Appendix

F

MEDICINE BOW NATIONAL FOREST

Revised Land and Resource Management Plan

Final Environmental Impact Statement

Appendix F
Research Natural Areas

Appendix F

Introduction

Adaptive management is one of the key principles of ecosystem management. Adaptive management recognizes that land and resource management decisions need to be made even though the knowledge for making the decision and their consequences may be incomplete or uncertain. Under adaptive management, managers decide the best course with available information but monitor to make sure the original decision is having the desired effect. Research Natural Areas (RNAs) are key components of adaptive management because they represent ecosystems in a natural condition. RNAs serve as reference areas that allow managers to assess consequences of management actions on other similar areas. Scientists use RNAs to understand how ecosystems function. RNAs are also important for conserving biological diversity.

The first Forest Service RNA was established in 1927 on the Coronado National Forest in Arizona. Since then, the RNA system has grown to over 420 established RNAs nationwide. Forest plans will propose additions to the RNA networks because of the essential role of RNAs in ecosystem management—providing reference areas and research opportunities and protecting biological diversity. Currently, there is one RNA on the Medicine Bow National Forest, Snowy Range RNA.

What RNAs Represent

The goal of the RNA program is to represent the ecological diversity that occurs on National Forest and National Grassland units so the Forest Service can assess the impacts of management and conserve biological diversity. An ecosystem can roughly be defined as the plants animals, and environment of a given area. Some of the major ecosystem types that help define this ecological diversity on the Medicine Bow National Forest include spruce/fir, lodgepole pine, and aspen forests; shrublands; montane grasslands; alpine areas; and aquatic and riparian ecosystems. At a finer scale, ecosystem types can be defined by several of their dominant plant species, such as subalpine fir/Engelmann spruce/grouse whortleberry and aspen/bracken fern types. At this level, ecosystem types are referred to as plant associations or community types. Over 500 plant associations and community types have been identified on national forests and grasslands in the Rocky Mountain region, and few of these are represented in RNAs.

RNAs can also represent the broad geographical differences in different ecosystem types within each Ecoregion Section (see hierarchy of Ecological Units). Variations in geology, soils, landforms, and climate influence the kinds of plants and animals that live in different regions and can be used as features for establishing a representative RNA system. The climatic differences that occur between the east and west sides of the Continental Divide affect ecosystems and are typical of the kind of significant ecological differences that the RNA system tries to represent.

The Function of RNAs

RNAs serve at least three important functions for the Forest Service:

1. Reference Areas: RNAs serve as benchmarks or references areas for monitoring and evaluating the sustainability and impacts of land management practices on lands with similar ecosystem types. To determine the impact of management on an area, it is desirable to have a similar area maintained in natural condition for comparison. RNAs make one of their most important contributions to ecosystem management serving as a representative system of controls for land managers.
2. Biological diversity: RNAs provide protection for biological diversity. A representative RNA system provides some degree of assurance that a wide array of plant and animal species are being given a high degree of protection for the future. This protection may be most important for the forms of biological diversity that ecosystems often depend upon the most and about which we know the least, such as soil microorganisms, fungi, and insects. RNAs can also be selected to provide a high degree of protection for specific populations of threatened, endangered, and/or sensitive species.
3. Research: RNAs provide sites for research into how ecosystems function. This research is often best accomplished in areas where ecological and evolutionary processes are functioning as naturally as possible. RNAs serve as sites for monitoring long-term change in ecosystems, such as global climate change and shifting patterns in the landscape resulting from natural disturbances by fire, floods, and insect epidemics. When scientists perform a variety of research projects in an identified RNA, the cumulative results of such work can greatly increase our understanding of particular ecosystems. One of the results of ecosystem management is that lands will be managed with the best information available. Over the years, scientific research in RNAs has helped provide that information. RNAs also serve an important educational function by providing excellent examples of ecosystems in relatively natural conditions with functioning ecological processes.

RNAs help the Forest Service maintain the long-term health, productivity, and diversity of lands entrusted to its management by the public.

Condition of RNAs

Because RNAs represent ecosystems in their natural condition, they should be located in areas with a minimal amount of impact from human use. RNAs should also contain good examples of the ecosystem types they represent. For some ecosystem types, areas without significant human impact could not be found. In these cases, RNAs were selected from sites in the best available condition. On the Medicine Bow National Forest, a concentrated effort was made to select sites that would have minimal conflicts with existing public uses. Therefore, potential RNAs were primarily selected from lands that are presently roadless and in vacant or closed grazing allotments.

Size of RNAs

To serve as benchmarks, to conserve biological diversity, and to serve as research areas, RNAs must be large enough to maintain the natural processes that sustain ecosystems. For example, many of our forest, grassland, and shrubland ecosystems evolved from fire and other natural disturbances producing a landscape that is a mosaic of patches of various sizes and ages. These patches vary from tens to thousands of acres in size. To maintain ecological processes in many fire-dependent ecosystems, land areas of a thousand or more acres in size often work best to incorporate a mosaic of successional stages or to allow for their development in the future. Current ideas in conservation biology also recognize the potentially harmful influence of some outside land uses on the ecological integrity of small natural areas. Small natural areas can degrade easily and suffer species loss.

Larger natural areas provide greater representation for the range of natural variability, which occurs in most ecosystem types and makes RNAs potentially more valuable as benchmarks for ecosystem management. Some RNAs that represent these patterns and processes are desirable. Where possible, complete watersheds have been selected for potential RNAs, partially in order to maintain intact and naturally functioning aquatic and riparian ecosystems.

Management of RNAs

Management area prescriptions provide an outline for how RNAs will be managed. The intent of RNA management is to minimize human impacts that will affect the ecosystem and to maintain biological diversity and natural processes. Therefore, most potential RNAs were selected from areas that are roadless, in vacant or closed grazing allotments or where grazing levels appear compatible with RNA designation, in areas that have not experienced timber harvesting, and in areas that do not experience heavy recreation use. Road building and timber harvesting are not compatible uses in RNAs. Some degree of livestock grazing can be used to maintain grassland ecosystems found on national grassland units.

Recreational Management

Most of the potential RNAs on the Medicine Bow National Forest were selected in areas that do not receive heavy recreational use. However, it is inevitable that varying degrees of recreational use will occur in all these areas, and recreational use will likely increase. Because RNAs serve as benchmarks and heavy recreational use can alter species populations and affect ecosystem function, recreational use is not encouraged but not prohibited, in RNAs. For example, use of existing trails in RNAs is permitted, but no new trails will be constructed unless necessary to correct resource damage from existing trails. Existing recreation trails often provide desirable access to RNAs for research, administrative, and educational purposes.

Fire Management

Natural fire frequencies are desirable in RNAs. However, excessive build up of fuels from decades of fire suppression, valuable resources outside RNA boundaries, and special values inside some RNAs, may preclude allowing prescribed natural fires to occur. Site-specific fire management plans may need to be developed for some RNAs in order to identify circumstances during which natural fires can be allowed to burn freely and to design specific management ignited prescribed fires to mimic natural fires.

Exotic Species Management

Exotic (non-native) species are not desirable in RNAs. Some particularly invasive and unpalatable plant species, such as knapweed and Canada thistle, could be targets for control in RNAs and elsewhere on public and private lands. Decisions on the threats of exotic plant species to RNA values and possible control techniques, including the use of herbicides, will need to be made on a site-specific basis.

Potential RNAs

Short summaries for each of the potential RNAs are presented below. Complete descriptions of each area were written, based on Ecological Evaluations developed by The Nature Conservancy, and validated by Medicine Bow National Forest personnel familiar with on-the-ground conditions. These complete descriptions are part of the administrative record on file and available for review at the Forest Service Office in Laramie Wyoming.

Sheep Mountain

The 13,536-acre Sheep Mountain potential RNA is located in the Laramie Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the RNA are Douglas-fir woodlands, aspen woodlands, lodgepole pine woodlands, limber pine woodlands, shrublands, and grasslands representing a variety in species

composition and stand structure; wetlands with floating mat bogs; and seeps on geologic faults. It also provides habitat for Colorado tansy-aster.

Platte Canyon

The 11,856-acre Platte Canyon potential RNA is located in the Laramie and Brush Creek/Hayden Ranger Districts of the Medicine Bow National Forest. The principal features of the area include a mosaic of upland forest, woodlands, and shrublands, and a narrow riparian corridor in North Platte River Canyon. This area was selected to fill gaps in the following community types: Douglas-fir series, aspen series, narrowleaf cottonwood series, Rocky Mountain juniper series, big sagebrush series, antelope bitterbrush series, Idaho fescue series, thinleaf alder series, Booth's willow series, water sedge series, and bluepoint reedgrass series. The RNA also provides habitat for boreal western toad, bald eagle, and peregrine falcon.

Battle Mountain

The 1,319-acre potential Battle Mountain RNA is located in the Brush Creek/Hayden Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the area are a volcanic butte supporting a mosaic of plant communities. Quaking aspen woodland, lodgepole pine forest, mountain big sagebrush shrubland, and bluebunch wheatgrass vegetation occur primarily on top of Battle Mountain. Subalpine fir woodland, limber pine woodland, and Saskatoon serviceberry shrubland occur mainly on the sides of the mountain.

Ashenfelder

The 7,151-acre potential Ashenfelder RNA is located on the Douglas District of the Medicine Bow National Forest. This area is an excellent example of a virgin Front Range ponderosa pine ecosystem. The Laramie columbine is located in the RNA, as is habitat for the northern goshawk.

Old Maids Draw

The 990-acre potential Old Maids Draw RNA is located in the Douglas Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the area include the narrow, steep-sided Old Maid's Draw and the northern slopes of Brumley Mountain. Granite outcrops are common. The vegetation is principally lodgepole pine woodlands, limber pine woodlands, Douglas-fir woodlands, and shrublands on the slopes, with a narrow riparian corridor in the bottom of the draw.

Ribbon Forest

The 4,350-acre potential Ribbon Forest RNA is located in the Laramie and Brush Creek/Hayden Ranger Districts of the Medicine Bow National Forest. The principal distinguishing features of the area are old growth spruce-fir forests, ribbon forests, subalpine meadows and wetlands, and talus fields. This area would fill gaps in the RNA system for the subalpine fir series, the Engelmann spruce series, the tufted hairgrass wetland series, the common spikesedge wetland series, Parry clover alpine fellfield series, and the planeleaf willow riparian series.

Savage Run

The 1,057-acre potential Savage Run RNA is located in the Laramie Ranger District of the Medicine Bow National Forest. The principal distinguishing feature of the area is that it is almost entirely covered by lodgepole pine. The area also contains subalpine fir-Englemann spruce/elk sedge, subalpine fir-Englemann spruce/grouse whortleberry phase Ross sedge, and lodgepole pine/elk sedge.

Ground Moraine

The 1,271-acre potential Ground Moraine RNA is located in the Laramie Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the area are old-growth spruce-fir forests, tufted hairgrass meadows, kettle ponds, and glacial moraine arms. The kettle ponds and their associated wetlands are an especially significant feature of the RNA. The RNA also provides habitat for the clustered lady's slipper.

Three Mile

The 8,844-acre potential Three Mile RNA is located in the Laramie Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the area are limber pine forests on ridges, old growth lodgepole pine forests with single layer overstories, old growth spruce-fir forest, and a 927-acre 40-year-old burn with regrowth of lodgpole pine. The area contains one of the few large areas of uncut, old lodgepole pine forest in the Medicine Bow Mountains.

LaBonte Canyon

The 3,344-acre potential LaBonte Canyon RNA is located on the Douglas District of the Medicine Bow National Forest. The principal distinguishing feature of the RNA is a steep walled valley. The northern side of the valley is a mixture of big sagebrush stands, antelope bitterbrush stands, Rocky Mountain juniper shrublands, ponderosa pine woodlands, and rock outcrops. The southern side of the valley is forested with lodgepole pine and ponderosa pine woodlands. Riparian woodlands grow along the stream in the valley bottom.

Big Bear Canyon

The 2,829-acre potential Big Bear Canyon RNA is located on the Douglas District of the Medicine Bow National Forest. The principal distinguishing feature includes a narrow, steep-sided stream valley. The valley sides are forested with lodgepole pine woodlands, ponderosa pine woodlands, aspen woodlands, and sagebrush shrublands, and rock outcrops. A narrow fringe of riparian vegetation grows along Big Bear Creek in the bottom of the valley.

Standard Park

The 3,618-acre potential Standard Park RNA is located in the Brush Creek/Hayden Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the RNA are extensive quaking aspen woodlands, conifer forests, subalpine fellfields, and wetlands. The wetlands contain mud sedge. The RNA also provides habitat for Colorado River cutthroat trout.

Big Sandstone (formerly Deep Creek)

The 4,657-acre potential Big Sandstone (formerly Deep Creek) RNA is located within the Brush Creek/Hayden Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the RNA are lodgepole pine woodlands, quaking aspen woodlands, sagebrush shrublands, and dry grasslands. The area also contains two populations of the clustered lady's slipper, habitat for northern goshawks, and habitat for the Colorado River cutthroat trout.

East Fork Encampment River

The 2,244-acre potential East Fork Encampment River RNA is located in the Brush Creek/Hayden Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the area include lodgepole pine forests, subalpine fir-Englemann spruce forests, and tufted hairgrass meadows around seeps. Its primary value as a potential RNA is the vast amount of research that has been conducted there by the Rocky Mountain Research Station and various academic institutions.

Cedar Pass

The 5,470-acre potential Cedar Pass RNA is located within the Brush Creek/Hayden Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the potential RNA are lodgepole pine forests, quaking aspen forests, and a mosaic of sagebrush shrublands and grasslands. The potential RNA also provides habitat for the northern goshawk.

Many Ponds

The 899-acre potential Many Ponds RNA is located in the Laramie Ranger District of the Medicine Bow National Forest. The principal distinguishing features of the area are strings of ponds created by current and past beaver activity along three low gradient streams. The ponds provide habitat for several wetland plant communities in the subalpine fir series, montane willow series, and sedge series, and for boreal western toad. Also included within the area are lodgepole pine forests on uplands between the streams.

Browns Peak

This 1,735-acre public proposed RNA was identified by Welp et al. (2000) as the Snowy Range Biological Area. It is characterized by alpine fellfield, tundra, and willow habitats. Known occurrences of rare animals include the brown-capped rosy finch, dwarf shrew, pygmy shrew, Medicine Bow Mountain pika. This area has rare plants including: Golden saxifrage, black-head fleabane, Rocky Mountain snowlover, pygmy goldenweed, northern white rush, Rocky Mountain nailwort, Arctic harebell, alpine kittentails, and Dane's gentian.