

THE CRYPTIC BROWN BEAR POPULATIONS OF NORWAY

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Abstract: Until 1975, it was estimated that the brown bear (*Ursus arctos* L.) in Norway was restricted to 1 remnant southern population and a few small northern populations. In the last decade, it has been shown that small populations of very shy individuals exist in many parts of the country, including the fjord districts of the west. These secretive bears have escaped the notice of previous authors reporting on the occurrence of brown bears in this century. This development in our knowledge of Norwegian brown bears may be relevant to other European countries where similar conditions may prevail.

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Most accounts of brown bears in Norway are based on hunting statistics that date back to 1733. In 1846, these records were centralized, making them readily available. I used these data to estimate the brown bear population according to the following reasoning: based on the number of bounties paid (Fig. 1), it appears that the brown bear population has declined about 4.5% annually between 1846 and 1910. By estimating a natural population increase of about 16% and natural decrease combined with unreported hunting of about 10%, I estimate the number of bears shot is about 10% of the total population. Population estimates are then derived by multiplying the number of bears killed by 10 (Elgmork 1979).

HISTORY OF DECLINE

Large numbers of brown bears were shot for bounties between 1850 and 1900 (Fig. 1). Around 1850, more than 200 bears were harvested annually. The number of brown bears shot has declined rapidly since, and after the turn of the century relatively few bears were shot, a situation that still prevails.

During the decline, there was no increase in human activity or habitat deterioration. On the contrary, the disturbance from dairy farms in the forests and mountains declined and was practically nonexistent by 1900. The reduction of the brown bear population was, therefore, caused primarily by extensive hunting.

Brown bears were hunted in certain areas longer than in others. If no bears were harvested from a region for some time, it was assumed they had been extirpated. Brown bears were present in all forested areas through 1860, but only 1 small isolated population and a few populations along Norway's borders, regarded as extensions of populations in neighboring countries (Elgmork 1976), were assumed to be present about 1970 (Fig. 2). There were also newspaper reports that bears were observed in other areas (Myrberget 1969), but these were regarded with

skepticism or these bears were considered to be transients.

RE-EVALUATION OF OCCURRENCE

The nutritional conditions for bears were exceptionally poor after consecutive warm dry summers in 1975 and 1976. An intervening winter with little snow caused the overwinter blueberry (*Vaccinium myrtillus*) plants to freeze. Bears responded with movements that exposed their presence more than usual. Evidence that bears were present in areas regarded as void of bears started to accumulate. In 1979, a bear with 2 cubs attacked a man in an area where bears were not thought present. This incident attracted great attention in the media. The attitude among the rural people changed; they now dared to tell what they had observed previously. After officials declared an area free of bears, people were reluctant to report bears they had seen for fear of not being trusted.

Using newspaper accounts, interviews, and field studies, a new map was assembled showing brown bears to be present in several areas (Elgmork and Mysterud 1977). Furthermore, I investigated 2 cases during 1976-80 that supplement the nationwide sur-

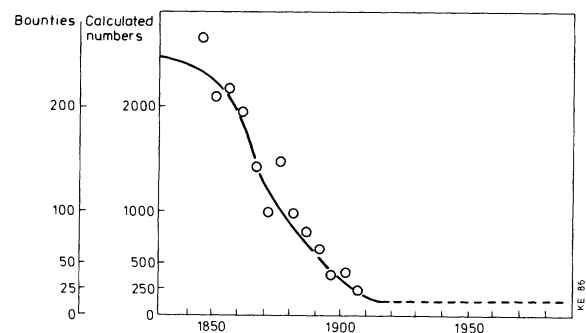


Fig. 1. Bounties paid for killing brown bears in Norway (open circles) and a calculation of bear numbers (solid line) for 1846-1910. The curve after 1910 is estimated. Circles represent annual means for 5-year periods.

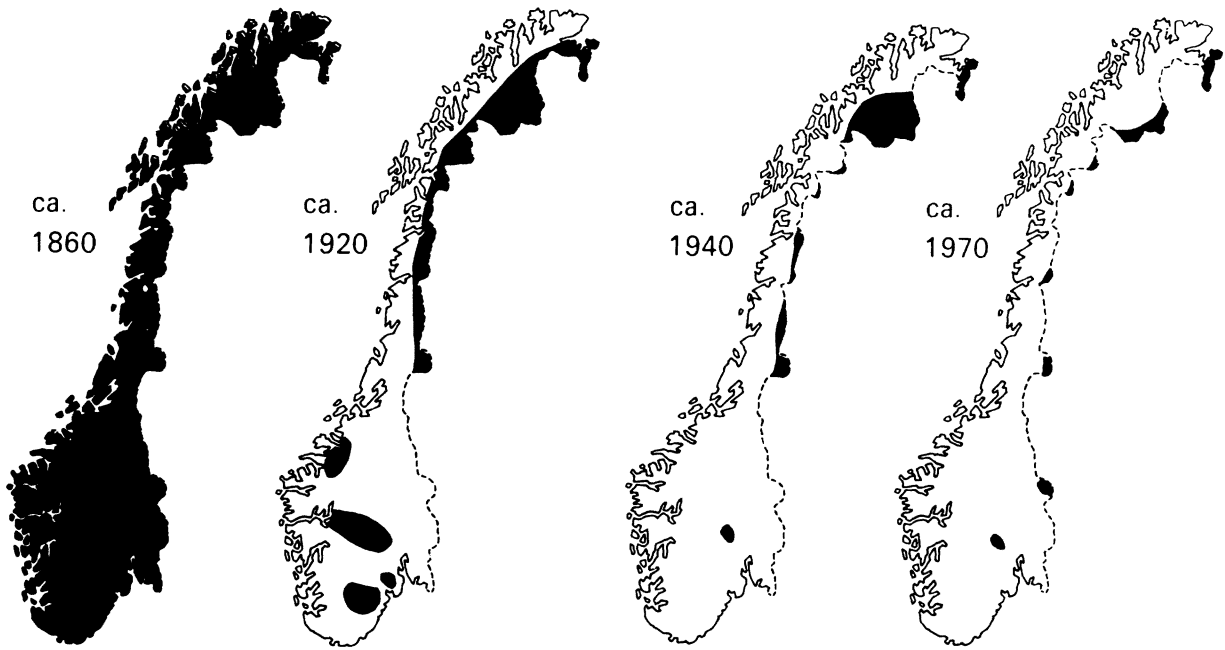


Fig. 2. Brown bear distribution in Norway, 1860–1970, based on hunting statistics.

vey of bear distribution and abundance (Kolstad et al. 1984).

In Hordaland County, a fjord district on the west coast, the last known brown bear was shot in 1905; since then the county has been regarded as empty of bears. But interviews with local people demonstrated that bears had been observed during every decade since 1900, and organized hunting had been arranged by local officials (Elgmork 1984). Among the brown bear observations collected from 1976 to 1980, I was able to document 4 valid tracks or signs of bears (Fig. 3). The population density is extremely low, perhaps fewer than 2 bears/1,000 km² of forest. The bears remain in steep, rugged mountainous areas and are reclusive.

The last bear shot was killed as recently as 1949 in Telemark County (Elgmork 1986). A number of newspaper reports of bears are available from the following years, but were disregarded because they could not be verified. Field work and interviews from 1976 to 1980 produced several reports (Fig. 3). I verified 1 report of tracks of a young bear, possibly a 2-year-old, indicating a reproducing population. In this area, the population is extremely small, and the bears are restricted to remote wilderness areas.

A nationwide survey (Kolstad et al. 1984) showed that very small, secluded brown bear populations are

also present in other areas where bears were previously assumed to have been extirpated. This does not, however, indicate a population increase (Kolstad et al. 1984), of which there is no evidence at present. Figure 4 summarizes all available information regarding the present brown bear distribution in Norway and neighboring countries.

DISCUSSION

The brown bear in Norway occurs in extremely low-density populations consisting of very shy individuals living in areas away from humans and their disturbances. This tendency can even be traced in wilderness areas (Elgmork 1978, 1983). Such behavior is in contrast to the brown bear in other areas, such as parts of North America. Possibly the difference is a result of "gun selection" (Mysterud 1977). The less shy individuals were the first to be shot during the intensive hunting period in the late 1800s. The shy individuals remained in inaccessible areas, avoided contact with humans, and thereby survived. These patterns were passed to new generations through heredity and learned behaviors. Similar selection patterns in behavior are known from other species such as the rhinoceros (*Diceros bicornis*) (Eltringham 1979).

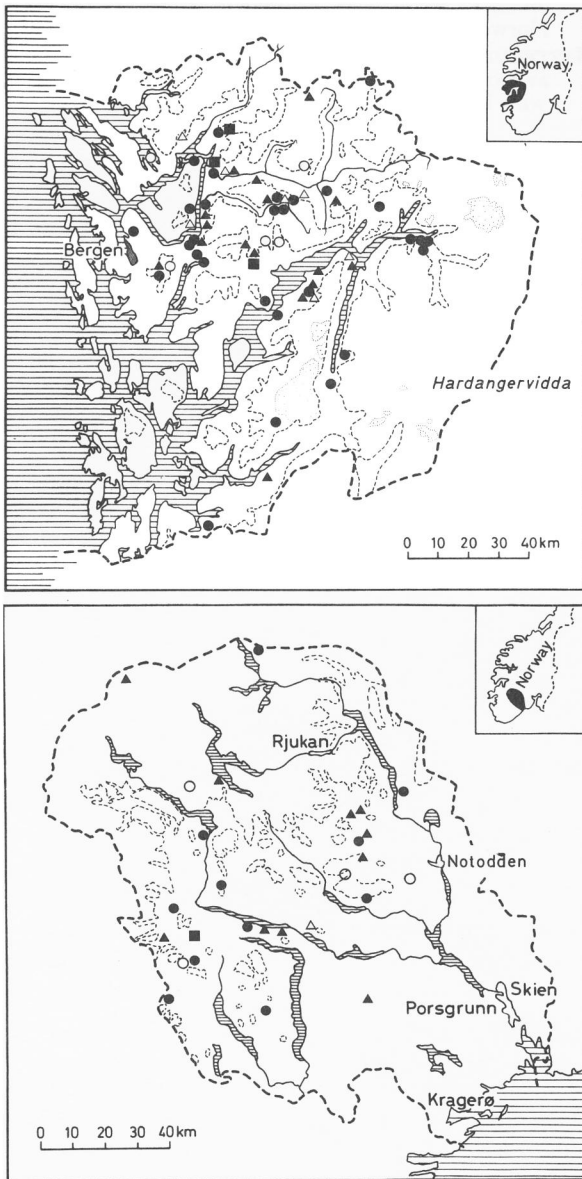


Fig. 3. Brown bear observations in 2 counties in Norway, 1976–80. Upper map is Hordaland; lower map is Telemark. Circles represent visual observations; triangles represent tracks and signs. Filled symbols represent accepted observations; filled squares are verified observations; open symbols are uncertain observations. The dashed line represents timberline.

This study shows that hunting statistics are not adequately sensitive to monitor trends in small, low-density brown bear populations. Interviews with local people and field studies are more appropriate methods. Similar conditions may prevail in other regions, especially where bear populations have been exposed

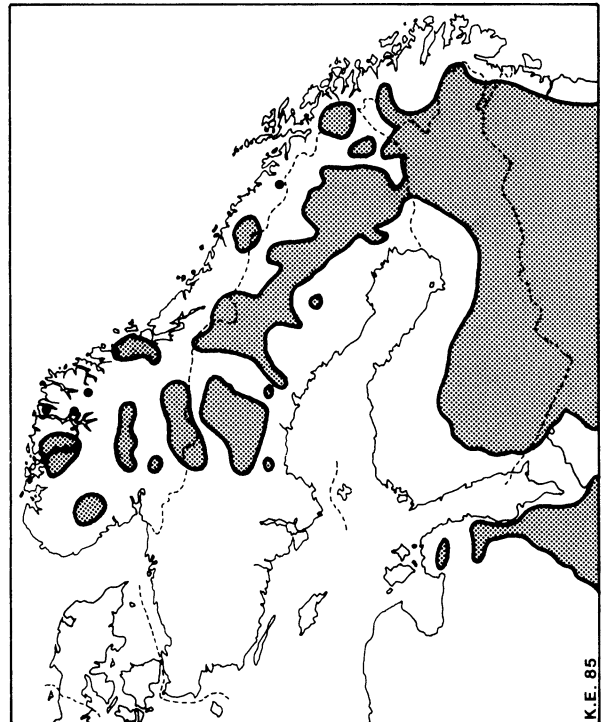


Fig. 4. Brown bear distribution in Northern Europe (Elgmork 1979, Kolstad et al. 1984; Bjärvall, pers. commun.; Pulliainen, pers. commun.; Wikan, pers. commun.).

to heavy hunting pressure. Low-density, shy, brown bear populations may, therefore have escaped notice in other areas.

LITERATURE CITED

ELGMORK, K. 1976. A remnant brown bear population in southern Norway and problems of its conservation. *Int. Conf. Bear Res. and Manage.* 3:281–297.

—. 1978. Human impact on a brown bear population (*Ursus arctos* L.). *Biol. Conserv.* 13:81–103.

—. 1979. *Björn i naturen*. Gyldendal Norsk Forlag, Oslo. 179pp. (In Norwegian.)

—. 1983. Influence of holiday cabin concentrations on the occurrence of brown bears (*Ursus arctos* L.) in south-central Norway. *Acta. Zool. Fenn.* 174:161–162.

—. 1984. *Björn i Hordaland*. *Fauna* 37:96–104. (In Norwegian, with English summary.)

—. 1986. *Björn i Telemark*. *Fauna* 39:41–46. (In Norwegian, with English summary.)

—, AND I. MYSTERUD. 1977. *Björn i Norge 1976*. *Norsk Natur* 13:68–71. (In Norwegian.)

ELTRINGHAM, S. K. 1979. *The ecology and conservation of large African mammals*. The Macmillan Press, Ltd. 286pp.

KOLSTAD, M., T. KVAM, I. MYSTERUD, O. J. SÖRENSEN,
AND S. WIKAN. 1984. Björnen (*Ursus arctos* L.) i
Norge. Utbredelse og bestand 1978–1982. Viltrapport
31:1–68. (In Norwegian, with English summary.)
MYRBERGET, S. 1969. Den norske bestand av björn, *Ursus*

arctos L. Medd. Stat. Viltunders. 2. Ser. 29:1–21. (In
Norwegian, with English summary.)
MYSTERUD, I. 1977. Problemer i forskning og forvaltning
av björn i Norge. Viltrapport 4:19–51. (In Norwegian,
with English summary.)