

STATUS OF THE BROWN BEAR IN THE PYRENEES

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Abstract: The population size of the Pyrenean brown bear (*Ursus arctos* L.) has declined from about 200 animals to 20 or even less during the past 40 years. Distribution covered the Pyrenean slopes from the Atlantic to the Mediterranean Sea but is now restricted to an area of about 800 km² in the western French Pyrenees. This area includes a national park, which, however, covers only a small portion of the bear's habitat. Thus, the bear is living largely outside the reserve. Forest exploitation and other human activities within the bear's range have been minimal until recently, so the species was able to withstand man's impact. However, a developmental program begun in 1976 will severely deteriorate the mountain landscape and, if allowed to continue, will bring the Pyrenean brown bear to extinction.

As land in central and western Europe has long been heavily utilized and densely populated by man, predators quite early became serious competitors with man. This situation led to almost complete extinction of the larger carnivore species by hunting. Relict populations retreated to remote areas. The more these areas are developed, particularly for tourist activities, the more management problems arise for big game animals. Even if a species has complete legal protection, it often suffers severely from human disturbance and habitat destruction.

The Pyrenean brown bear is a striking example of the problems of predator management in Europe. An extremely limited relict population has retreated to a very restricted range in the western French Pyrenees. Even there, in a rather remote region, the bears are suffering more and more from human interference, particularly from developmental programs. This case study may cast some light on the management needs for larger carnivores in central Europe. However, our knowledge of the Pyrenean brown bears is still fragmentary, and this population will have to be studied much more intensively. Results of such study will also serve management planning for other relict populations of this species in Europe.

FORMER AND PRESENT DISTRIBUTION

In central and western Europe the brown bear has nearly been exterminated. Only 4 relict populations have been able to survive. One of these is in the Cantabrian Mountains of northwestern Spain. The population was believed to comprise 70-100 animals some 15 years ago (Notario 1964). Accurate data have not been obtained recently, but numbers will certainly have decreased markedly since then — if former figures were correct. It is possible that the population may have been overestimated, however.

Until 1930, at least, this Cantabrian population was linked with the Pyrenean bear (Röben 1974), whose distribution is now very restricted (Fig. 1) and may

comprise about 20 animals or even less. The population has apparently declined by about 50 since Curry-Lindahl's (1972) report, or the figures cited were too high.

Two relict populations reside in Italy. One, in the Alps (Dolomites) west of Trento (studied by Krott 1962), is unlikely to survive, as it comprises only 6-14 animals (Barigozzi and Barrai 1972). A recent very comprehensive survey by Roth (1976, 1978), however, indicates a stable population of about 10 bears. The second is still a viable population of ostensibly 70-100 bears (Zunino and Herrero 1972) in the Abruzzo Mountains of central Italy near Rome. Despite legal protection, this population is under rather heavy pressure from human activities. Nevertheless, this brown bear population seems to be the most numerous in western Europe.

The Pyrenean brown bear population, formerly occupying most of the Pyrenean chain, was estimated as 150-200 animals (Bourdelle 1937) on the French (northern) slopes and later as 70 animals by Couturier (1954), the distribution still comprising about three-fourths of the Pyrenees, the most easterly region excepted. Today, this brown bear population has dwindled to a few animals in the Basses-Pyrénées district.

PRESENT POPULATION STATUS

Though I am unable at present to prove this figure, the number of Pyrenean brown bears may well have dropped below 20, although offspring have been observed regularly. The principal threat to the species is increasing disturbance caused by intensified forest exploitation and road construction on lower mountain slopes. These activities were unimportant until 1976, when a new wave of development seriously accelerated habitat destruction, particularly in the Aspe Valley. Thus, the national park's buffer zone will be so seriously altered that the bears will have to retreat to higher altitudes, where habitat is far below optimum for this species. The low reproductive rate will then be unable to

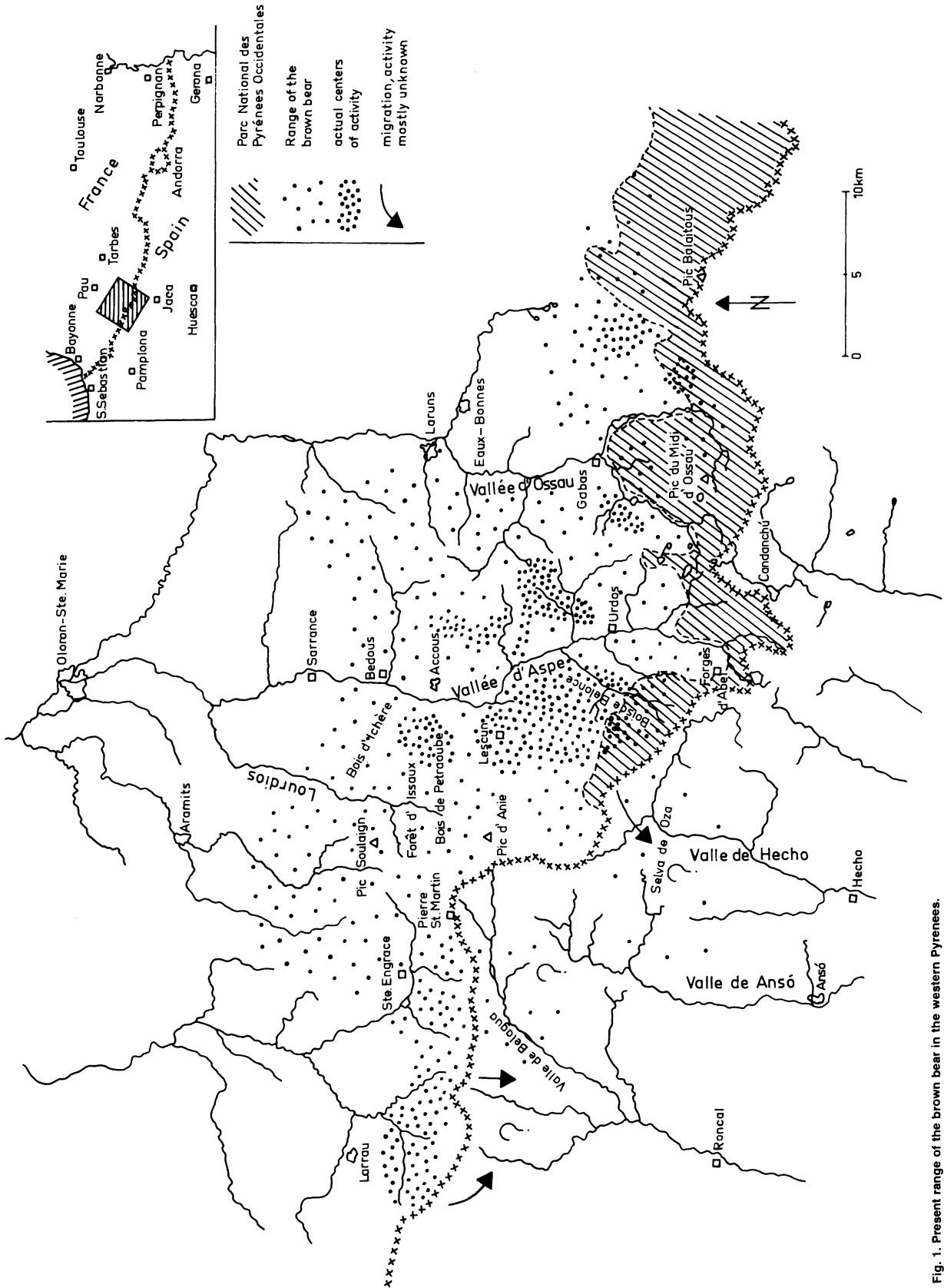


Fig. 1. Present range of the brown bear in the western Pyrenees.

counter further losses by poisoning, which, although infrequent, occurs every year. Finally, it is obvious that the gene pool of the Pyrenean bear is dangerously limited.

HABITAT REQUIREMENTS

Most of the Pyrenean bear's range consists of rather steep slopes covered with meadows or forest. Characteristic trees are beech (*Fagus sylvatica*) and fir (*Abies alba*) and, to a lesser extent, oaks (*Quercus* spp.) and other broad-leaved trees as well as isolated pockets of pine (*Pinus silvestris*). Forest utilization until recently has been negligible, mainly because of the inaccessibility of forested areas and low rental values.

Pyrenean brown bears have become almost nocturnal because of steady human interference. It is mainly the female bears with cubs that are reported active in the daytime (J. Cédet and J.-P. Izans, personal communication). Winter denning usually takes place from November to March, depending somewhat on weather conditions, but bears have been observed outside their dens during periods of mild weather in January. After emergence, the bears occupy relatively limited home ranges at low and medium altitudes until about June or July, when shepherds bring their livestock up into the mountains. The bears then move to higher elevations, and home ranges begin to enlarge. During summer, when shepherds are moving higher into the mountains, the bears seek still higher elevations to avoid disturbance. Finally, towards autumn, bears range over a wide area. To what extent this range includes the southern slopes on the Spanish side of the Pyrenees is largely unknown but appears to be of little importance (Vericad 1970, personal communication 1976).

Though a thorough food habits analysis has not been conducted, one can conclude from the data available (Couturier 1954; Röben, unpublished observations) that the Pyrenean bear is largely herbivorous, possibly not from choice but because animal food is scarce. Big game animals are in short supply — as almost everywhere in France on land not privately owned — because of a hunting system that, during the hunting season, allows anyone who purchases a hunting license to shoot (with some restrictions) anywhere and anything he desires. Thus in the surroundings of the Pyrenean National Park, red deer (*Cervus elaphus*) are extremely rare, and roe deer (*Capreolus capreolus*) not abundant. This fact is very important for the bear, since winter-killed deer (e.g., by avalanches or starvation) could be a staple food item in early spring. Because carrion is absent, the bears are obliged to live mainly on buds, leaves, roots, and bulbs during spring. In summer and autumn, berries are

an important food source, particularly the blueberry (*Vaccinium myrtillus*), which as a plentiful fruit for several weeks constitutes almost the entire diet of the bear. As berries ripen at different periods, depending on altitude, the bear profits by migrating gradually from lower to higher elevations.

MANAGEMENT PROBLEMS

Because of man's extremely high population density in western and central Europe, all national parks are established in high-altitude areas where human intrusion is limited by hostile climate. Several threatened species whose habitats should be protected by the creation of parks do not profit greatly from this protection since they are hardly able to survive there. The activity range of the Pyrenean bears is mostly outside the national park's boundaries; only parts of the park can be used by bears (Fig. 1). Though totally protected by law everywhere in France, bears are being disturbed by human activity outside the national park. Thus, a true bear reserve does not exist in Europe.

In early summer, bears start to prey upon livestock, which is then readily available on the mountain meadows (Fig. 2). Their prey is almost exclusively sheep, rarely goats, and occasionally cattle; only once during the past 10 years was a horse reported killed by a bear. Livestock depredations attributed to bears by the shepherds are examined by game wardens and, if verified, compensation is paid by the national park (since 1968) for every lost animal. From 1958 to 1967, amends were made by the Conseil Supérieur de la Chasse (Chimits 1973). Compensation has certainly prevented more intense poaching of bears. The costs of compensation may be about 20,000 to 65,000 French francs (\$4,400 to \$14,300) per annum. Numbers of depredations have decreased steadily during the past few years (Fig. 3), which may also indicate a further reduction in the bear population.

MANAGEMENT RECOMMENDATIONS

In order to assure the survival of the Pyrenean brown bears, several strict measures must be considered throughout the bears' range:

- (1) Road construction in large portions of the Pyrenean bear's habitat is incompatible with preservation of this relict population and must be curtailed.
- (2) Forest exploitation must be restricted and should be abandoned wherever possible. The construction of new forest roads, particularly in hitherto undisturbed areas, must not be allowed.

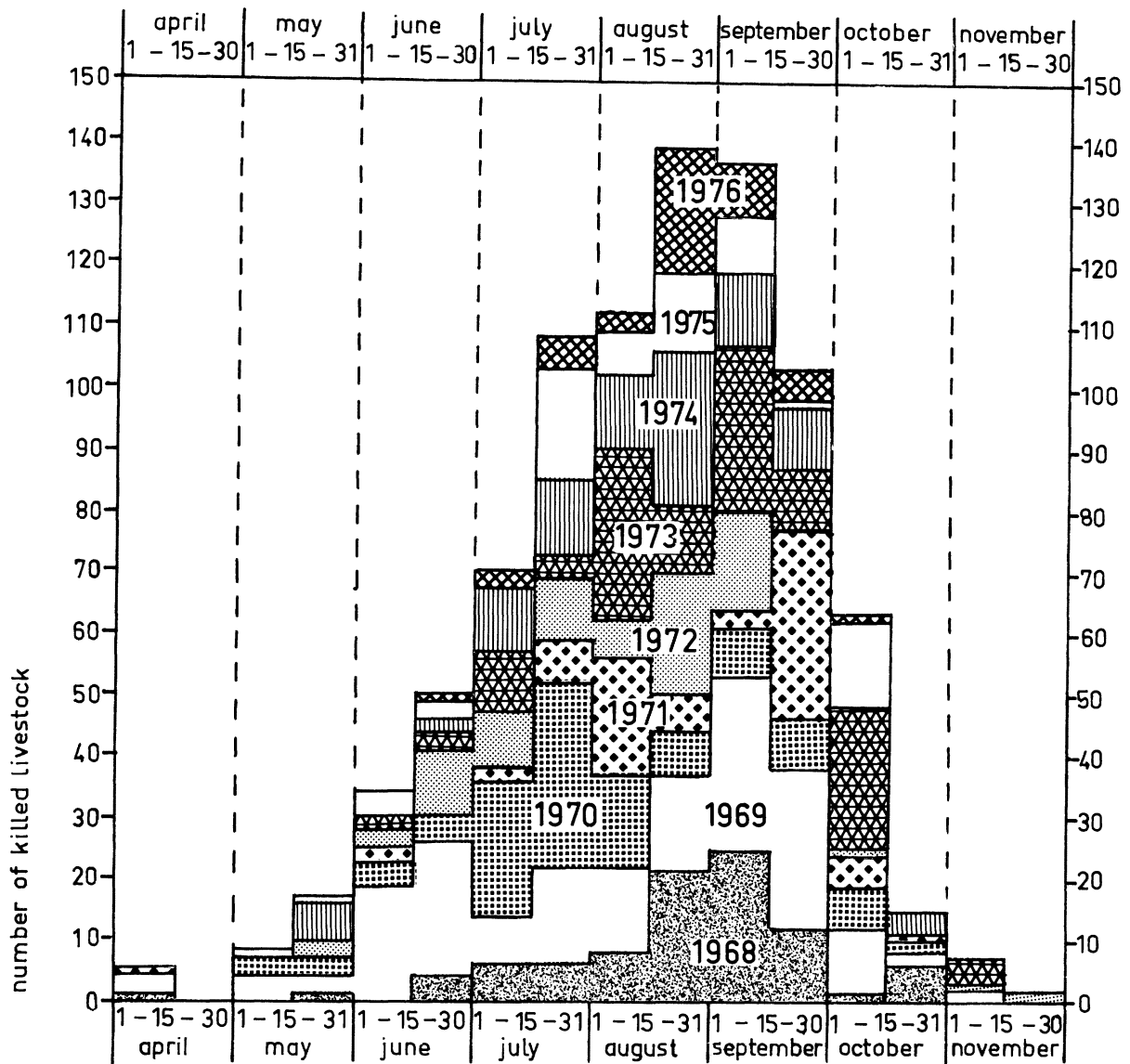


Fig. 2. Number of livestock deprecations by Pyrenean brown bears, by month, 1968-76.

(3) Hunting should be prohibited or at least strictly limited everywhere in the brown bear's range. This measure is not only to protect bears from hunting pressure (which occurs even if the bear itself is un-hunted) but also to protect and to permit better management of prey species of the bear so that these species can regain normal population densities.

(4) Supplementary feeding with carrion should be undertaken until food conditions have improved for the bear. Feeding sites should be established in inaccessible places for supply by helicopter.

(5) Licenses for the construction of houses outside villages must not be given. Rebuilding of abandoned

cottages and farms as weekend homes should be prohibited. The more cottages abandoned, particularly in remote areas, the better for bear preservation.

(6) Pasturelands should no longer be subsidized as in the past. The constantly repeated statement that livestock grazing is necessary to preserve mountain landscape is untrue and objectively wrong. Pasturing could be favored throughout the Pyrenees but it need not be done in the very refuge of the Pyrenean bear.

(7) In particular, grazing activities in woodland habitat should be prohibited. Several forests have been severely affected by cattle, even inside the national park.

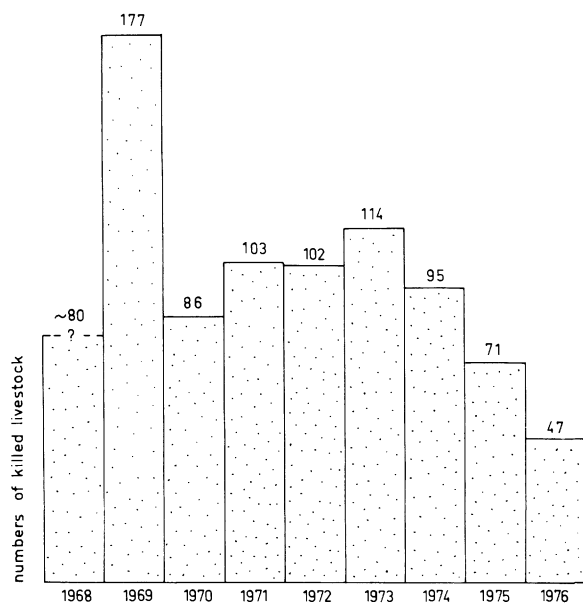


Fig. 3. Number of livestock deprecations by Pyrenean brown bears, 1968-76.

(8) Burning of meadows and brush, which is done extensively every spring, should be prohibited within the bear's range.

(9) Compliance with all regulations for the protection of bears must be strictly enforced throughout the area.

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(10) In general, the Pyrenean people are very conscious of the need to preserve the bears. However, educational programs should be developed and implemented in areas where these concepts are still poorly understood.

LOOKING FORWARD

Only 2 years ago, the status of the Pyrenean brown bear did not yet seem too unfavorable. However, since then the situation has changed drastically. A recent campaign of development has begun that is rapidly altering forest and pastureland in a largely senseless manner. This situation is not uncommon in Europe, where similar programs are not uncommonly carried out in remote, relatively undisturbed areas for the sake of "progress." In the special case dealt with here, this disastrous imprudence, however, does not only affect a hitherto intact landscape but also the ultimate relict population of the Pyrenean brown bear, which cannot long endure this impact. Any additional disturbance may cause the final vanishing of this bear population, which is already living under minimal conditions. If deterioration of the bear's habitat continues at the present rate, the Pyrenean brown bear will be extinct within the next decade.