

THE OTTER (*LUTRA LUTRA* L., 1758) IN BULGARIA, ITS STATE AND CONSERVATION

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The otter remains a species in Bulgarian fauna which is not well studied. The problem of its preservation is increasingly topical, the otter being included among the threatened species of Europe (Smit, A. Wijngeaarden, 1976) and the IUCN Red List of Threatened Animals, 1986. This status calls for the publication of the results of current research as well as for recommendations for urgent steps for its preservation.

PAST DISTRIBUTION AND NUMBERS

In the late 19th century the otter was common and inhabited almost the entire country (Христович, 1904), while Дренски (1926) considers it a pest to fisheries, destroying tens of tons of fish only among the Danube and the Black Sea. According to hunting statistics Дренски (1926) estimates its numbers between 4000 and 5000 otters.

Towards the 1950's the situation had obviously deteriorated, and in spite of dense populations inhabiting the Danube and the frequency of the otter along the banks of the rivers Lom, Jantra, Kamčija, Iskăr, Struma, Marica, as well as its appearance along the Black Sea coast (Атанасов, 1954; Тулешков, 1956). Its numbers continued to fall later, hence the otter was declared a protected species with the exception of the otters in the regions of fisheries (1962). At that time Атанасов and Пешев (1963) referred to the otter as a rare species in Bulgaria.

Taking into account the status of the otter as a threatened species in Europe, the otter was also included in the Red Data Book of the People's Republic of Bulgaria (Спасов, Спиридонов, 1985), calling for some studies. Some results have been published and proposals for the full protection of the otter (Спиридонов, 1984; Спасов, Спиридонов, 1985) were adopted by the Committee for Protection of the Environment at the Council of Ministers, declaring the otter a protected species from the end of 1986.

MATERIAL AND METHODS

We established the recent distribution chiefly judging from data from a survey, carried out in 1980 with Forestry Commissions.

The relative density of the population in various regions we determined after processing the data, drawn from the Central Warehouse of the Bulgarian Hunting and Angling Union (BHAU) for the 1972-1985 period, as well as for the years 1972, 1977, 1980, 1982, and 1983, establishing the regions of all skins received at the Warehouse. Four average density zones were designated (Fig. 1).

The numbers of the species were determined over the last 10 years on the basis of the mean length of stretch of river bank per animal, which according to Erlinge (1967) was about 5 km. The same length was obtained for the former Vidin District (Džuninski, personal communication). We used the indice 5 km in assessing the population in the high density zone of the otter (see Fig. 1). Owing to pollution, low waters and a small stock of fish in many rivers in Bulgaria, we considered the length of stretch of river bank per animal for zone B (zone of average density) 10 km. This length for zone C (zone of low density) was 20 km. A correlation occurs between these values and the length of individual territory, which according to Erlinge (1967) is approx. 15 km. The differences between the lengths of individual territories and the mean length of stretch of river bank per animal was due to the fact that individual territories of the otters more or less overlap.

Common negative factors, affecting the species in Europe, have been interpreted in view of the specific conditions in Bulgaria.

RESULTS AND DISCUSSION

Distribution. Through a survey we gathered data for all Forestry Commissions with the exception of those in the former Smoljan and Silistra Districts. Positive answers were given for 112 Commissions, negative answers — for 22, while 18 answered that it was unlikely that otters inhabited their territory. For some regions corrections of the values were made, based on skins, purchased from the regions. Distribution of the species in the former Blagoevgrad District was assessed on the ground of data, gathered by A. Tjufekčiev (personal communication) and data on the former Vidin District (Northwest Bulgaria), on data from E. Džuninski (personal communication). Otters do not occur in south Dobrudža and most of the Ludogorie region (Northeast Bulgaria), (Surveys with the Forestry Commissions; С п и р и д о н о в, 1985). No constant population occurs in higher parts of the mountains in particular above 1200 m. a.s.l. The distribution of the otter (Fig. 2) given by S m i t and W i j n g a a r d e n (1976) is not precise due to incorrect interpretation of data of A t a n a s s o v and P e s h e v (1963).

Numbers and density. Populations of 800-1200 otters (С п а с о в, С п и р и д о н о в, 1985) refer to sexually mature specimens. It appears to have been stable over the past 10-12 years, if we judge by the number of skins sold to the Central Warehouse of the BHAU — on the average 200 skins annually. In fact over 300 otters are killed, caught for zoos and export annually, part of the skins not reaching storerooms, as they were caught by poachers. The number of otters captured from rivers also includes young specimens and weaned non-mature specimens over 9 months. If we consider that the annual increment (amounts to 25 per cent of the whole population) (Ю р е н с о н, 1967) is equal to the number of killed or caught animals, the annual number of otters in Bulgaria is about 1000-1400 specimens.

The density of the population is largest in Southeast Bulgaria and above all in the catchment area of the rivers Luda Kamčija, Močurica and Ajtos, about 150 skins having come from here only for 3 years (1980-1982). High density of the otter also occurs in the ranges of the rivers Tundža and Marica (in the territory of the former Haskovo, Stara Sagora and Plovdiv Districts), along the rivers flowing into the Burgas Bay, along the Rezovska river, Veleka river in Strandža, along the Mesta river, to the south of Momina Klisura, along the Rositsa river and upper stretches of the Jantra river. Along the Da-

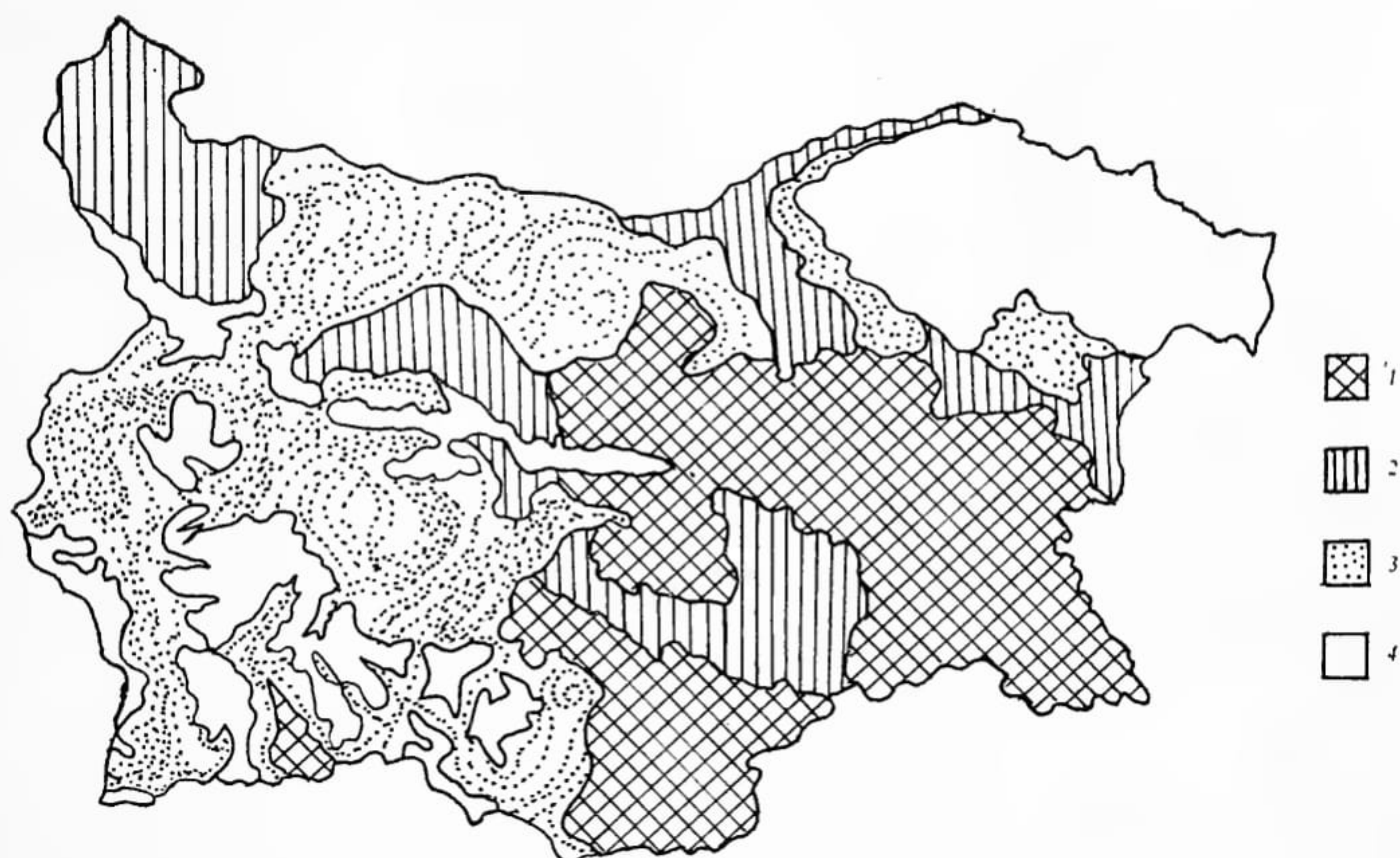


Fig. 1. Present distribution and relative density of the otter (*Lutra lutra* L.) in Bulgaria

1 — zone A — high density population; 2 — zone B — average density population; 3 — zone C — low density population; 4 — zone G — region with no otters

Fig. 2. Distribution of the otter after Smit et Wijnngaarden, 1976. The dotted sectors present the regions with otter populations



nube the otter is more frequent in the vicinity of the Belene Islands and in the former Vidin District; otters are very rare in the Danube between Kozloduj and Nikopol, where the river is heavily polluted by the rivers Ogosta, Iskăr, Vit (Капанеткова, Диков, 1986) and Osăm, with no fish flowing. A low density is observed almost throughout the entire southwest part of Bulgaria, mostly in the Thracian and the Danubian Plains. The figures on relative density of the otter are the average for larger areas (Fig. 1), as they were based on statistics from territories of forestry commissions and not on concrete data for river or closed basins.

S t a t e o f t h e p o p u l a t i o n. Today the otter population has decreased 3-5 times in comparison with the 1920's, however towards the end of the 1950's and the early 1960's the decrease was even greater. The main reason for the decrease was the great fall in fish population and the reduction of additional food in the diet of the otter (crabs, frogs, etc.) owing to industrial pollution, in particular along the large rivers, the use of pesticides in agriculture, angling and poaching. The free hunting of otters up to 1962 was another negative factor, together with a deterioration and disappearance of natural habitat, owing to the draining of closed basins, melioration work along river stretches (resulting in concrete covered banks, a smaller area of the rivers' surface and an accelerated current); hydropower construction work, the felling of forests along river banks, the urbanization of river banks, etc. These have caused a reduction of otter populations or their disappearance all over (Smit, Wijngaarden, 1976; Müller, Diethelm, et al., 1976).

The drying out of a large number of rivers from between 15 and 105 days annually (after Стойчев, 1982), in the summer-autumn period, when the otter is bringing up its young, has contributed to the strong loss of the food base of the otter in the country.

The increase of otter numbers towards the end of the 1960's coincided with its being partly protected. In fact this increase was due to the improved food base in the dams, which have constantly grown over the past 35 years, reaching the impressive number of 2200 (Зяпков, 1982), as well as in the numerous newly established fisheries.

The growth of the populations over the past 20 years has been accompanied by major changes in its distribution and relative density in the different areas. Along the Danube and the lower and middle stretches of almost all its principal tributaries no increases of otter populations are observed, while the relative share of the north Bulgarian population is smaller than ever. The same is valid for the otter in southwest Bulgaria, the former Sofia District and elsewhere. The appearance of otters and their growing number along the upper flows of the Danubian tributaries are attributed to its withdrawal from the rivers in the Danubian plain which have no more fish.

The increase of otters over the past 20 years occurred chiefly in the southeast parts of Bulgaria, in some places almost amounting to a population explosion. This is the result of an increase of the food base — in the Sredna Gora-Thracian region where 810 dams have been built, and the dams in the Eastern Balkan Range should be added to them. Simultaneously the area in question is known for its considerable number of large and small rivers, which are not polluted.

The brief period of frost typical for the Thracian Plain (on average 6-8 days annually), compared with the same period for the Danubian Plain (36 days), and exceeding 120-130 days (Стойчев, 1982) in the mountains above 1500 m are also a factor in this respect. Юпренсон (1967) points

out that the numbers of the otter greatly depend on the character of freezing regime of basins.

The growth of the otter population is considered a temporary phenomenon which occurs over about 1/4 of the territory of Bulgaria. The large and constant number of otters killed around fisheries comes to show that at least half of the population cannot be maintained by its natural food base alone. The fencing off of fisheries against otters, which will follow once they become completely protected species (1986), will result in a reduction of their food base. Neither should the role of dams be overestimated. Most of their banks do not offer locations suitable for liars and holes, while pelagic fish and fishes inhabiting depths over 4 m are practically out of reach for otters (Müller, Martin, Diethelm, 1976; Спирidonov, 1980). The upper reaches of rivers, and in particular the trout zone, lack variety in the food base (the Balkan trout is difficult prey for otters — Müller, Martin, Diethelm, 1976), so otters are forced to ravage a large territory, above all in winter, and attack fish in fisheries (Спирidonov, Спасов, Милева — (1987). Studies in this line, carried out in the catchment areas of the rivers Beli and Černi Vit, and the drastic fall of fish populations and crabs over the past 30 years, point to the fact that large otter populations cannot be sustained in mountainous regions. There is no sound reason to believe that the negative factors will cease to exercise their impact on the species and its habitat in North Bulgaria, Southwest Bulgaria and the Thracian Plain.

CONCLUSIONS AND RECOMMENDATIONS

Over the past 20 years, the otter maintains a stable and vital high-density populations in some regions in the southeast part of the country; hence the species in Bulgaria cannot be considered directly threatened with extinction. Nevertheless, its population in a large part of Bulgaria has greatly fallen, including the middle and lower reaches of almost all big Bulgarian rivers. The existence of numerous negative factors do not give grounds to believe that these habitats which in the past were most favourable for the species will be restored to it in the near future. On the contrary, these factors will exert their impact where the otter today enjoys high numbers and great density. This gives grounds to characterize the species as vulnerable in Bulgaria, as it is entered in the IUCN Red List of Threatened Animals (1986).

We recommend measures which directly or indirectly would contribute to the improvement of ecological conditions of the species, to reduction of the losses due to anthropogenic factors and stabilization of the Bulgarian population.

1. The restoration of the purity of rivers and closed basins, increasing their fish stock and the protection and restoration of river bank vegetation, as well as the planting of this vegetation around artificial reservoirs, the rational use and preservation of natural reservoirs, restoration of drained swamps, etc. These measures are general and aim at the improvement of the environment, but they would to a great extent contribute to the preservation of the otter and the natural river environment in Bulgaria.

2. Preservation of the habitat of the otter. Stretches of rivers of various lengths could be declared "protected areas" (a variant of "protected river" in the sense of the Law of Nature Protection), limiting anthropogenic activities affecting the otter and its habitat (Спирidonov, 1984). Larger protect-

ed areas — natural parks and reserves — could be established in the Eastern Balkan Range, the foothills of the Balkan Range, the Eastern Rhodopes, Strandža, the Dervent Hills, thus preserving representatives of the most important regional populations of the otter. This could be the grounds for the creation of such protected areas. The latter would also justify the placing of marshes and lakes in Bulgaria, as well as some islands on the Danube, under special protection.

3. Fencing of fisheries against otters, improving the system and efficiency of game protection and protection of endangered species, as well as more vigorous customs control, alongside with other administrative and technical measures.

4. The capture and release of otter in regions where it has disappeared or its density is low.

5. The breeding of otters in captivity. This field of activity, a failure in the past, has become successful in several countries, above all Great Britain (Wayre, 1985; Шило, Тамаровская, 1981; Pechlaner, Thaler, 1983, and others). This should be done in Bulgaria as a step to preserve the species.

6. Bulgaria should become a signatory of all international conventions on limiting trade with threatened and rare species.

7. Research. The distribution of the otter in Bulgaria should be established with greater precision by means of the Macdonald and Mason method (1982, 1983).

The system of check points along the network of rivers has already been prepared in some regions (Spiridonov, Mileva, unpublished), however carrying out of the entire study calls for the establishment of a special otter group, as has been done elsewhere.

8. The study of the food base of the species in various habitats, the size of habitats, seasonal migrations, breeding, population dynamics, effect of pollutants on the species should be undertaken.

9. Environmental education, popularization. Together with the general initiatives in this respect, special emphasis should be given to the place of the otter in wetland ecosystems addressed towards hunters and anglers.

We thank the Management and officials of the Forestry Commissions who helped to a great extent in establishing the distribution of the otter in Bulgaria. We also thank the officials of the Central Warehouse of the Bulgarian Hunters and Anglers Union for their assistance in determining the regions of the greatest otter population. We also thank eng. Angel Tjufekčiev and eng. Emil Džuninski for their assistance in establishing the status of the species in the former Blagoevgrad and Vidin Districts, respectively.

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Received May 15, 1987

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ВЫДРА (*LUTRA LUTRA* L., 1758) В БОЛГАРИИ — СОСТОЯНИЕ И ПРОБЛЕМЫ ОХРАНЫ

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(Резюме)

На основании данных анкеты, проведенной в лесохозяйственных комбинатах, сведений о поступлении шкур на Центральный пушной склад при Центральном совете Болгарского охотничье-рыболовецкого союза, а также расчетов, охватывающих площадь индивидуальных участков обитания и

среднегодовой прираст, дается оценка распространения, относительной плотности и приблизительной численности выдры. Обширный район, где этот вид не встречается, образуют Южная Добруджа и большая часть Лудогорья. Наиболее высока плотность популяции в Юго-Восточной Болгарии. Рост численности и плотности вида в этих областях обуславливается в большой мере созданной системой микроводохранилищ и рыборазводен, тогда как в естественных местообитаниях численность вида сократилась. Весенний запас выдры в Болгарии, вероятно, колеблется между 1000 и 1400 экземплярами. Ныне выдра в стране, вероятно, в 3—5 раз малочисленнее, чем в начале века, но ее численность бо́льшая, чем в 50—60-х годах. Можно принять, что комплекс действующих в настоящее время и предполагаемых в будущем отрицательных факторов приведет к сокращению численности ее популяции. К нарушению естественных местообитаний — разрушению природных берегов и побережий, загрязнению водоемов и уменьшению естественного корма в реках добавится ограждение рыборазводен, закрывающее доступ к ним выдры, после того как этот вид был полностью поставлен под охрану закона в 1986 г.

Предлагается система мер по охране этого вида, занесенного в Красную книгу мира и Красную книгу НРБ. Выдра может быть отнесена к категории „уязвимого“ человеческой деятельностью вида на территории Болгарии.