

WILDLIFE- OUR ENVIRONMENTAL INDICATORS



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Professionals involved in research and management of wildlife, particularly with threatened and endangered species, are often asked, so what? What difference does it make if the existence of a species is threatened through man's activities? After all, many animals have become extinct in the past.

Most wildlife research today is directed toward obtaining basic scientific information about a species so we can better manage the animal for commercial or recreational use.

There is an additional reason for wildlife research that should provide everyone with an interest in its outcome and that is to learn about "indicator species."

To better understand this approach, some knowledge of animal adaptation is necessary. Adapta-

tions are morphological (form), physiological (function) and behavioral (activity) features that a species possesses which enable it to live and reproduce under certain environmental conditions. Each species differs from every other species in its requirements and thus, each species requires a different set of environmental conditions. If we witness a change in the density of a species in an area, we know one or more factors in the environment have changed. From this we can see that an animal or given population of animals can show us that there have been changes in its environment. Thus we can call these animals "indicator species."

Before we can utilize the indicator species idea, we must be aware that population densities fluctuate naturally. Weather, for example, can play an important role in determining population distribution and density. This has been a cause of

extinction for many species in the past that were not able to adapt to shifts in climatic patterns. This is an example of a natural process. We cannot change this course of events, but we should be aware that its force is present.

But there are also changes in the environment brought about by man. Man with his expanding technology has extended his influence to the point where he causes environmental change for all forms of life. Most of these changes are so subtle that we are not aware of them or their consequences. There is a way that we can observe these changes and that takes us again to the "indicator"—the animal that must derive its livelihood in that changing environment.

A question arises at this point about the fact that some animals can better adapt to change than others. Animals that do best in the presence of modern man are those

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which are naturally associated primarily with habitats that are unstable and whose composition is changing (sub-climax vegetation types). Examples of these species would be the black bear, white-tailed deer and robin. Species which are dependent upon the more stable (or climax) habitats are most affected by man's influence, because man in his land-use practices changes habitats from climax to sub-climax states. Species associated with stable conditions tend to be restricted in their ability to handle changing environmental conditions so, of course, this group includes most of the rare, threatened and endangered species we have today, such as the grizzly bear in the lower 48. Although the grizzly is not endangered in Alaska, the destruction of its habitat through agriculture and other human endeavors has brought about the decline of this animal in other parts of the nation.

The result is that those species which lack adequate flexibility to environmental changes are better suited to act as indicators of environmental change. All animals have some indicator value but the amount is related to the animals' adaptability: the less adaptive, the more value it has as an indicator.

With an understanding that all animals reflect conditions in the environment we should observe them in a refreshed way. When we see a fleeting glimpse of a wolverine, a band of Dall sheep or a soaring eagle we should respond by thinking in terms of why they are there. What conditions are present to allow us to experience this?

To better understand why a species is absent or present in an area we must know characteristics of the animal including its habitat requirements. Wildlife research is the key to obtaining this information and this information becomes

more meaningful when we can apply it to the indicator species concept.

The more we know about an animal the better we can identify the exact changes going on in its environment. Animals as monitors of environmental change serve everyone, because the biosphere we share with the animals is the one from which we derive life. If we are concerned about ourselves, we must be concerned about those animals that can keep us informed about our environment.

Albert Franzmann has been a Game Biologist III with ADF&G since March 1972. He received a DVM in 1954 and was a practicing veterinarian for 13 years. In 1971 he received a Ph.D. in Wildlife Management. He is a member of various wildlife societies.



ALASKA ANGLER'S ALMANAC MAKES FOR LIGHT READING

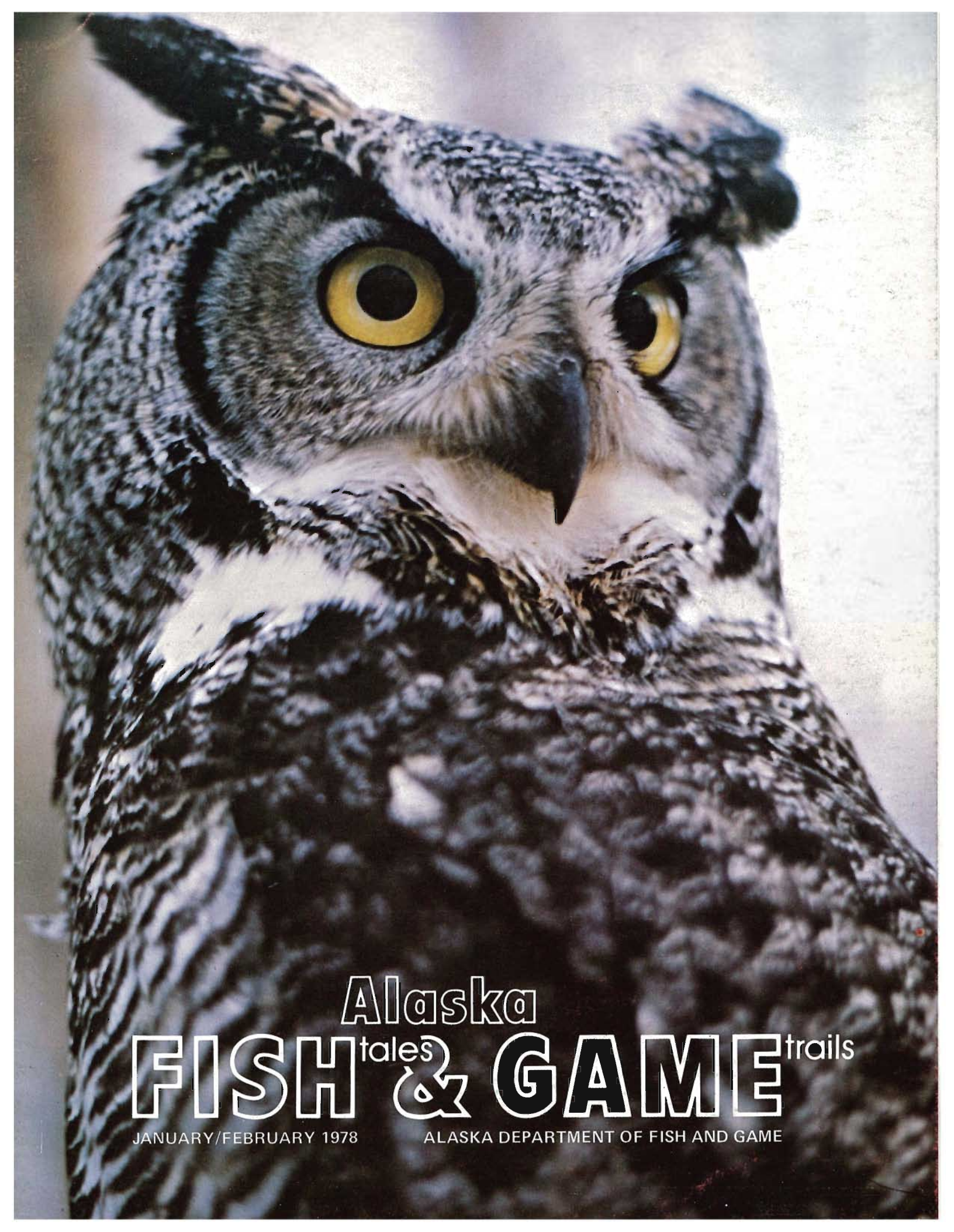
There's a new booklet out that makes an ideal gift even for the angler who has everything. It's called *The Alaska Angler's Almanac*, and it's available from most regional Fish and Game offices for the paltry sum of one dollar. The light and informative reading it contains makes it worth ten times as much.

The Alaska Angler's Almanac is authored by Bob Baade, a sport fish biologist who spent 15 years working for the Department in Ketchikan. Baade, now retired and living in Petersburg, has a remarkable insight into both fish and fishermen, which he combines with an off-beat sense of humor. Baade writes about things to which every angler who has-been-there can re-



late. He says, for example, of the pike fisherman: "An angler reaches into the mouth of a pike but once." He is, of course, a dedicated angler himself, the kind of guy who will readily admit to robbing the neighborhood chickens and the family dog of their accoutrements so that he can fashion a new fly.

The 48-page *Alaska Angler's Almanac* contains Baade's writings and observations on everything from the lowly dogfish to the Dolly Varden. The cartoons illustrating the text are as outrageous and enjoyable as the prose. This is not only a humorous book, but one that contains lots of information and fishing tips. It's important reading for every serious angler.



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