



Gary Lackie

Brown/Grizzly Bears:

A Challenge for the Hunter and Wildlife Manager

by Dick Sellers

Often cited as the ultimate challenge in North American big game hunting, the brown/grizzly bear may also pose the biggest challenge for wildlife managers. Two years ago we printed an article on bear hunting in Alaska that addressed many aspects of planning your hunt. Rather than cover the same ground here (see us or write for a copy of this article in the September-October 1989 issue of *Alaska Fish and Game* -now *Alaska's Wildlife* magazine), I'd like to turn your attention to how we manage this species.

First a word to bear hunters. Many people, including some hunters, view bear hunting rather unsympathetically, if not with downright hostility. Here's a species that was eliminated from over 90 percent of its former range in the lower 48 states. It's the ultimate symbol of remaining wilderness, hunted merely for its trophy value rather than for its meat. But don't become defensive when asked rather pointedly why you want to kill one of these magnificent animals. You each will have your own justification, although it's often hard to explain your inner motivations. Just remember the following:

Conflicts with economic interests (primarily the livestock industry), and irrational fear—not hunting—led to the demise of the grizzly on the American frontier. Ultimately here in Alaska *Ursus Arctos* will be pressured more from these same factors than by carefully regulated sport hunting.

Bears are a renewable resource. Currently brown/grizzly bears are thriving in most parts of Alaska. They are a highly intelligent and adaptable species.

You, the hunter, typically hold your quarry in the highest esteem, generally are more knowledgeable about its biology, and contribute much more to the conservation of the species and its habitat than do most of your detractors. If this description doesn't fit you, maybe you should do some serious soul-searching!

This little sermon is offered to emphasize that you, the bear hunters, and we, the wildlife managers, have a responsibility to cooperate so that Alaskan bear populations remain viable and we can continue to point to hunting as a legitimate and non-damaging use of this resource. (We also need your help with determining management objectives.)

Challenges of Managing Brown/Grizzly Bears

Over the past 10 years more time and money (including sizable contributions by other agencies) has gone into research on brown bears than on any other species in Alaska (on the management side much more money goes to moose and caribou). The need for so much research is based on the variability of the species, the difficulty in evaluating population status (bears are difficult to count), the susceptibility of bears to impacts from development projects, and on the prolonged recovery required if bad management decisions are made. When it comes to establishing harvest objectives, we managers tend to be conservative because the consequence of making an error with bears is potentially more damaging and harder to correct than for most other species.

Detecting that a population may be overharvested is not easy and may not be apparent until the population decline is fairly severe. Also, because bears have a much lower reproductive rate than other game species, recovery from overharvest will be slow unless hunting opportunities are severely restricted. So, just how do we go about making our recommendations?

Analysis of Harvest Data

Brown bears killed in Alaska must be sealed (hides and skulls are tagged). The information we collect on the sex, age, and location of the bears harvested has traditionally been the main tool of the manager to gauge the status of the bear population within this area. First, we look at trends in numbers of bears harvested within management areas. Changes in hunting regulations or even a hunting story in a magazine can lead to shifts in hunting pressure. Some lightly hunted areas of the state might be able to absorb a bit more hunting pressure while other areas cannot take more harvest. Thus accurate kill locations reported by hunters is truly the basis of any successful management program.

Next we look at the sex and age composition of the harvest. The theory behind looking at harvest statistics as a reflection of the population status is this. Because hunters generally select large bears, bear behavior (such as females entering dens earlier in the fall and leaving dens later in the spring) and regulations that protect females and their cubs, male bears are more likely to be killed than females. In very lightly hunted populations, adult males predominate in the harvest. As hunting pressure on a population increases, old males are cropped off faster than they are replaced. Consequently more females and young bears show up in the kill. If a manager sees a change in the pattern of the harvest such as an increasing percentage of females, a declining average in males, combined with higher total harvest, he or she is likely to conclude that hunting needs to be reduced. It sounds fairly simple, but it isn't!

Many factors affect the size and composition of the bear harvest. Here are two brief examples. The characteristics of the bear harvest vary considerably between spring and fall hunting seasons (adult males are more vulnerable in early spring and late fall than are females). Thus any change in the hunting season dates

may affect the composition of the harvest somewhat independent of the composition of the living bear population. For instance, if a spring hunt is lengthened by opening it earlier, at first more adult males may show up in the harvest. The novice might think that this shows the bear population is doing great, when in fact you might be starting to overharvest the male segment. If the increased harvest leads to a depletion of males, hunters will eventually start taking more females because they are proportionately more common. It likely will take several years for the harvest data to reflect that too many bears were killed; and by that time severe cutbacks in hunting opportunity would be needed to make the correction.

In another case, a stable bear population might suddenly begin to increase in size because of an expanded food supply, more favorable weather, etc. With higher cub production and/or survival, in a few years there would likely be more young bears showing up in the harvest. This change in age structure of the harvest could fool a manager into thinking the population is being overharvested, when in fact it is growing.

Estimating Allowable Harvest

In the ideal world, each manager would know exactly how many bears are in an area. He would know what the population sex and age composition is, and what the reproductive and survival rates are. With these data he could project a sustainable harvest rate that likely would be between 2-6 percent of the total population each year, depending on how low the natural mortality rate is and how successful females are at adding new bears to the population. A complete data package of this type is difficult to get even for a very small study area after years of expensive and detailed research, much less for an entire Game Management Unit. Fortunately several studies in Alaska have produced useful data which we are putting to use in our management schemes.

Estimating Population Size

Actual population estimates are extremely difficult to make for most game animals, and brown bears certainly are more difficult than most. Often the best that can be hoped for is an index of abundance that will reflect changes in the population size and composition. Aerial counts of bears concentrated along salmon streams is one technique used in some parts of the state where the tree/brush cover is minimal. We are evaluating this technique to see if trends in bear abundance can be detected on the Alaska Peninsula. Past studies by the department have shown that even under the best circumstances we are able to see fewer than half the bears known to be present in a survey area. Many variables affect the quality of these aerial surveys, including the aircraft type, the experience of the pilot and observer, the seasonal and daily timing of flights, size of salmon run, and weather conditions. Although the results appear encouraging, this technique is best applied in areas where a dense bear population uses a stable fish run in open habitat where bears are easily seen.

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Black Bears *(Continued from page 27)*

north; they average just under 17 inches in much of the Interior, but record book bears have been taken from throughout the state.

Hide quality may be best in the spring, provided a bear is taken before he becomes "rubbed." Rubbing occurs when bears emerge from the den and scratch themselves on trees or rocks, breaking down the longer guard hairs and exposing the short underfur or skin. Fall bears may have more fat under the skin, and despite a more uniform fur, be susceptible to hair loss during processing.

Trophy hunters are often as interested in color as they are size, and black bears, contrary to the name, come in a wide range of pelt colors or "phases." The *cinnamon* phase is less common than the black and may range in hue from a chocolate brown to a light tan. Although it is possible to come across a cinnamon just about anywhere that you find blacks (except on some islands), they are prevalent in particular areas. An ADF&G wildlife biologist would be able to get a hunter looking for this color phase started in the right direction. A much rarer coloration is the *glacier* or *blue* phase. Found almost exclusively in Southeast, this silver to

blue-tinged bear is most commonly encountered in the Yakutat area. So rare is this color phase that only one or two are harvested statewide each year.

As hunting interest increases, some reassessment of black bear seasons or bag limits may be necessary to prevent excessive harvests. In Southeast, where nearly half of the harvest is taken by nonresidents, the bag limit for that group of hunters has already been reduced to one bear per year. However, the lack of a guide requirement for this species continues to make it attractive for hunters from outside the state.

Whether for subsistence or sport, trophy or meat, black bear hunting has come into its own. No longer considered a varment, or just the brown bear's smaller relative, the black bear has gained stature in the world of big game.

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With the advent of radio-collars individual bears can be located regularly from airplanes and their home ranges plotted. If most of the bears within a study area were fitted with radio collars, at least a number of bears could be estimated. Moreover, bears often travel long distances to feed seasonably on concentrated food resources, such as a salmon stream, a rich intertidal sedge meadow, or a particularly good berry patch. Thus deciding on where to put the boundary of a count area is crucial. A disadvantage of this technique is its high expense; also, it must be done over a prolonged time period.

Within the past five years an old technique originally used to estimate the number of fish in a lake has been modified for bears. This involves putting radio transmitters on a representative cross-section of the bear population and then intensively searching the area from small aircraft to see as many bears as possible. Each bear located is then checked to determine if it has a radio collar. Because the exact number of marked bears within the search area is verified each day by a radiotracking airplane, the total population can be estimated from a mathematical formula that calculates the ratio of marked to unmarked bears. After several days of replicate searches, the independent estimates can be averaged to provide a statistically valid population "census." For a census to be useful to managers, the results have to be extrapolated to a much larger area—such as an entire Game Management Subunit. A typical census area might be 300-500 square miles, whereas a management subunit is 10 to 20 times larger.

Brown/Grizzly Bear Abundance Varies Within Alaska

Given the huge size of Alaska and its diversity of habitats, it is not

surprising that bear numbers vary considerably from one end of the state to the other. Along coastal areas of southeastern and southwestern Alaska, the habitat is enriched with large salmon runs. The productivity of this coastal habitat is reflected both in larger body size of bears and in much higher bear densities (expressed as the number of bears inhabiting a specified area of land). Several censuses have been completed in coastal areas with densities ranging from 50-140 bears per 100 square miles. In contrast, bear densities in several areas of interior Alaska were measured at 1-8 bears per 100 square miles. Reproductive and survival rates (which have a great influence on what percentage of the population can be harvested) also vary from one part of the state to another, although not as dramatically as do the densities.

Management Objectives

All of the available biological data must be merged with management objectives to finally arrive at a desired harvest level. If providing for top quality trophy hunting is a primary objective, the harvest must be kept below the maximum sustainable level so that more bears will reach older age classes. This is where your input is so valuable. We need to hear what management objectives you want. Then we need your ideas on how we can achieve those objectives with the hunting regulations.

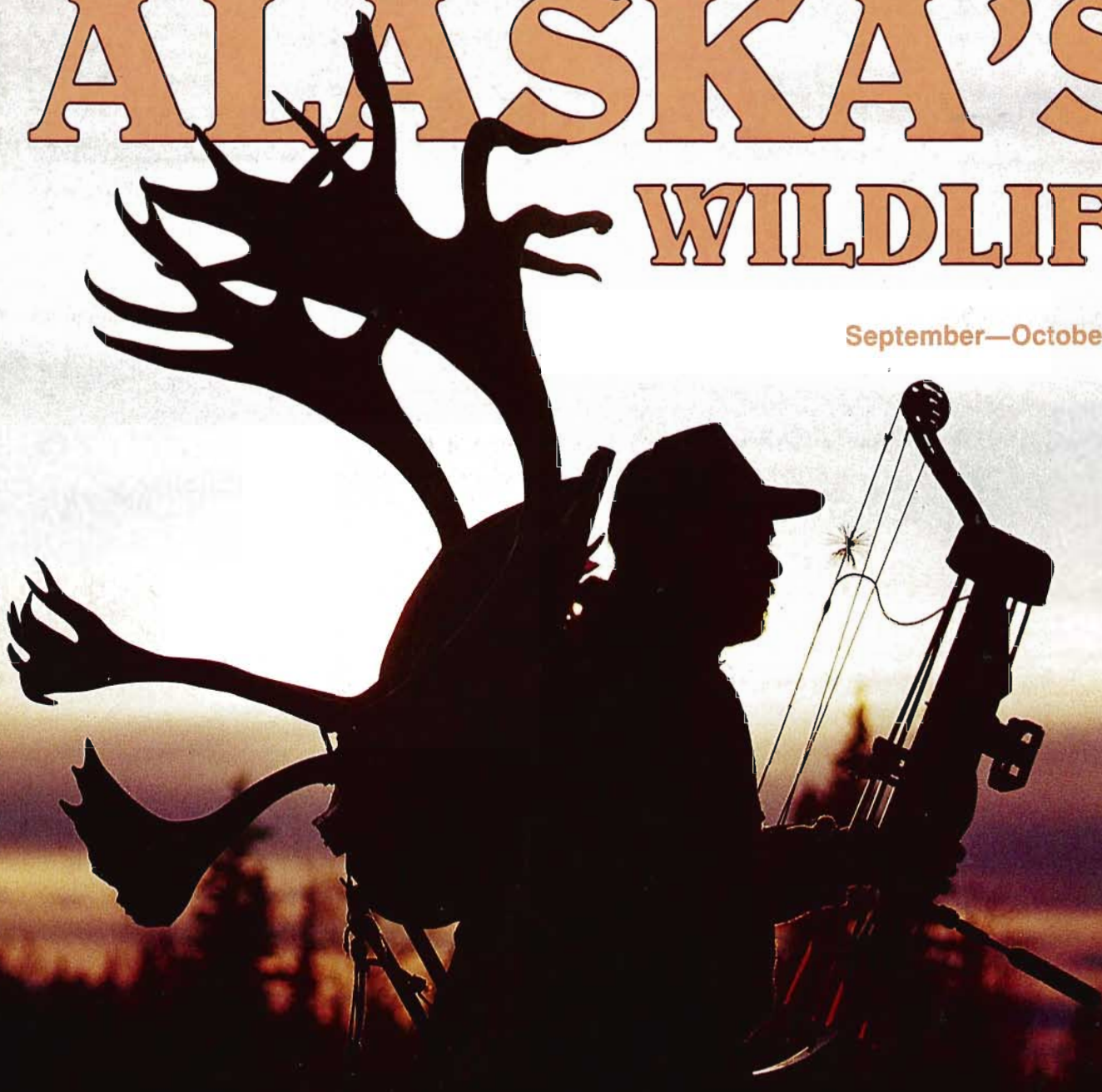
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