

FIXING A HOLE



THE IMPORTANCE OF LANDSCAPE CONNECTION

Ecosystems are composed of numerous plant and animal species existing in an ever-evolving inter-relationship. Historically, the United States has divided and transformed its landscape to meet our material needs, often with little understanding or forethought. The result is that large, intact and connected natural ecosystems are increasingly rare. This is especially true of U.S. forests. Conservation biologists agree that America's individual protected areas, such as national parks and wilderness areas, are too small to support healthy and diverse ecosystems. The vast majority of these nature reserves are in fact "islands" of protected habitat in a vast sea of development.

Like island species, wildlife found in isolated national parks and wilderness areas must survive on limited resources, with restrictions on movement and with little flexibility in the face of catastrophe or competition. In fact, the extension of island theory into modern conservation planning began with research documenting the loss of wildlife species in North America's largest park complexes.⁶ This research demonstrated that the rate of local extinction in protected areas was inversely related to the size of area: the larger the protected area, the lower the likelihood that it would lose species to extinction over time.

Habitat diversity (i.e., the variety of different habitats within a given area) and special features such as caves, springs, cliffs and certain tree species, coupled with the mitigation of destructive impacts, are critical elements of an effective nature reserve system. Protecting examples of all representative ecosystem features in an ecological reserve network allows wild plants and animals in the region to flourish under the resulting habitat umbrella.⁷

In examining the relationship between area, species diversity and extinction rates, ecologists have identified a key weakness in current conservation network: a lack of the large protected natural areas, known as "cores." Cores are protected areas designed to maintain existing natural landscapes where biodiversity, ecological integrity and wilderness take precedent over other uses.⁸ Cores are necessary for protecting ecological health, particularly for large, wide-

ranging mammals. Even relatively sizable regions, such as the Greater Yellowstone ecosystem, must be connected to other large reserves if they are to safeguard animals such as wolverines and grizzly bears.⁹ Increasing the size and number of parks and wilderness areas is an effective way to establish core areas. Furthermore, safe corridors for travel between protected cores are necessary to ensure species viability over the long term.¹⁰

Ecologists now recognize that certain animals—referred to as "keystone species"—play a critical role in maintaining ecosystem diversity.¹¹ Keystone species, the custodians of healthy ecosystems, may occur at any ecosystem level, from plants and herbivores to carnivores and detritivores (waste eaters), and include animals that physically transform landscapes or aquatic habitat such as prairie dogs and cavity-excavating birds.

Contemporary conservation planners recognize that these three interdependent components—cores, corridors and keystone species—are necessary for healthy nature reserve networks that protect biodiversity. Modern conservation science provides us with the know-how to protect habitats effectively and to design future nature reserves. Research on ecosystem scale, connectivity and species composition indicates that we must increase our efforts to establish large, linked protected areas. For obvious reasons, these factors were not taken into consideration when the United States laid the foundation of our protected areas system 100 years ago.

If the United States is to safeguard its natural resources into the future and regain its international conservation leadership role, we must re-examine the management structure governing our last forest regions. Such an exercise will help determine where national parks, wilderness areas, national forests, wildlife refuges and other protected areas should exist and allow for higher-impact tourism, hunting, fishing and the harvest of non-timber forest products. The best place to start such a process is with our public lands in our most important forest regions—the keystone forests.