

INTERACTIONS BETWEEN THREATENED AND
ENDANGERED SPECIES AND WILDERNESS

Maurice Hornocker
Idaho Cooperative Wildlife Research Unit
University of Idaho
Moscow, Idaho 83843

ABSTRACT

Wilderness has long been recognized as important as a land laboratory. This natural laboratory can provide the basic or baseline data against which man's impact can be measured elsewhere. This is particularly important to endangered species. Wilderness is not, however, functioning in this manner.

Wildlife is an important, if not essential, component of wilderness, yet it has received little or no attention. There are numerous reasons for this, an important one being the lack of clear guidelines to management agencies.

In order to utilize these natural laboratories, a framework must be developed to provide funding for basic long-term research. The framework must also provide clear guidelines for all agencies managing wilderness wildlife.

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Thirty-seven years ago Aldo Leopold wrote: "The . . . most perfect norm is wilderness. Paleontology offers abundant evidence that wilderness maintained itself for immensely long periods; that its component species were rarely lost, neither did they get out of hand; that weather and water built soil as fast or faster than it was carried away. Wilderness, then, assumes unexpected importance as a land-laboratory" (Leopold 1941).

The land-laboratory or natural-laboratory concept will be the basic theme of this discussion. Endangered species and their relationships to wilderness will be part of the entire paper but we'll go beyond that to explore ways in which species, in wilderness and without, may hopefully be prevented from becoming threatened or endangered.

The original working title of this paper was Wilderness: Endangered Species Capabilities and Conflicts. In that working framework I drew on observations from my own work in wilderness and on species dependent on wilderness habitats. Many capabilities were obvious, as well as conflicts. As that framework developed I rediscovered the thoughts and concepts advanced early by eminent scholars of wilderness and wildlife: Marshall

(1937), Leopold (1941), Murie (1941, 1944), Olson (1956), Craighead (1958), Allen (1966, 1973), and others. More recently Schoenfeld and Hendee (1978) have articulated these same thoughts in their excellent work Wildlife Management in Wilderness. All extol the value and virtues of wilderness to our culture. All point out eloquently that wildlife is an integral, important, and often essential component of any wilderness ecosystem. Allen (1973), in the new North American Wildlife Policy, stated one of our highest priorities should be "the preservation of species, especially the perpetuation of natural gene pools unchanged by human uses. Of particular value are completely protected areas large enough to support self-contained populations of native carnivores and the plant eating animals they prey upon. . . . Rare or endangered ecosystems should have highest priority. . . ." Clearly, from the beginning of the wilderness movement, wildlife has been considered of great importance.

At the same time it became obvious that few things have changed with respect to wildlife in wilderness. Since these scholars wrote and spoke, we have seen a tremendous surge in interest in wilderness. The Wilderness Act and the National Wilderness Preservation System have come into existence, and a significant enlargement in official Wilderness has resulted. Wildlife is always one of the critical factors considered when new areas are set aside as wilderness - it currently is of great importance in the Roadless Area Review and Evaluation (RARE II) being conducted by the Forest Service. This is

good. Yet we have seen little attention paid *afterward* to associated wildlife within officially designated areas. We have the Endangered Species Act and other legislation aimed at specific species or groups of species but these are catch-up or after-the-fact measures. Too often Haldane's "blinding glimpse of the obvious" is pointed out to our profession by the public. And we have seen the list of threatened and endangered species grow steadily. The question naturally looms large: Why hasn't threatened or endangered wildlife received more attention in wilderness?

This paper will, then, be more wide-ranging than the title implies. It will review wilderness and wildlife capabilities, with special reference to threatened or endangered species; it will explore some of the conflicts or reasons which seem to me responsible for the lack of more intense and viable wildlife research and management in official Wilderness; and finally it will explore some possible ways in which wildlife in wilderness--if it is all that important to us-- might receive more attention and wilderness be truly utilized as a natural laboratory. Hopefully this discussion will be constructive. Most of my examples will be mammals because of my greater familiarity with them.

Capabilities or Opportunities

It will be useful to review the capabilities of wilderness as a natural laboratory. Schoenfeld and Hendee (1978) list three categories for wildlife in wilderness: (1) wilderness-

dependent wildlife, (2) wilderness-associated wildlife, and (3) common wildlife found in wilderness. The following can apply to all three categories but is most important to those species dependent on wilderness.

First, wilderness can act as a refuge. Most visible examples are wolves and grizzly bears in National Park and National Forest wilderness. These areas provide size and extent of habitat necessary to sustain populations of these big carnivores. Size is important because it insulates the population from competition with man.

The wilderness refuge can function as a reservoir for some species, a reservoir which repopulates surrounding suitable habitat. The Idaho Primitive Area, a 1-1/4 million-acre officially designated Primitive Area since 1931, has functioned in such a manner for mountain lions. Similarly, Glacier National Park and the Bob Marshall Wilderness Area in Montana have functioned as both refuge and reservoir for wolverines.

These areas not only can sustain populations of rare species but can be utilized for reintroduction of native species. This can't be accomplished anywhere else in the case of large predators (see Mech 1977). This should be given more consideration, not just for endangered species but other species as well.

Established, viable wildlife populations in wilderness can provide answers to many questions concerning the preservation and maintenance of wilderness and all its components. Our work on mountain lions showed that lion predation on mule deer and elk

was an important factor in maintaining ecologic stability in the central Idaho wilderness. Lions removed a certain number of deer and elk each year, lessening the impact on the plant community, but their influence on surviving populations was considered equally important (Hornocker 1970). There is evidence other carnivores carry out the same function elsewhere (Leopold et al. 1947, Cowan 1950, Klein and Olson 1960, Wright 1960, Mech 1970).

Relatively unexploited wildlife populations provide the natural gene pools Allen referred to; they can provide an insight into intrinsic behavioral mechanisms which can and should form the basis for any management program outside Wilderness; they can provide an insight into all those population processes against which we can measure our influences elsewhere. In short, wilderness populations can provide the baseline data, an understanding of which is essential if we are to prevent the list of endangered species from becoming even longer. Species unable to adapt to increasing human numbers and shrinking habitats outside non-official Wilderness will surely be added to that list unless we gain more knowledge *now*.

So the opportunity for research is certainly present in our wilderness system. Schoenfeld and Hendee (1978) lament the lack of information and cite the need for research. They state "Fish and wildlife research in general is underfunded, particularly those deep-digging basic studies that must undergird all applied research. . . . We need more basic research on total, natural ecosystems, research that looks comprehensively at all

their plant-animal relationships."

This basic research need not and should not be restricted to endangered species. It should be undertaken on numerous game and non-game species about which we know little. The relatively-rare, naturally low-density species should perhaps receive high priority--species such as fisher, wolverine, river otter, lynx. These "gray area" species could conceivably become endangered in a short period of time. This is especially true when a species is economically valuable as in the case of some furbearers.

But some of our more "common" wildlife should also be researched in wilderness. The recent widespread decline in mule deer in the West should have told us how little we know about the basic ecology of this species (see Workman and Low 1976). The same is true of some of our other large ungulates. Murie's work on coyotes in Yellowstone nearly 40 years ago (Murie 1941) was the closest we've come to understanding an unexploited natural population of this species and the intrinsic mechanisms which may operate in such a population. That work has not been extended anywhere, yet during the last 40 years we've spent millions trying to control the numbers of this animal. There are numerous other examples.

Formerly such long-term basic research was funded by universities or by federal granting organizations such as the National Science Foundation. For a number of years, however, the trend has been away from such support. Much funding is being given to short-term, "total ecosystem" research but seldom are

any grants made for more than 3 years, in most cases only two. Scientists find themselves forced into spending far more time promoting funds than performing in their field. Further, "single species" research even though it is ecosystem oriented, is not likely to be considered for funding, despite the fact a dearth of basic biological and ecological information exists on many species. Evidence for this is the recent controversy which erupted when the Endangered Species Scientific Authority banned the export of lynx, bobcat, and river otter pelts. A special working group, convened to examine the biological evidence to support or refute this action, found very little biological or population data available on any of these species anywhere. Some harvest figures exist for different states, but little basic long-term research has ever been carried out on any of these species.

Finally, in our review of opportunities present in the wilderness laboratory, the opportunity exists to describe and delineate "critical habitat" for a particular species *beforehand*, before it becomes endangered. It seems logical this should be high priority in any research. There is no question that if a fraction of the money now being spent on grizzly research was spent 20 years ago on similar research, if those findings were presented to the public in a vigorous and straightforward manner, then conditions for bears, those agencies responsible for them, and for the public at large would be much better. "Critical habitat" now elicits negative, often hostile reactions

(U.S.F.W.S. News Release, Feb. 22, 1978); it need not and should not be that way. Basic research in wilderness laboratories could help. All such research should, and could, conform to the philosophy that wilderness values are first and foremost. The position taken by the International Association of Fish and Wildlife Administrators (1976) could act as a research guidelines, as could Schoenfeld and Hendee's (1978) suggestions.

Conflicts

We've reviewed and explored possibilities most agree are desirable in wilderness-wildlife interactions. When we ask if these wildlife programs have been or are being pursued and carried out we must answer "No." There are but a handful of research projects on wildlife currently underway in the vast mountainous wilderness in Idaho and Montana, two of our big wilderness states. And most of these are short-term efforts, underfunded for the most part by outside independent organizations. These huge areas, with their wealth of diverse wildlife, could be likened to a modern multi-million dollar *unused* chemistry laboratory. Let us examine the reasons why.

First, the language of the 1964 Wilderness Act does not assign high priority to wildlife. In fact, as Schoenfeld and Hendee (1978) point out, wildlife is directly mentioned only once in the Act and that in reference to states' responsibility for wildlife and fish. These authors further state that effective management of any resource depends on clear management objectives. Such objectives for all aspects of wilderness--including fish and wildlife--must be spelled out clearly. Clearly the Wilderness Act does not spell out wildlife objectives for implementation by management agencies.

This absence of guidelines to the different agencies results in different approaches to the treatment of wildlife in official Wilderness. The Forest Service manages most of the 14.4 million acres of official Wilderness, but the Bureau of

Land Management, the National Park Service, and the Fish and Wildlife Service also administer Wilderness. Each of these agencies has its legal responsibilities, each is subject to economic and political constraints and realities, and each is steeped in a different, strong traditional philosophy. Therefore it is not surprising in the absence of a clear mandate concerning wildlife that different paths are followed. In many cases this means little or no attention at all to wildlife, the attitude seemingly being "take care of wilderness and wildlife will take care of itself." For example, the Forest Service manages 87% of all official wilderness, yet only 1% of its entire budget is directly available for wildlife management on *any* of its lands, not just wilderness (McGuire 1975).

Secondly, state agencies have jurisdiction over resident wildlife, and this further complicates the picture. State agencies are subject to the same realities, pressures, and constraints--legal, political, fiscal, traditional--as are the federal agencies. Often these factors are locally intense--again the wolf and grizzly serve as good examples.

For the above reasons, often there is little Federal-State cooperation. The "statesmanlike dialogue" among federal and state agencies and other groups, referred to by Schoenfeld and Hendee (1978), has seldom come about. Only after legislation such as the Endangered Species Act and the Wild Horse and Burro Act, or the formation of Executive Authorities such as the Endangered Species Scientific Authority, do the agencies turn

to "statesmanlike dialogue."

Analysis and a Suggested Solution

My point in all this is that all these legal, political, and fiscal realities and constraints, plus strong tradition, prevent both federal and state agencies from exercising *foresight* with respect to wildlife. Because of these realities they *must* set priorities for the present and only the very near future. They cannot assign sizeable resources to some future endeavor or to little understood or appreciated basic research, because at present their constituency would not permit it. Therefore no agency is able or as yet willing to support the kind of long-term deep-digging basic research on wildlife in wilderness that is so sorely needed (Schoenfeld and Hendee, 1978).

Because agencies do necessarily give more attention to political and economic considerations, as well as adhere to traditional goals, they do a very credible job of tending shop. Once legislation is passed or regulations announced, agencies do a very good job of following up. The Fish and Wildlife Service carries out the Endangered Species Act in a very conscientious manner. And funding has been available. The Service recently proposed a \$2.9 million peregrine falcon cooperative recovery plan. Before the Endangered Species Act or before the peregrine was listed as endangered it would have been difficult for the Service to have provided any funding at all for work on this species. I return to my former point here that, for very

realistic reasons, agencies cannot exercise foresight but can and do act very positively after the crisis is declared. A relatively-rare low-density species, suspected of imminent threatened or endangered status, cannot receive attention in the way of agency funding. There simply is no framework within federal or state management agencies to support that kind of before-the-fact research on a long-term ecosystem basis. Once it becomes endangered, however, it receives lots of attention. Recovery plans are announced with sizeable funding, recovery teams are formed, transplants are considered, captive breeding is begun or at least considered, foster parent programs are discussed, habitat protection initiated, etc. How much easier, it would seem, if we could exercise foresight and attempt to prevent endangered status.

We have reviewed the interactions of wilderness and wildlife and have examined some reasons why, in my view, few of the available opportunities are being pursued.

So what is the answer? Are there solutions? Schoenfeld and Hendee (1978) call for "statesmanlike dialogue" as a solution. Certainly this is a must. But first, all those agencies and groups must recognize wildlife as an integral and important and desired, if not essential, component of wilderness. There must be closer cooperation and more communication between traditionally provincial and sometimes defensive state agencies and a too often all-knowing federal agency. There are some good signs here: the interagency approach to grizzly research, the whooping

crane foster parent program in which several states and Canadian provinces are cooperating, the wolf recovery plan, and the cooperative key deer and peregrine programs. There are others.

More progress is being made with the Endangered Species cost-sharing program with states--but some states are finding it difficult to meet the criteria and some have problems in finding funds for their one-third share.

These programs are good but are not designed for basic long-term studies in wilderness although some may be utilized for that purpose, depending on the species involved.

What is required is a framework which recognizes the need for Schoenfeld and Hendee's "long-term deep-digging basic research" and provide the funding to carry it out. Further, the program needs to be independent of agencies in order to free the research and researchers from political realities and the built-in priorities with which these agencies must live. This would also provide for maximum use of funds on the actual research itself and a minimum on administration and overhead. The program should be designed to recognize foresight in our profession and reward this foresight with adequate research funding. Rewarding foresight would hopefully slow the growing "box score" of threatened and endangered species by providing biological and ecological information *before* species numbers reach a critical point.

I should like to suggest a possible way of achieving such

a program. It involves a simple amendment to the Wilderness Act, an amendment which recognizes the importance of wildlife to the integrity of wilderness ecosystems. Further, the amendment would provide funding for utilizing wilderness as the natural laboratory it was intended to be. These funds, appropriated by Congress, would not be added to the federal and state management agency appropriations, but could be administered independently by the Secretaries of Interior and Agriculture. An advisory board of wilderness and wildlife professionals appointed by the two Secretaries could award funding for independent research to individuals exhibiting expertise and interest in specific species and areas. This group could review needs for research and advise the Secretaries on research priorities. Further, such an advisory board, by interacting with wilderness and wildlife professionals and with the agencies with primary responsibility for wilderness, could enhance implementation of research findings.

There is precedence for such a framework. The Regional Commissions, established under Title 5 of the Public Works Act, offer an excellent example. Under this plan, governors of participating states administer funding made available, by Congress, to the Regional Commission. Research grants are awarded on a competitive basis for different types of long-range projects of importance regionally.

The suggested program would not, in any way, affect existing research and management funding or the carrying out of any

existing federal or state program. Further, it should recognize that official Wilderness philosophy must be foremost in any project undertaken. All state and federal agencies should be consulted beforehand and concurrence reached before any project was initiated. Again, Schoenfeld and Hendee (1978) and the International Association of Fish and Wildlife Administrators (1976) provide adequate guidelines.

Our profession is blessed with numerous examples of glorious hindsight. As the human population grows, as wilderness outside officially-designated Wilderness diminishes, we shall certainly be blessed with more examples. Less adaptable species of wildlife will be added to the "box score" and totaled up on the endangered list. Our responsibility as a profession does not lie in simply care-taking or attempting to husband remnant species, but in *preventing species from becoming endangered*, if that is at all possible. Wilderness laboratories offer beautiful opportunities to accomplish this but we must provide the framework in which it can be done.

Literature Cited

- Allen, Durward L. 1966. The preservation of endangered habitats and vertebrates of North America. In Future Environments of North America. F. Darling and J. Milton, ed. Nat. Hist. Press, N. Y. 767pp.
- _____. 1973. Report of the Committee on North American Wildlife Policy. Trans. N. A. Wildl. Conf. 38(152-181).
- Cowan, I. McT. 1950. Some vital statistics of big game on overstocked mountain range. Trans. N. A. Wildl. Conf. 15: 581-588.
- Craighead, John. 1958. Too many and too few. Minn. Nat. 9(2):48-51.
- Hornocker, Maurice G. 1970. An analysis of mountain lion predation upon mule deer and elk in the Idaho Primitive Area. Wildl. Monogr. 35. 39pp.
- International Association of Fish and Wildlife Administrators. 1976. Policies and Guidelines for Fish and Wildlife Management in Wilderness and Primitive Areas. Washington, D.C. mimeo.
- Klein, D. R. and S. T. Olson. 1960. Natural mortality patterns of deer in southeast Alaska. J. Wildl. Manage. 24:80-88.
- Leopold, Aldo. 1941. Wilderness as a land laboratory. The Living Wilderness, July 1941.
- Leopold, Aldo, L. K. Sows and D. L. Spencer. 1947. A survey of overpopulated deer ranges in the United States. J. Wildl. Manage. 11:162-177.

- McGuire, John R. 1975. The Forest Service program for the nation's renewable resources. Washington, D.C. U.S. Dept. Agriculture, Forest Service.
- Marshall, Robert. 1937. The universe of the wilderness is vanishing. Nature Magazine, April 1937.
- Mech, L. David. 1970. The Wolf: the ecology and behavior of an endangered species. Natural History Press, N.Y. 384pp.
- _____. 1977. A recovery plan for the Eastern Timber Wolf. Nat. Parks and Cons. Mag., Jan. 1977. pp 17-21.
- Murie, Adloph. 1941. Ecology of the coyote in the Yellowstone. U.S. Dept. Interior, National Park Service. Fauna Series No. 4. 206pp.
- _____. 1944. The Wolves of Mount McKinley. U.S. Dept. Interior, National Park Service. Fauna Series No. 5. 238pp.
- Olson, Sigurd. 1956. Wilderness Days. Knopf, New York.
- Schoenfeld, Clay and John Hendee. 1978. Wildlife Management in Wilderness. The Boxwood Press, Pacific Grove, CA. 172pp.
- Workman, Gar and J. Low, ed. 1976. Mule deer decline in the West: a symposium. Utah State Univ. 134pp.
- Wright, B. S. 1960. Predation on big game in East Africa, J. Wildl. Manage. 24:1-15.