

STATUS OF BROWN BEAR IN LATVIA

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Abstract. This study aimed to find out the current distribution and number of brown bear (*Ursus arctos*) as well as any trends in species population status in Latvia. Data were collected by an inquiry carried out in 1999. The obtained results were compared with the data collected during 1991–1995 for the Mammal Atlas and during the late 1970s for the Red Data Book of Latvia as well as with few published historical data about species status in the late 19th and early 20th century. It was found out that both currently and historically brown bear is distributed in the eastern part of Latvia. However, the total number of brown bears is small and is likely to fluctuate around 10. Since there is still no clear evidence on bear breeding in Latvia, all animals recorded should be regarded as migrants between Latvia, Estonia, and Russia.

Key words: brown bear, distribution, abundance, protection, Latvia

INTRODUCTION

Brown bear (*Ursus arctos*) originally occurred throughout Europe, except for some large islands of the Baltic, Mediterranean and North Seas, but later disappeared from most areas. Currently bears are found in twelve restricted populations in Western and Southern Europe as well as one population in Northern Europe, including Scandinavia, which is part of the world's largest continuous Euro-Asiatic population (Swenson *et al.* 2000). Similarly, a widespread species historically (starting from Early Holocene) in the whole Eastern Baltic (Lepiksaar 1986), nowadays it is included in the Red Data Book in Latvia and Lithuania.

This study aimed to find out both the current distribution and number of brown bears in Latvia. Additionally, the main population trends and possible causes were analysed.

MATERIAL AND METHODS

Although brown bear is a rare and currently protected species in Latvia, its occurrence is traditionally recorded by state foresters within the frame of annual game censuses. Data about brown bear have been accumulated since 1979 (Fig. 1). Latvia is divided into numerous administrative units ranged by professional foresters. The game censuses are one of their duties. Since the 1970s the range units have changed their borders and areas several times, but never overlapped and always included at least 1.5–3 thousand ha of forest land. Records from those units were summed up and provided to local offices of forestry districts (ca. 10,000 ha of forest land with 3–4 basic units) for statistics. Head forestry offices collected the statistics from the local offices and sent them to the central office in Riga currently named the State Forest Service. Although the

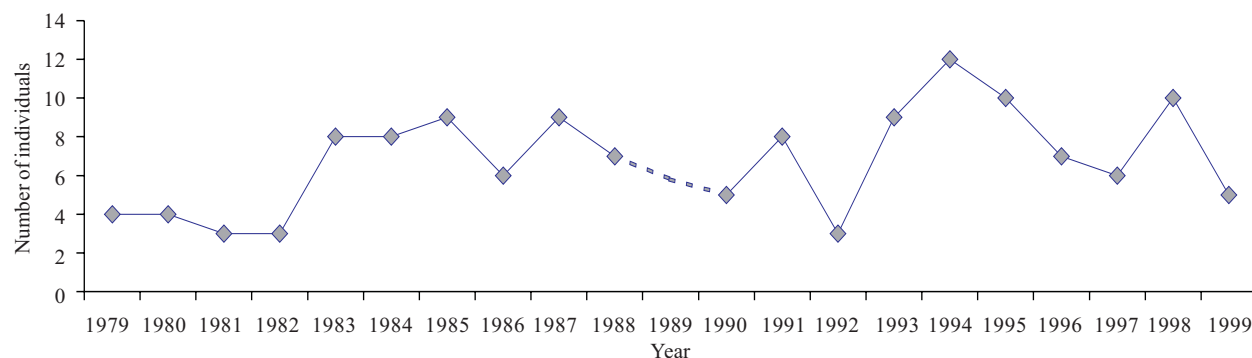


Figure 1. The number of brown bears in Latvia according to official statistics of the State Forest Service.

double counting by the smallest units, especially regarding big game, can not be excluded, these data are considered to be sufficiently reflecting main trends in populations. Due to a relatively small and stable basic sample area (on average 3 km² per each state forest ranger) and regularity of estimates (annual), the total sum of records undoubtedly increases when population is growing, and vice versa.

In addition, data for the study were collected by an inquiry carried out in March–September 1999. A total of 220 questionnaires was distributed within the state head forestries and local forestries as well as administrations of nature reserves. Each questionnaire consisted of three parts. The first part asked for information just about the presence (currently or recently) or absence of bears. The second was meant for cases when bears had been seen, but data about them had not been presented for game statistics. Respondents were asked to indicate who had met a bear or seen its signs, themselves or somebody else, and how the animal was identified. The third part dealt with cases when data about bears had been presented for game statistics. Respondents had to describe the area, time, and circumstances of bear findings and indicate cases when signs of bear hibernation or breeding, or any damage done by bears had been observed. In addition, respondents were asked to express their attitude towards bear presence in Latvia.

Inquiry feedback, 104 questionnaires or 47.3%, was received. In 36.5% of the replied questionnaires there were no data about bear occurrence. In most (37.5%) of the replied questionnaires there were data about bear occurrence before 1997, i.e. bear records were more than three years old, and in 26% of the questionnaires there were data about bear occurrence during the last three years (Fig. 2).

In addition, field surveys were carried out to check some bear records and find additional bear signs in those nine state forestry districts where bears had been recorded during the previous half-year. Numerous personal communications with foresters and hunters throughout Latvia were carried out, too.

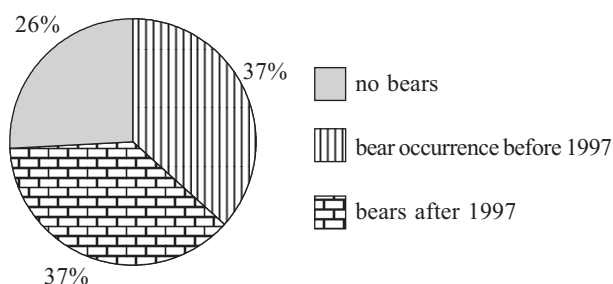


Figure 2. Percentage of bear occurrences according to the urgency of data in questionnaires (n = 104) (inquiry 1999).

The obtained results were compared with official game statistics of the State Forest Service, unpublished data collected during 1991–1995 for both the Latvian and European Mammal Atlases (Mitchell-Jones *et al.* 1999) and during 1977–1993 collected by J. Lipsbergs for the Red Data Book of Latvia (Tauriņš 1982; ZABI 1985) as well as with few published historical data about the species status in the late 19th and early 20th century (Grevé 1909; Lange 1970).

The data for both the Mammal Atlas and the Red Data Book had also been collected mainly by inquiries and personal communications. All the data about the presence of the species were mapped using the standard European UTM-grid system. Latvia was divided into 739 squares of 10 × 10 km. In the distribution maps, all squares with at least one record are dotted.

RESULTS AND DISCUSSION

Former distribution

Brown bear appeared in the area of Eastern Baltics after the thaw of the last glacier starting with the Early Holocene, i. e. about 10,000 years ago, and belonged to the first post-glacial animal communities (Lepiksaar 1986). During the Bronze Age (3,500 years ago) the bones of bears made 5.3% of all game animal bones found in refuses in Latvia (Mugurēvičs & Mugurēvičs 1999). Hupel (1777) and Fisher (1791) made the first written references to bears as inhabitants of the present territory of Latvia. Obviously already in the 18th century a decrease in the brown bear distribution range started in the territory of present Latvia due to both extensive forest logging and overhunting. In West Latvia, the last brown bear (Kurzeme) was shot in 1811 (Grevé 1909). During the second part of the 19th century brown bear disappeared consistently from most parts of North-East Latvia (Vidzeme) and Estonia, too (Fig. 3). At the turn of the 19th and 20th century some bears were left only in East Latvia around Lake Lubāns (Grevé 1909). Probably, they were part of a larger bear population in Russia (Lange 1970; Fig. 3). The very last local bears were exterminated during 1921–1926. Nevertheless, later from time to time the animals appeared in the area where Latvia, Estonia and Russia border, to be instantly killed. The former State Forest Service was reticent about those cases (Lange 1970), so bears are lacking in official game statistics (Kalniņš 1943) of that time. Records about brown bear became more numerous starting with 1946 (Lange 1970), but only since the 1960s the animals have been more or less residential inhabitants (ZABI 1985). This coincided with the recovery of the brown bear population in Estonia after the WW II (Lõhmus 2002).

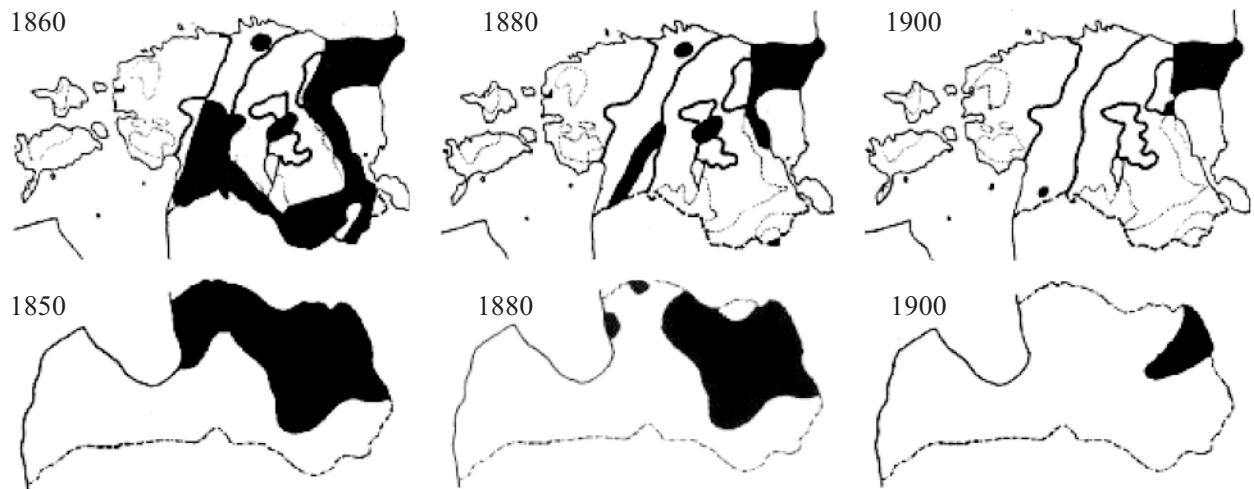


Figure 3. Distribution of brown bear (shaded) in Estonia (top) and Latvia in the 19th century (from: Kaal 1980 and Lange 1970, respectively).

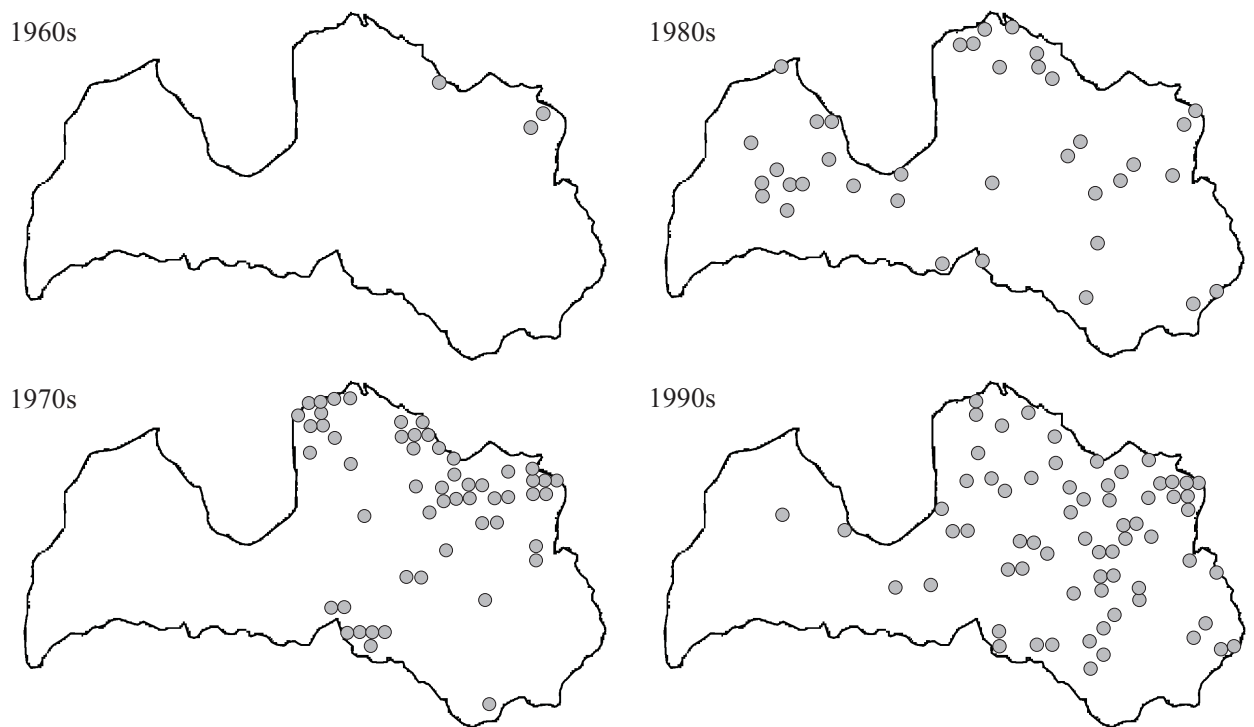


Figure 4. Distribution of brown bear in Latvia during the second half of the 20th century (each dot – one square of 10 × 10 km with at least one record).

Distribution during the 1960s–1980s

In the 1960s, bears were recorded only in the very North-East Latvia (Fig. 4). In the 1970s, bears were observed almost in the whole eastern part of Latvia, including the area bordering Lithuania (Sēlija). A rather similar distribution pattern of bears was established for the 1980s. Brown bears were present in the western part of Latvia (Kurzeme), too, during 1983–1985 and in 1989. Twice two animals simultaneously were observed. It is most likely that only two or three

bears were living in Kurzeme during those years. According to unofficial information, at least one of those individuals was shot.

Distribution during the 1990s

During the last decade of the 20th century the distribution pattern of brown bears in Latvia was almost the same as during the 1970s–1980s and 100 years before, in the late 19th century. Again, most records are from the north-eastern and eastern parts of Latvia. Obviously,

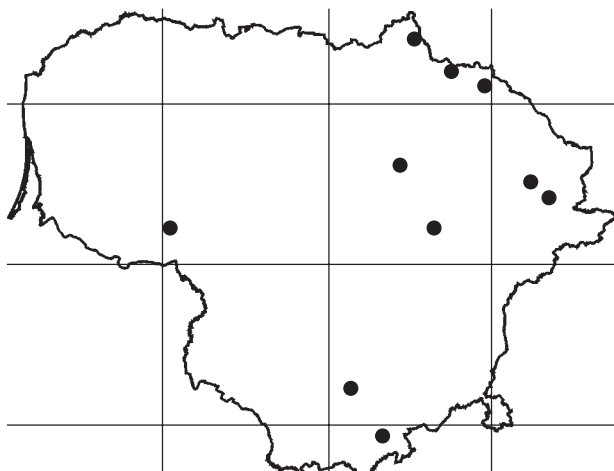


Figure 5. Distribution of brown bear in Lithuania during 1977–1995 (from: Balčiauskas *et al.* 1999 with alterations).

the animals recorded in the southern part of the country, at the very border with Lithuania, are the same individuals recorded on the other side of the border (Balčiauskas *et al.* 1999; Fig. 5). Typically, the same distribution pattern can be observed even during one year, but not each year.

Encounters with bears

A total of 66 questionnaires with data about bear occurrences was received during the inquiry of 1999. In 57 cases, respondents had reported different signs of bear activities. Of them, in 37 cases they had seen a bear, too. In three cases, a bear offspring had been recorded. Three records had been about bear hibernation places. Five bears found dead had been reported, too. Only eight cases of damages done by a bear had been described. In seven cases, bears had destroyed beehives, and in one – an oat field was considerably damaged.

Abundance

Unfortunately, there are no data about the number of bears inhabiting the present territory of Latvia in former times. It is known that in the beginning of the 20th century about 10 bears were left in the very North-East Estonia (Lõhmus 2002). Probably, the same number of bears inhabited Latvia at that time. The current Estonian bear population is estimated at about 500 individuals, i.e. 2.2 ind. per 100 km² of forest land (Lõhmus 2002). The only source of data about brown bear numbers in Latvia is the official game statistics of the State Forest Service. According to it, at present the number of bears in Latvia fluctuates around 10 individuals (Fig. 2), i.e. 0.03 ind. per 100 km² of forest land. This means that the population is not large enough for self-reproduction. Moreover, no breeding cases of brown bear in the territory of

Latvia were confirmed. Females with cubs might be immigrants from neighbouring countries. The existence of the Latvian population of brown bear depends mainly on the immigration of the animals from neighbouring Russia and Estonia. Besides, bear numbers in Estonia and Latvia differ. It seems that the bear number in Latvia was rather stable during the last 20 years despite its increase in Estonia during the 1980s and a slight decrease during the early 1990s (Lõhmus 2002).

In Lithuania, brown bear is considered an accidental visitor (Prūsaitė 1988). There is no clear explanation for such a distinct difference in bear abundance among all the three East Baltic States.

Movements

In 1999, four bears of the nine recorded were reported as living on both sides of the state border (Fig. 6). We can assume that a great part of bears recorded in Latvia are animals wandering around, coming from and going back to either Estonia or Russia. Most local foresters are of the same opinion (Ennītis 2001), and the same pattern was observed in former times (Lange 1970).

From time to time, bear footprints are recorded also in the Gauja National Park. Although it is quite a large protected area (more than 900 km²), no signs were found testifying to a long presence of bears in it. It seems to be just crossed.

Obviously, such vagrant bears can walk long distances. Bear records from Kurzeme and Lithuania are an evidence of this. However, some bears may become rather residential, at least for several years. Again, this is confirmed by records from Kurzeme. In general, in Latvia bears should be regarded as part of the marginal population. No strict border for distribution range can be identified in the territory of Latvia. One year a bear inhabits one area, while another it lives somewhere else. Bears prefer remote areas with low human disturbance (Swenson *et al.* 2000). In Latvia, such areas mainly are forests making almost half of the country's area. However, in Latvia forests are quite fragmented (Fig. 6). Distribution of brown bear in Latvia, i.e. areas frequently inhabited by bears, coincides with large forest massifs (Fig. 6). This means that only such forest stands suit the requirements of animals, and they should be regarded as their main habitats. In general, there are few bear records from outside the forests. A relatively low forest cover in South-East Latvia (Latgale) probably is a reason for the absence of bears in its central part. Similarly, large agricultural areas in Zemgale (area south from Riga Gulf) is likely to be a barrier for bears to reach large forest areas in Kurzeme. The forested belt crossing the whole eastern part of Latvia facilitates bear movements to Lithuania.

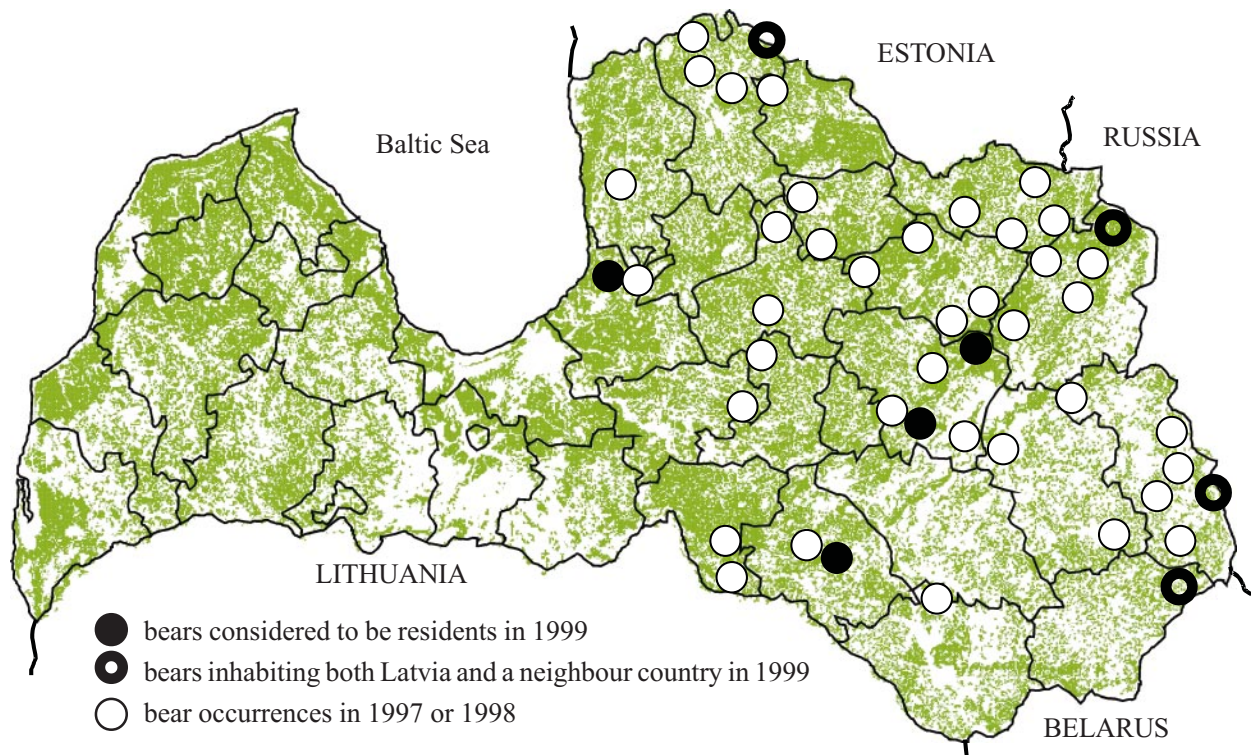


Figure 6. Distribution of brown bear in Latvia according to the study in 1999 (each dot – one record). Forests shaded.

Threats

Historically, bears were favourite game animals in Latvia, as in many other countries. Therefore hunting was one of the main reasons for the declining bear population. Nevertheless, already Grevé (1909) indicated that the reason for a considerable decrease in the bear number during the 1860s was not direct persecution of the animals but introduction of modern forest management practice. Despite the status of a protected species, brown bear is rarely shot nowadays, too, due to poaching or oversight. Obviously, it has no abiding effect on population as losses are compensated by immigration. Most of direct bear observations during the late 1990s are connected with hunting of other animals. Supposedly, hunting, especially with animal driving in late autumn and during winter, might be one of the main disturbances to bears in Latvia. Due to the driving both bear hibernation and breeding can be obstructed.

Since the 1990s forest cuttings have probably been most intensive during the whole second part of the 20th century. The same can be said about picking of wild berries and mushrooms. All these are additional disturbances to bears in Latvia.

Hibernation is typical of bears living in the northern part of their distribution range. Contrarily to expectation, bears are rarely found hibernating in Latvia. The

reason for this most probably is the effect of ‘civilization’, i.e. all those disturbances mentioned above. Bears do not fatten enough before winter, besides they can not find suitable hibernation places free of hunters and hunting dogs. Few bear females with cubs found in Latvia could be an evidence of such disturbances. Moreover, as it has been already mentioned, no breeding cases were confirmed in the territory of Latvia.

All these different types of disturbance are supposed to be the main limiting factors of habitat use (e.g. in smaller forested areas) and distribution in Latvia.

In several cases, bear signs were found at exposed animal carcasses in a forest. It is known that brown bear, in addition to feeding on vegetarian food and invertebrates and killing prey, is also an opportunistic scavenger (Swenson *et al.* 2000). Presumably, due to a relatively high abundance of other carnivores (Ozoliņš & Pilāts 1995; Ozoliņš *et al.* 2001) and ravens (Priednieks *et al.* 1989) in Latvia bears have insufficient amount of animal carcasses available. This is especially evident in winter and early spring, when no other food is available. It might be an additional reason inhibiting the settlement of bears in the territory of Latvia.

Nevertheless, neither of the disturbances and threats mentioned above may be expected to reduce the current number of bears in Latvia any further.

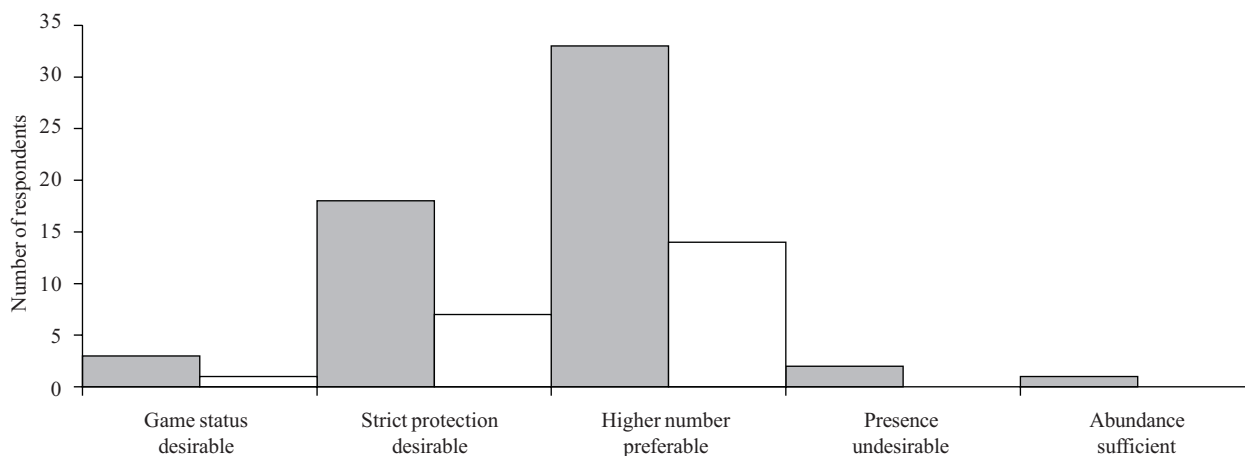


Figure 7. Attitude of respondents to brown bear presence in Latvia. Grey columns – all respondents, white columns – respondents from districts without bears.

Protection

In Latvia, brown bear has been protected since 1977. Since 1980 it has been included in the Red Data Book of Latvia. At that time its population status was described as a rare species, not endangered by extinction, but which might disappear in a short period as it is found in very small numbers. Nothing has changed during last 20 years. No protected areas have been established for bears, as no area is continuously inhabited by them. Nevertheless, both additional conservation actions (e.g. to reduce disturbance level) and detailed studies on habitat use are required to increase the brown bear population. Public opinion about the presence of bears in Latvia is favourable. Even 43.3% (n = 45) of all the respondents who participated in the inquiry in 1999 expressed their positive attitude towards bear conservation. Most of them were interested in bear increase in Latvia and considered that bears had to be strictly protected. Only few of them wanted brown bear to be a potential game species or were against bear presence in the country (Fig. 7).

CONCLUSIONS

Distribution of brown bear in Latvia has not changed essentially during the last 20 years compared to the late 19th century.

Brown bears in Latvia should be regarded as part of the marginal population. There is no strict border of distribution range in the territory of Latvia.

In Latvia, at present the number of brown bear is not very stable, but still does not show essential fluctuations and is about 10 individuals.

The population is not large enough for self-reproduction. Its existence depends mainly on the immigration of the animals from neighbouring Russia and Estonia.

No breeding cases of brown bear have been confirmed in the territory of Latvia.

Distribution of brown bear within Latvia coincides with large forest areas. They are the main habitats for the animals.

Different types of disturbance are supposed to be the main limiting factor for habitat use and distribution in Latvia. No threats are identified which could reduce the current number of bears in Latvia.

Both additional conservation actions and detailed studies on habitat use are required to increase the population.

ACKNOWLEDGEMENTS

Our special thanks are due to Juris Lipsbergs, a pioneer in bear studies in Latvia, for delivering invaluable unpublished material about bear records in Latvia during 1977–1993.

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RUDOJO LOKIO STATUSAS LATVIJOJE

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SANTRAUKA

Tyrimo tikslas buvo išsiaiškinti rudųjų lokių (*Ursus arctos*) dabartinį pasiskirstymą, skaičių ir jų populiacijos būklės tendencijas Latvijoje. Duomenys apie dabartinį lokių pasiskirstymą surinkti 1999 m. atlikus miškininkų ir aplinkosaugininkų apklausą. Ši informacija lyginta su duomenimis, rinktais 1991–1995 m. Latvijos žinduolių atlasui, o aštuntojo dešimtmečio pabaigoje – Latvijos raudonajai knygai, bei publikuotais istoriniais duomenimis apie populiacijos būklę devyniolikto amžiaus pabaigoje ir dvidešimto amžiaus pradžioje. Praeityje ir dabartiniu metu rudieji lokiai daugiausiai paplitę Latvijos rytuose. Šiuo metu jų yra nedaug, apie 10 individų. Kol kas neįrodyta, jog lokiai Latvijoje veisiasi, todėl visi užregistruoti gyvūnai laikytini migruojančiais tarp Latvijos, Estijos ir Rusijos.

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