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The beaver (*Castor fiber*) in the vicinity of Lake Baikal region

Schlagworte/key words: *Castor fiber*, Baikalregion, distribution, acclimatization, protection

1. Introduction

The beaver (*Castor fiber* L.), the largest rodent in Holarctic theriofauna, is really an attractive animal for the human attention. It is well known that beavers were an accessible game animal beginning from ancient time. But, unfortunately, the same value feature of these animals serve as the reason for the unattractive relation of human to the beaver dramatic for the latter during a few last centuries. Beaver fur, meat and castoreum have a bad turn for beavers extermined or greately reduced worldwide. To restore ist populations the beavers were legally protected and reintroduced in many countries and to the end of 20th century the beaver network has led to increasing of many ist populations (Zurowski, 1983).

Some literature sources indicate that beavers were widely occured near Lake Baikal region in the past (Arembovsky, 1937) (Fig. 1). For instance, in the Angara river basin beavers occured by the middle of the 17th century (Arsenjev, 1882). According J.G. Gmelin the beavers are disappeared on the Lena river tributaries, such as Kirenga, Vitim and Olekma to 18th century (cit. by: Ognev, 1947). Also in the Selenga river basin (the Menza river) beavers occured before 1770 (Lavrov, 1981). The name of the Menza river in Mongolia is „Minzh". In translation it means „beaver". I.G. Georgi (1772) reported on the beaver occurance in the vicinity of the Baunt lake situated eastwards from northern shore of Lake Baikal and which was possibly one of the latest points.

All of the beaver populations occured near Lake Baikal were disappeared before the 19th century (Ognev, 1947).

2. The beaver in the vicinity of Lake Baikal region

2.1. The nearest beaver population

There is the beaver population in the Republic of Tyva, that survives in the upper reaches of the Yenisei river (West Sayans) (Yanushevich, 1952). The total beaver number there was about 40-50 individuals (Lavrov, 1983). There were organized Azas Reserve in 1985 aimed to preserve these beaver population (see Saveljev et al. 2000).

The Tuvinian beaver form demonstrate some morphological features, on which L.S. Lavrov (1969) has distinguished it as the subspecies – *Castor fiber tuvinicus* Lavrov, 1969. But not numerous sample examined morphologically by this author needs in more detail investigation using the modern methods such as, for example, DNA fingerprinting. Unfortunality, the

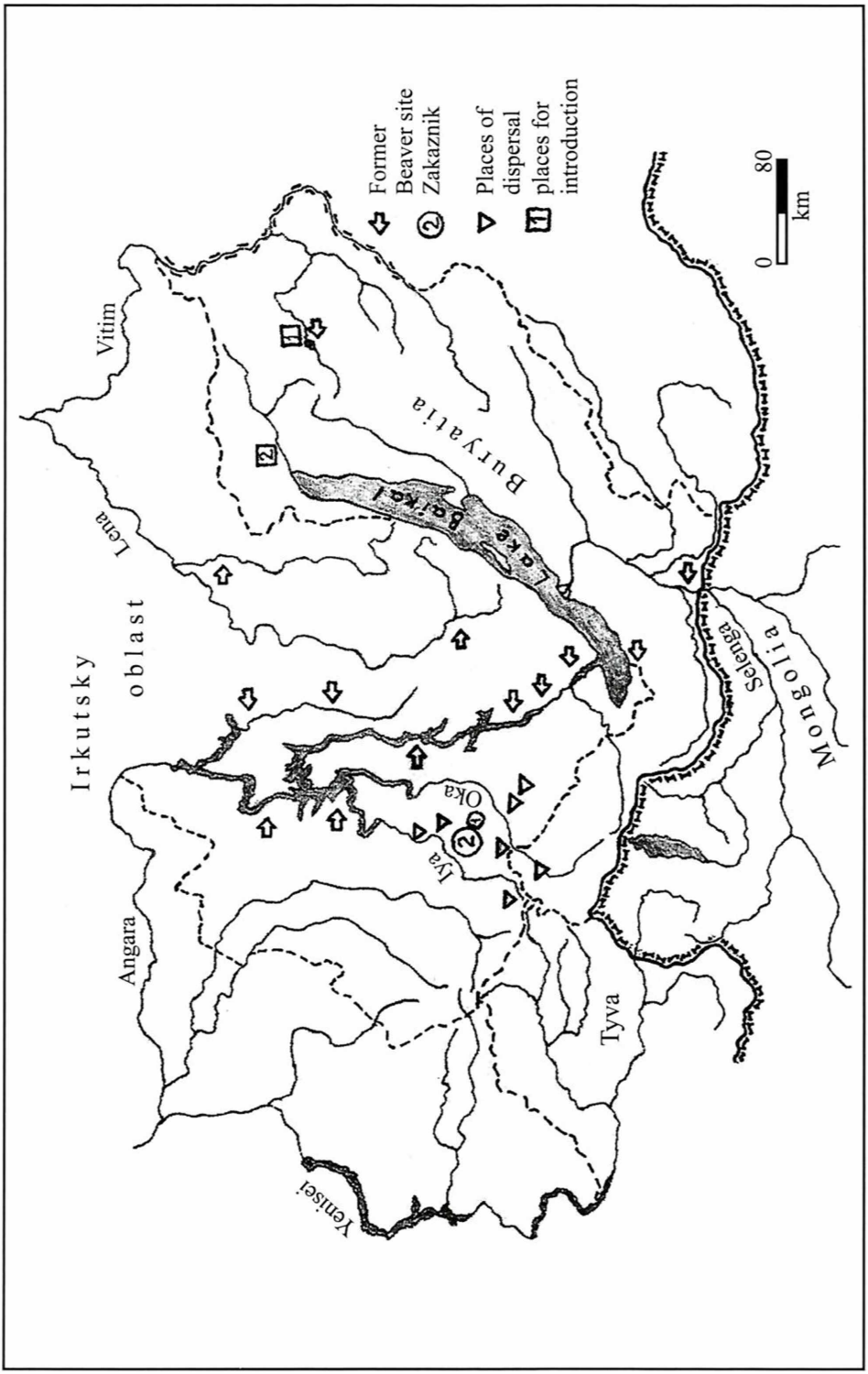

Fig. 1 The Beaver distribution in Lake Baikal vicinity in the past and at the present. The arrows indicate points of former beaver occurance. The circles indicate location of protected territories - zakazniks: 1. Zulumaisky and 2. Kireisky. The triangles indicate dispersal points of introduced beavers.

fact of the introduction in Tyva the beaver form from Byelorussia consist of 40 individuals have been undertaken in 1953 (LAVROV, 1960) cause the scepticism on the genetic purity of Tuvinian form although have been reportd about total disappearance of the introduced animals (ZHARKOV, 1969). This fact is also discussed by SAVELJEV et al. (2000).

According to V.A. ROMASHOV (1969) the Tuvinian form has the specific parasite *Travassosius americanus* CHAPIN, 1925 and has not the parasites ususal for European beaver form. These fact maybe used as one of the indirect keys in determining of the possible mixing degree of two beaver forms in the future.

The autochthonous beaver population in Tyva have been obtained the intensive scientific study nowdays. The international research team consist of collaboratories from Russia, Germany, Poland, France and Mongolia have joined their efforts to establish new beaver settlements in Sayans.

Molecularbiological investigations of the autochthonous Euroasiatic beaver subspecies have shown, that the Tuvinian beavers have their own seperate character with special haplotypes (DURKA et al., 2005). After a population study of three years (STUBBE et al., 2003; SAVELJEV et al., 2003), in 2003 and 2004 Tuvinian beavers were catched at Azas river and were brought to the Bilin river, a right tributary of the big Yenisei near to the Mongolian border (see map by STUBBE et al., 2004).

2.2. The introduction of the beaver

In Irkutsky oblast were undertaken the beaver introduction efforts in 1950-1963 (LEONTYEV, 1969). 269 animals from Voronezhsky and Ryazansky oblast and Republic of Byelorussia were introduced in four different localities in Irkutsky region. But only in the locality adjacent to East Sayans (the Angara river tributaries: Zima and Tagna river) the beavers found the suitable environment for their fixation (KOMAROV, 1988). From 94 introduced individuals as „founders of population" there were numbered about 200 animals to 1984. There were organized the beaver protected territories (Zulumaisky zakaznik, since 1964 and Kireisky zakaznik, since 1986) (Fig. 1). There was a beaver number about 296 individuals in 1994 (B.A. POGUDIN, pers. comm.). The introduced animals exposed wide dispersal by natural way now (Fig. 1). The recent sources indicate that the introduced population increased 4-fold and have been estimated now as 1200 individuals distributed on a territory of 3500 km^2 (MELNIKOV, 2004).

2.3. The beaver dispersal by natural way

In the middle of 1980 the beavers dispersed in East Sayans from the Irkutsky oblast were observed in the Okinsky rayon of the Republic of Buryatia (Fig. 2). The description of their locality with dams and lodges were reported earlier (BADMAEV, 1993). The siutable locality have been found by beavers in the environment of the Oka river flow through wide valley were the river formed numerous meanders. There is a little island of 6 x 1,5 km on the river with ponds and streams very available for the beavers activity exposed in construction and feeding (Fig. 3).

There were organized the protected territory (Okinsky zakaznik) surrounded the beaver locality in 02.03.1993 according the scientific basement and recommendation of B.B. BADMAEV. The observations from the late April to early May 1995 have shown that there were about ten beavers in two sites consist of animals in three age groups. There is a sufficient forage base for beavers, consist mostly of poplar and willow, rarely of different woods such as larch, birch, and fir have been observed in beaver nutrition. From the mountain slopes the aspen descend to banks of Oka river. The first site has a lodge and dams, second one has not a lodge but burrows in banks of river.

The beavers from Irkutsky oblast exposed the dispersal also in other places of these area now. They were observed in Khoyto Oka tributary stream of the Oka river (the territory of Buryatia), the upper parts of Kirei and Iya rivers (Irkutsky oblast). We consider this fact as a range expansion of the introduced animals and, certainly, it is very positive having in mind the appearance of valuable animal there.

However, to our opinion there we may predict also serious problem would raise in the future. It would related to the autochthonous beaver

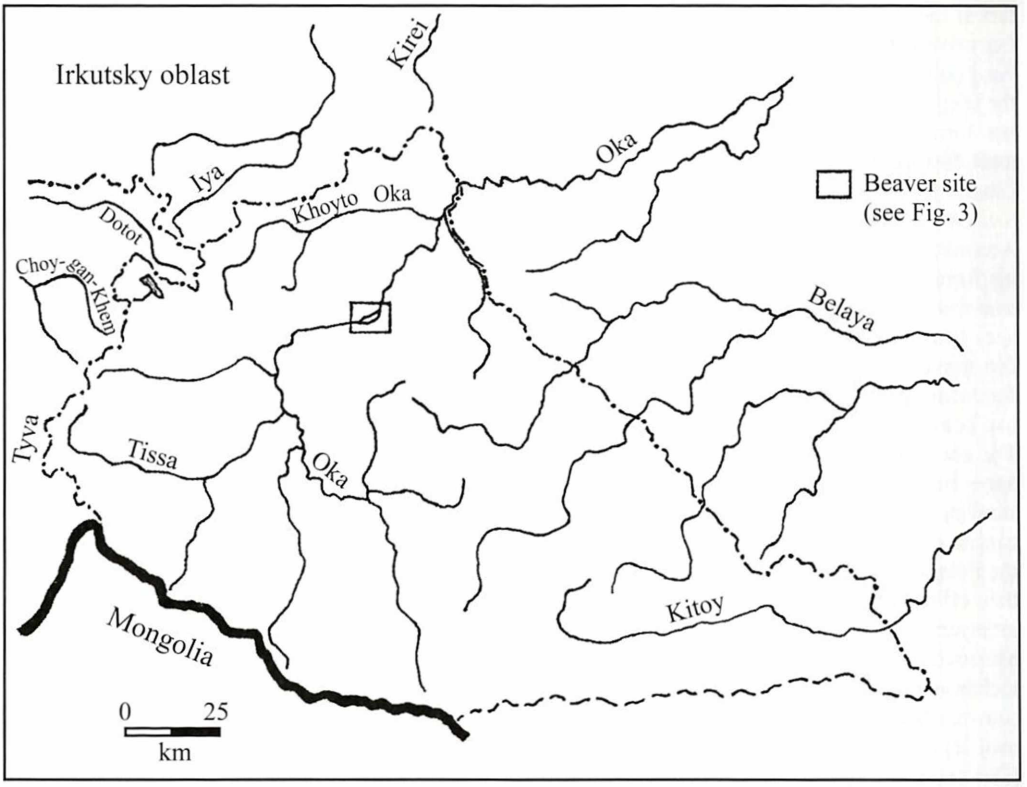

Fig. 2 The beaver settlement in Okinsky rayon of Buryatia. The square indicate a place of beaver fixation along Oka river.

population in Tyva. The further expansion of the introduced beavers from Irkutsky oblast that have a dispersal route directed westwards from introduced place will represent as the real threat to the well-being of the relict Tuvinian form. There is the sharp necessary for the prevention of such mixing and the elaboration (or development) of the special measures to protect Tuvinian form. This thesis is actual also because some authors have proposed to work for further European beaver introduction in another territories of East Sayans (MELNIKOV et al., 2000). One of the alternatives in the prevention of the two beaver forms mixing is the removal of introduced form from this area and the organization of next beaver settlement point (or points) in the vicinity of Lake Baikal region or in widely sense entirely in East Siberia. For instance, as a possible point for reintroduction might be chosen the surroundings of the Baunt lake

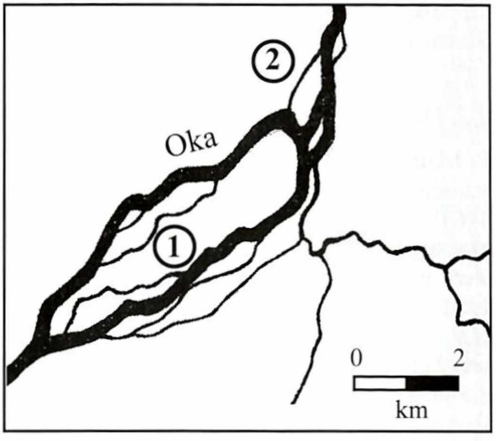

Fig. 3 The location of beaver families in the settlement in Okinsky rayon of Buryatia. The circles indicate points of family location (1) The family with lodges and dams, and (2) The family without lodges but with burrows in banks of river.

(Buryatia) after their careful investigation because, as mentioned above, the beavers occured there in the past. As indicated above, there were the place of the last beaver finding in East Siberia (Georgi, 1772; Ognev, 1947) (Fig. 1). As next possible territory for beaver introduction might be consider the Verkhnyaya Angara river basin (Fig. 1).

The autochthonous beaver population in Tyva need in more purpousful scientific investigation concerning ist distinction as special subspecies. Next point is that there was not observed an visible increasing of the population of Tuvinian beaver during long time.

Some unreliable sources indicate that in neighbouring to Tyva and Okinsky rayon of Buryatia have been existed a little beaver site before 1930 (Tuluev, K.D., pers. comm.). There was the Buddist temple on the Tissa river near Balakta village. The monks of this temple provided prohibition to humans to kill the animals and to destroy the beaver constructions on mentioned river. But during years of 1930-ies by the regime of Stalinism the Buddist temple was destroyed just as Buddist monks were repressed. After these bad time simultaneously the beaver settlement was destroyed and animals were killed. It is known even the name of local Herostrat sound as Moroon. If these sources indication is true there may occur Tuvinian beaver form only. At any rate, there ist the problem to discover the cause of low population growth in the Tuvinian beaver and to elaborate the translocation practice for the artificial expansion of the Tuvinian form in Sayans. Naturally, the offered projects maybe fulfilled after serious investigation only taking into consideration the possible success or the failure for instance as reviewed in D.W. Macdonald et al. (1995) and Saveljev et al. (2000).

2.4. The human consequences

It seems, the territory in vicinity of Northern Baikal is one of the alternative sites for the removal of the introduced beavers from East Sayans in order to the prevention of the two beaver forms mixing.

Meanwhile the Northern Baikal is the primordial land of the not numerous Evenk nation whose main vital interests was related with hunting, fishery and reindeer breeding in the past. There are many problems concerning the Evenk nation revival now (Belikov, 1994). Some of them related with the search of the ways to restore traditional forms of life and economy. The modern industrial standards of life were harmful for this little nation and resulted, for instance, in unfavourable demographic trends and lack of high income occupation (Belikov, 1994).

The possible beaver introduction on mentioned area and the organization of the protected territories there in the future seems also be in accordance with the Evenk nation revival goal.

3. Conclusions

The autochthonous beaver population in the Republic of Tyva have real threat from introduced European beaver form exposed at present the expansion in East Sayans from the neighbouring Irkutsky oblast. The problem for the investigation in detail of the reintroduction measures still actual in nowdays. The animal dispersal by natural way as result of the introduction is one of the forcible arguments for the cooperative financial investments in such projects by the parties concerned (the adjacent administrative territories of Tyva and Buryatia and Irkutsky oblast and maybe even Mongolia). The introduced beaver removal from East Sayans maybe resulted not only in biodiversity conservation consequences but would be as an example of the sustainable living in the Lake Baikal region and its vicinity.

Zusammenfassung

Der Biber (*Castor fiber*) in der Baikalregion

Bis in das 18. Jahrhundert war der Biber in der Baikalregion weit verbreitet. Zwischen 1950 und 1963 wurden im Irkutsker Gebiet 269 Biber aus dem Voronesher und Rjasaner Gebiet sowie aus Weißrussland an vier verschiedenen Lokalitäten introduziert. Jedoch fanden sie nur im Ostsajan, an den Nebenflüssen der Angara, am Zima und Tagna-Fluss, akzeptable Umweltbedingungen. Von 94 dort angesiedelten Tieren

entwickelte sich bis 1984 ein Bestand von ca. 200 Bibern. 1994 gab es dort etwa 300 Tiere. Gegenwärtig hat sich der Bestand vervierfacht und ist auf einem Territorium von 3500 km² verbreitet. Die weitere Expansion könnte das autochthone Vorkommen von Castor *fiber tuvinicus* in Tyva gefährden. Es wird ein Management der Gebietsverantwortlichen von Tyva, Burjatija, Irkutsk und der Mongolei angeregt. In der nördlichen Baikalregion gibt es empfehlenswerte Gewässersysteme für Neuansiedlungen von Bibern.

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