. Fish and Wildlife Service is responsible for determining wildlife populations, at the tribe's request.

(3) Water

Water is an essential element to all wildlife species; some are more dependent on available water than others. A wildlife management plan includes the careful consideration of wildlife water availability. A careful inventory of wildlife watering sources is necessary. The planner and land manager must be aware of the target wildlife species' water needs. The type of watering facility may be critical for certain species (i.e., trough versus pond, fenced versus unfenced). Permanent watering sources are necessary for some species and must be available. To be accessible to all species, livestock water sources may need to be modified to provide water at ground level. Because livestock may concentrate around watering facilities, ground nesting bird habitat is an important consideration.

(c) Analyze the needs for improving, restoring, or maintaining wildlife habitat

Grazing animals, both domestic and wild, select a wide variety of plants from the three major vegetation classifications (grass, forbs, and browse). The vegetation of an area may be affected differently by different classes of livestock and different types of wildlife because of differences in foraging behavior.

The planner will assist the landowner or manager in determining whether the wildlife habitat is currently improving, being maintained, or deteriorating and why. This determination should include an evaluation of current and past utilization of plant species and evidence of satisfactory reproduction and growth of species desirable for wildlife. The Browse Resource Evaluation worksheet (exhibit 4-5 in chapter 4) can be used for judging composition, trend, and utilization of the browse plant resource.

The planner will assist the landowner or manager to identify dietary overlap between major wildlife species and livestock if any exists. Dietary overlap may be found during critical seasons and may affect breeding, animal development and survival for the wildlife species. It can also have detrimental impacts to the overall productivity of the livestock. The magnitude of the diet overlap and the plant and animal species involved should be considered.

As the kinds and amounts of vegetation decrease, competition increases. Competition for plants can also change as physiological stages of the plants change. The optimum mix of grazing animals can be determined from a combination of the knowledge of the grazing animals foraging behaviors, their forage preferences and nutritional requirements, the kinds and amounts of plants present throughout the grazing season, past experience, and present conditions.

The planner may use a vegetation transect from the multispecies calculator that is in the decision support software, Grazing Lands Application (GLA), in the Field Office Computing System (FOCS). This gives a recommended stocking rate for all classes of domestic livestock based upon the allocation of forage to the wildlife species. The planner must first identify the kind and number of wildlife present and the dates and duration of their presence.

The planner may use habitat suitability indices and appropriate habitat evaluation procedures for the wildlife of concern. These tools can assist the NRCS planner and land manager with understanding which habitat elements are critical and which, if any, need to be provided or improved for the wildlife species of concern.

(d) Develop and evaluate alternatives

The planning process includes developing and evaluating alternatives to maintain, improve, or develop the desired wildlife populations and habitat. This includes plant and animal resources as well as water resources.

(1) Plant and animal resources

A major objective in many wildlife management plans is to increase diversity of plant and animal life through the use of edge effect between various plant communities. The proper management of plant communities is the key to healthy wildlife populations because plants supply wildlife with food and cover for nesting, loafing, resting, roosting, travel, and escape from predators and adverse weather.

The manipulation of plant succession in native plant communities is the primary element in managing wildlife habitat. The proper manipulation of succession can lead to the desired plant community necessary for the wildlife species of concern. Different wildlife species attain their optimum populations in plant communities in different successional stages. Knowing the animals optimum habitat and distribution among, and between, different successional stages is necessary for the manager to adequately plan wildlife habitat management.

Manipulating the successional stage of a plant community can slow down or speed up the development of the wildlife population being managed. The primary methods used to manipulate plant succession are grazing, burning, disking, mowing, cutting, and applying herbicides. These methods must be planned for the appropriate time. For example, in parts of the Southeastern United States, mowing and cutting should be after July. This allows ground nesting birds and other wildlife adequate time to complete nesting. Proper timing is determined by the objectives of the manipulation and the growth stage of the target plant species

being affected. Patterns can be planned and applied that will increase the desired forage constituents for the preferred species while increasing the edge.

On grazing lands dominated by monocultures (pastureland, hayland, and cropland) and on native plant communities (rangeland and forest) where some habitat element is limiting, planting food and cover may be an effective and quick means of obtaining the desired plant community and wildlife habitat. Plants selected for plantings must be adapted to the ecological site or suitability group. Ecological principles must be used in planting, establishing, and managing the plantings to obtain the desired results.

A wildlife planting can provide food, cover, or both. Plants selected should eliminate the limiting factors where possible. Although any plant form can provide several habitat elements, annual plants are generally planted for food production, while perennial grasses, forbs, and woody plants may be planted for food and cover. The area selected for wildlife food and cover plantings should provide the optimum edge effect with other vegetation types. In some cases fences are necessary to manage livestock grazing, and exclusion is desirable.

A planned grazing system, as a part of the overall grazing prescription, can provide the land manager with opportunities and the flexibility to integrate wildlife use with domestic livestock grazing. The grazing plan must take into account the factors and criteria of competition to efficiently and effectively manage the grazing land resources. To restore, maintain, or improve the habitat for the wildlife species of concern where the grazing lands have deteriorated, livestock often need to be removed for a period to allow the plant community to respond. On the other hand livestock may be used as an effective tool to restore, maintain, or improve the habitat of the species of concern on many grazing lands. Livestock grazing can be planned and managed to open up dense vegetation that may support only a few species and create a diverse plant community favorable to more species of wildlife. To make the proper decisions concerning grazing timing, duration, intensity, and class of livestock, the grazing land manager must consider the condition and needs of all the resources.

Every grazing system must be planned for a specific area of land, and each system will vary in its effects

and influence on wildlife. The manager must not only plan a grazing system that is tailored to fit the vegetation and livestock needs, but must also plan a system that is tailored to fit the needs of the wildlife species of concern. As livestock is rotated through a given area, the quantity and quality of food and cover species may be altered. The manager, therefore, must know the specific seasonal needs of the wildlife of concern to prevent degradation and to plan grazing that will enhance the habitat.

The NRCS planner will:

- Help the landowner or manager clarify the goals and objectives so appropriate treatment alternatives are considered in the planning process.
- Help the landowner or manager plan the appropriate treatment for the desired habitat.
- Give adequate consideration to the conservation needs and wildlife potential of the land. Examples of such treatment are:
 - Manipulating kind and class of livestock, season of use, and intensity of use with a prescribed grazing system to provide required food and cover at critical times and locations for wildlife.
 - Planning systems for brush management, such as prescribed burning, to obtain a desirable combination of herbaceous and woody species.
 - Using seed mixtures that produce plants beneficial to wildlife.
 - Developing accessible watering facilities while protecting riparian areas.
- Help the landowner or manager plan for proper use by livestock and wildlife species, balance forage supplies for both wildlife and livestock, meet needs of migratory big game animals and waterfowl, and adjust for variations in forage production by having flexibility in numbers of game animals and livestock.
- Provide recommendations to avert deficiencies in food quality and quantity to meet the projected carrying capacity for the wildlife species and kind and class of livestock desired.
- When appropriate, discuss the desired level of harvest of game birds and animals. Frequent opportunities for making adjustments are available by:
 - Cooperating with State and Federal game management agencies and landowners
 - Leasing trespass rights for hunting

- Arranging for guide services and lodging for hunters.
- Allowing a charitable hunt for disadvantaged youth.
- Planning other appropriate practices or treatments needed to achieve the wildlife objectives of the landowner.

(2) Water resources

(i) Wildlife water availability—A wildlife management plan includes the careful consideration of wildlife water needs and availability. The NRCS planner and land manager must be aware of the target

wildlife species' water needs and plan to provide adequate water where it is not available, either year-long or during critical seasons. Wildlife water may be provided from a stream or pond, livestock watering trough adapted for wildlife use, or a specially designed wildlife watering facility planned for exclusive and specific wildlife use. A well-designed wildlife watering facility provides an adequate supply of quality water that meets the needs of the wildlife species of concern. Figure 8-1 is examples of wildlife watering facilities that provide an adequate supply of quality water to meet the needs of the wildlife species of concern. Figure 8-23 shows watering facilities used by different wildlife species.

Figure 8-1 Wildlife watering facilities

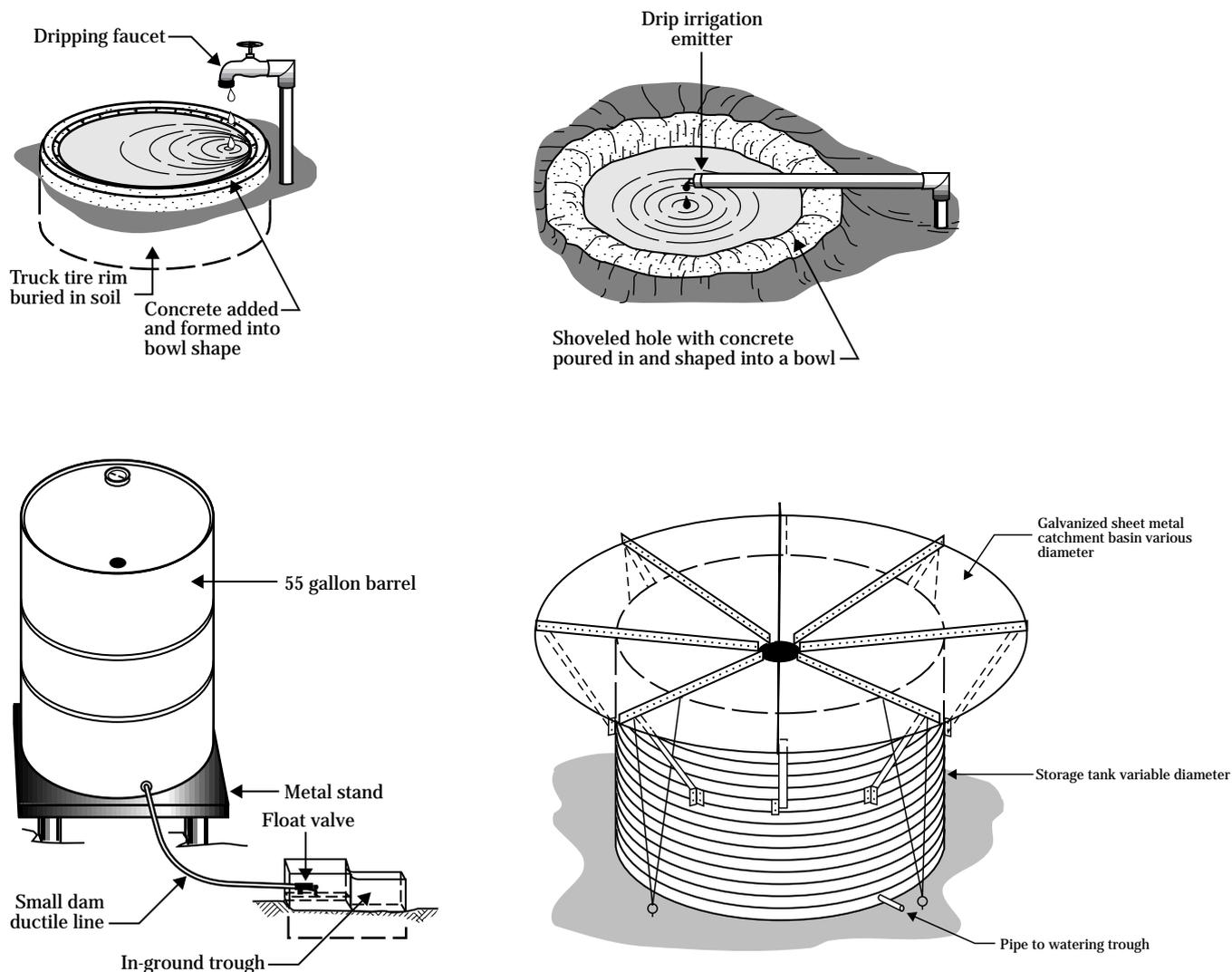


Figure 8-2 Properly designed watering facilities are used by many wildlife species



(ii) Riparian areas and fish habitat—The management of a fish population is dependent upon the availability of water of sufficient depth, temperature, and quality with adequate habitat structure for the fish species of concern. Proper planning and control of grazing are necessary to manage the fish habitat in streams and ponds adjacent to or contained within grazing lands. Control of grazing is necessary not only in the riparian area, but also in the upland areas of the watershed.

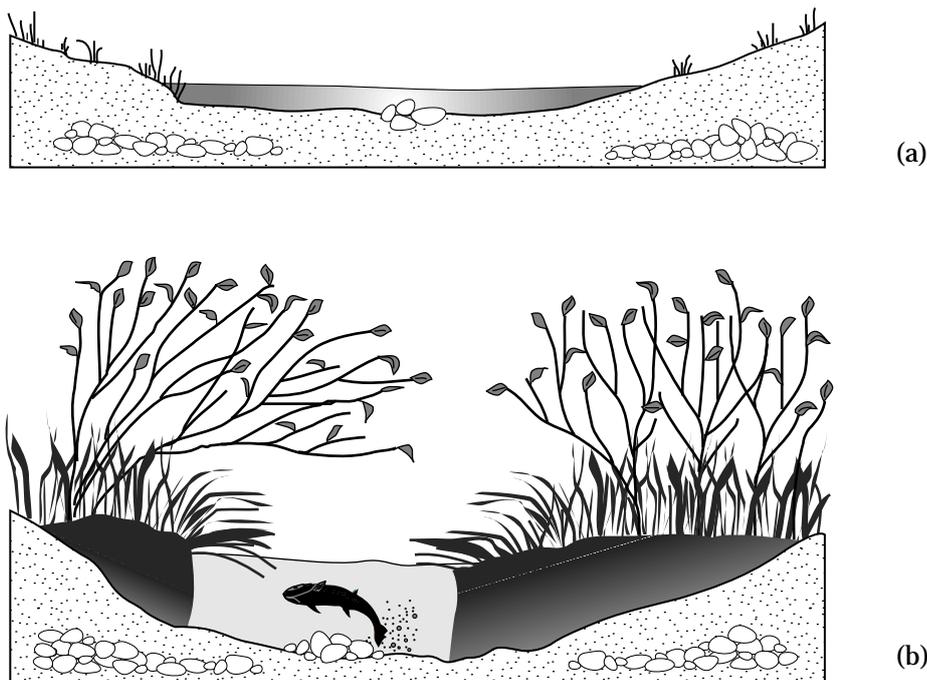
Riparian areas (fig. 8-3) are extremely important habitat for most species of wildlife at some time during the year. In some instances riparian areas need to be fenced. Overgrazing can severely degrade fish and wildlife habitat when the stream channel is altered through trampling and removal or destruction of streamside vegetation. Streambanks with adequate undercut, deeper water, and overhanging vegetation that shades the water and lowers the water temperature are desirable for many fish species. The fish population is severely depleted or eliminated where the streambank is altered and has fewer undercuts and less overhanging vegetation and where the water is

shallow and has a high sediment load, lower oxygen levels, and a higher temperature. Most fish that live in streams and many that live in ponds depend on the riparian vegetation to:

- stabilize the banks,
- keep sediment out of the channel,
- supply food in the form of insects,
- provide shade to keep the stream from getting too hot,
- provide large woody debris to form pools and hiding cover,
- provide energy to the stream in the form of leaves and other plant material that falls into the stream, and
- keep pollutants and nutrients out of the water.

Grazing management can improve water quality in ponds by reducing sediment yields from the drainage area and managing the desired vegetation around the shoreline. Excessive animal numbers can stir sediment, muddy the water by wading and drinking, and increase pollutant levels. Mismanaged grazing around the shoreline can remove valuable shade and cover vegetation for aquatic life.

Figure 8-4 An altered stream channel in an overused riparian area (a) in contrast to a stream channel in a well managed riparian area (b)



Where fish management is an issue, a properly planned grazing system must account for the needs of the fish population and its habitat. The intensity, duration, and timing of grazing in the riparian areas, as well as the entire watershed, should be planned and controlled to meet the objectives. The proper location of fences, mineral supplements, and water developments can be facilitating practices that enhance the manager's ability to implement a planned grazing system that is ecologically sound while maintaining desirable water quality.

(e) Provide follow-through assistance and evaluation

The planner will:

- Provide technical assistance to the landowner or manager in applying practices and implementing the total conservation plan. Quantifiable assessments should be done periodically to assure the objectives and goals of the conservation plan are biologically realistic and attainable.
- Assist the landowner or manager in checking habitat periodically to evaluate trend in habitat components. Appropriate monitoring techniques should be recommended to the landowner or manager to adequately evaluate food, cover, water, and spatial requirements for the wildlife species of concern. Particular attention should be given to riparian areas.
- Assist the landowner or manager in checking for proper utilization of key wildlife forage or browse species.