

Present Status of Blakiston's Fish Owl (*Ketupa blakistoni* Seeböhm) in Ussuriland and Some Recommendations for Protection of The Species

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Summary

Current status and distribution of the Blakiston's Fish Owl were revised in Iman River Basin (model territory) and firstly estimated for the whole Ussuriland by questionnaire work. Contrary to previous fears the species has not ceased to breed in Iman and some other reclaimed rivers, but showed a steep decrease in population, at least 4 times for the last 50 years. As breeder Fish Owl was firstly discovered at coastal rivers of Sea of Japan basin where its population consist of at least 50-70 breeding pairs and also in some previously unknown places at the western slopes of Sikhote-Alin Mountains. The whole population estimated in Ussuriland is 100-130 breeding pairs. The method of work, limiting factors and outlook in species conservation are discussed.

Introduction

Blakiston's Fish Owl (*Ketupa blakistoni* Seeböhm, 1895) is one of the rarest and most unstudied birds of Russian avifauna. Its both subspecies, presently live in the Russian Far East: *K. b. blakistoni* Seeböhm inhabits South Kurile Islands and, apparently Sakhalin Island, while *K. b. doerriesti* Seeböhm is found on the mainland part of the Far East (Stepanyan, 1990).

Unlike the island subspecies that has been fully and thoroughly studied by Japanese ornithologists, the mainland one has still remained rather unstudied. All published information concerning its distribution in the Russian Far East boils down to the following. In the Russian Far East the species was found for the first time in the extreme South of Ussuri region in the end of the last century (Taczanowski, 1891) where afterwards (after 1910) its registration there lapsed (Nazarenko, 1971; Panov, 1973). In the 1930s Blakiston's Fish Owl (further Fish Owl) was found breeding on the right-side part of the Ussuri River (Iman and Bikin river basins) where by that time it had not been an uncommon species (Spangenberg, 1940, 1965; Shibnev, 1963), but by the 1970s its population showed an abrupt decrease (at least 4 times) (Pukinski, 1981 and others). As a possibly breeding species Fish Owl is reported at the northern coast of the Sea of Okhotsk (Vaskovskii, 1956; Tarkhov and Potapov, 1986), but there its status has not yet been identified exactly. The situation at the other part of the Russian Far East southward from Magadan (about 1500 km latitude-wise and about 1000 km longitude-wise) has not yet been clarified at all. Nobody has ever conducted special investigations as yet within the mentioned territory, but a few separate and occasional registrations of the species (not exceeding 10 records throughout the whole period of study of the region) in different parts of the above mentioned region (Vorobiyov, 1954; Kalinichenko, 1961; Smogorzhevski, 1966; Kazarinov, 1969; Yakhontov, 1986; Roslyakov, 1989; Smirenski and Smirenskaya, 1980; Voronov and Pronkevich, 1991; Poyarkov and Budris, 1991) have lead to an assumption

of the existence of a unified breeding range in the Russian mainland stretching from the very south of the Southern Primorski Region up to Magadan and westward to the Selemzha River and to an estimation of the Russia-bound population of the Fish Owl (together with its island subspecies) as 300-400 breeding pairs (Galushin, 1983; Pererva, 1984; Stepanyan, 1990). Due to the lack of other estimates, the mentioned number was being repeated in different sources of information up to now (Collar *et al.*, 1994 and others), but the river basin of Bikin and Iman has still been regarded as the most important stronghold of Fish Owl even in spite of the current dwindling trend in the existence of the species (Pukinski, 1993).

Since 1993 the Fish Owl has been an object of our special research works in the Iman River basin, and starting from the fall of 1996 due to the financial support by PRO NATURA FUND the range of our research was expanded to engulf the whole Ussuriland though, as concerns sending questionnaires, we are acting all over the Far East of Russia. A part of data received within the framework of the given project is published (Surmach, in print; Surmach and Avdeyuk, in print; Surmach and Valchuk, in print). In the present work we will tackle issues stated in the headline of the article only, that is the present status of Fish Owl in the whole Ussuriland, limiting factors and our vision of measures on its preservation.

Study areas and methods

The very notion of "Ussuriland" or "Ussuri region" doesn't accord with the modern administrative territory division of the Russian Far East, but this non-official geographical term is often used (not always in its proper meaning) in scientific, mainly foreign literature. The most common mistake is to assume that Ussuriland incorporates the present territory of Primorski Region and lies within its borders, though in reality Ussuriland braces twice as big a part of land bounded in the west by the Russian-Chinese State Border and the Amur valley and spreading east to the Sea of Japan (Fig. 1).

The main part of the given region is occupied by the wooded mountainous area of Sikhote-Alin with a thick river network (Fig. 6). Its eastern grand slope, that faces the Sea of Japan, is mainly featured by not very large rivers that do not freeze over completely in winter due to the relatively mild climate. The western grand slope of Sikhote-Alin mountainous range is characterized by continental climate and has rather voluminous (more than 300 km long) waterflows such as Iman, Bikin, Khor etc. with prominent valley forests of Manchurian type ideal for breeding of Fish Owl. The total length of the region along the latitudinal lines is about 1500 km. Only its southern and western parts have been reclaimed considerably, though the center, north and north-east are, for the most part, unpopulated, hardly accessible and therefore practically unstudied lands.

Hunting is a well-developed activity in the region that is why almost the whole area is divided into hunting lots regularly haunted by hunters in special seasons. These circumstances underlie the basis of our work, because we have spread questionnaires (total amount of 1500) among hunters and other dwellers of the region with a purpose to find out previously unknown breeding sites of Fish Owl. We excluded from the questionnaire investigation all floodplain rivers including the middle and lower reaches of the Ussuri River and also the basin of the Bikin River as a relatively well-studied location. Simultaneously with a postal questioning we carried out detailed researches in a model territory (Iman basin) with application of a complex of methods such as: preliminary questioning by mail, direct questioning of hunters at their lots, repeated searches of all parts of river and the majority of their tributaries throughout all seasons of the year (Fig. 2). Besides, we conducted a one-time investigation of some coastal rivers (Fig. 1). Iman occupies an interim place between

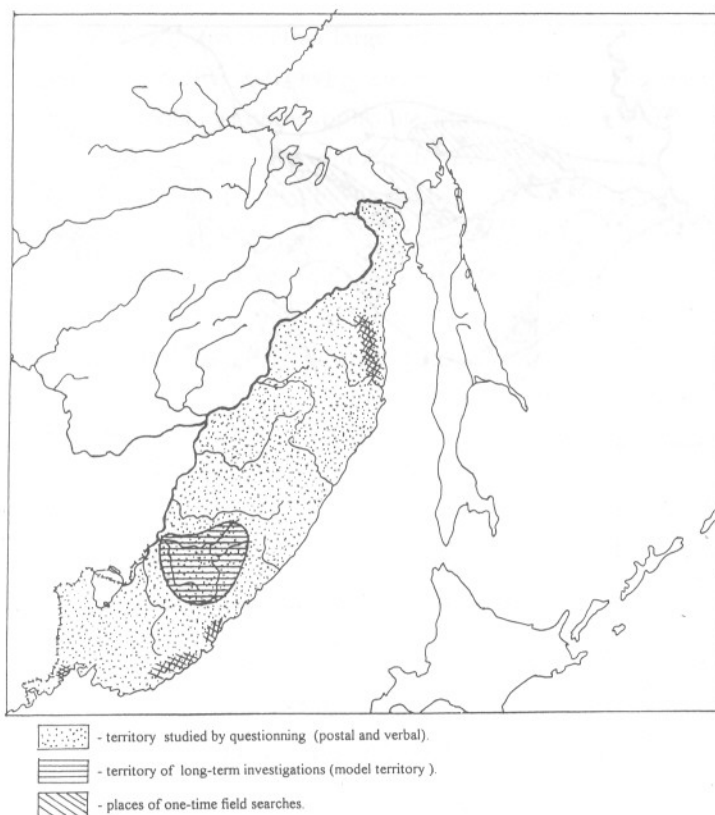


Fig.1. Studied Region.

the largest rivers of Ussuriland in term of economical reclamation, that is to say it pertains to the rank of so called semi-reclaimed rivers. Presently only its lower part (a 100 km - cut stretching upstream from the estuary) and its largest tributary - Malinovka (location of human settlements around the river basin is indicated on Fig. 2) are seriously reclaimed. Vast stretches of land alongside the upper stream and mostly along the middle stream of Iman River have been repeatedly affected by industrial felling as well, but their general look inspires quite good feelings and impressions as concerns valley forests important in the existence of Fish Owl. Such forests have retained their original appearance due to the existence of so called water-preservation zone (5 km wide belt of forest along each bank of the river) in which commercial felling was always prohibited. Until late the 1980s timber-rafting had been practiced widely on the main stream of Iman and its biggest branches which, alongside with over fishing had greatly reduced fish population in the river basin. As an alternative to the timber-rafting completely forbidden in 1989 a road network had been developed to facilitate an access to previously unapproachable locations. Nonetheless, there remain separate parts (some of them reaching 100 km's length) inaccessible to overland means of transport.

With all the above-said in mind we, thus, can afford to assume that the Iman River may be regarded as an ideal model territory for research work.

Awareness of the situation with Fish Owl in the 1930-40s (Spangenberg, 1940, 1965) i.e. prior to the commencement of intensive reclamation of the region in comparison with its present state enables us to

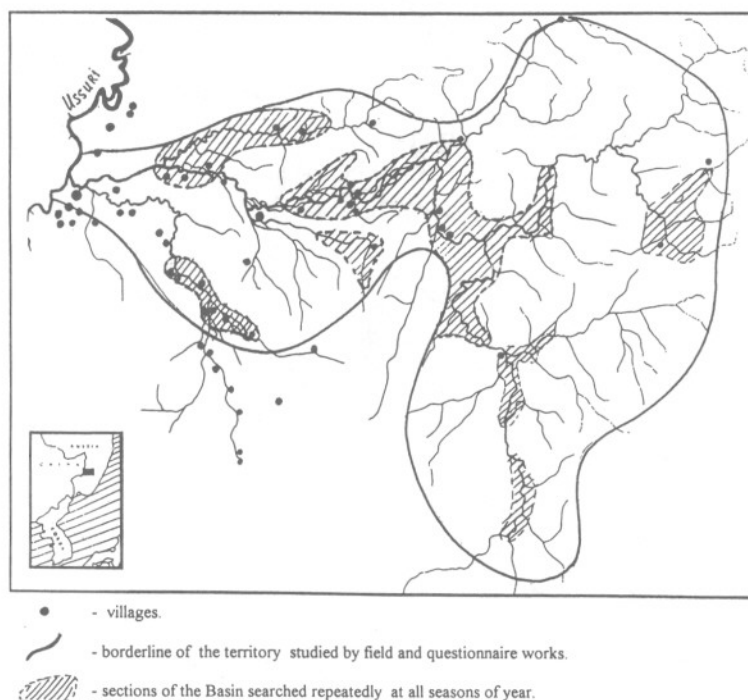


Fig.2. Region of study within model territory (Iman River basin)

estimate the scale of the real changes that took place during that time. Having compared the present condition of the species in relatively "wild" sections of the basin with that of substantially transformed parts of the river renders us capable of making judgment of significance and degree of men's influence.

Having a network of constant correspondence with people collaborating with us since 1989 and due to the fact that the region is relatively accessible in general, we can conduct a sufficiently thorough study that is unthinkable of along less reclaimed rivers such as Bikin, Anyui etc. with the same efforts.

Results and discussions

1. Notes on method

Foreseeing possible skepticism as concerns reliability of the information obtained from responses to the sent questionnaires we would like to briefly state our vision of the matter (we gave a detailed account on that in our special work (Surmach and Valchuk, in print)). Indeed the postal questioning has a few limitations in itself, as like as any other method. As we have seen, it does not reveal the reality of Fish Owls occasionally dying in traps to say nothing the reality of them being intentionally killed by hunters. The data concerning this is greatly diminished, because the majority of people questioned are reluctant to submit such information, their reticence being a result of fear to be punished for causing harm to such a rare species of bird. We succeeded in procuring the corresponding information only via direct and amicable communication with trappers and hunters, provided that we have known each other for a long period of time. The likelihood of mistake in defining species of birds described in responses to our questionnaires is by no means little, either, for, according to our data, more than 90% of the population do not even have a slightest notion of Fish Owl and

most hunters confuse it with Eagle Owl or other large owls.

Anyway, our strong belief is that Fish Owl is one of a small number of species of birds to which the method of questionnaire is not only just quite applicable, but is the most effective, and in case of vast or hardly accessible territories, the only possible one for the time being. The credibility of answers to the questionnaires can be estimated, provided that the text of the questionnaires is drawn up in a proper way and it also depends on the degree of complicatedness of the questions posed.

The main aim of the questioning is not to acquire data on quantity of Fish Owl, but to find out new inhabited areas. For the purpose it is quite sufficient to find out if Fish Owl stays permanently on a certain territory. The quantity estimation presented below are but preliminary, though for the most part the data are based on our own searches (Iman River basin) and on the responses to our questionnaires submitted (we suppose) to our strictest scrutiny as concerns credibility, that is to say that we admitted only 35% of positive answers as credible. The most important criteria in estimating answers as credible were either results of our own investigations to corroborate information about possible new breeding sites of Fish Owl listed in written answers to our questionnaires, or proofs strong enough to support the words. For instance, during the project we saw 11 samples of stuffed specimens and skins of Fish Owl and 6 that of Eagle Owl. Precise description of nests of Fish Owl or detailed observations on biology and behavior peculiar only to Fish Owl are also essential in stating credibility of answers. As a result of our check of reliability the data obtained by means of questionnaires distribution at the model territory we came to a conclusion that it is more difficult to estimate negative information both from correspondents or from our own observations.

Through being of seemingly prominent perceptibility (big size and loud call) Fish Owl may stay unobserved due to several reasons, even though it is specially searched for. As an example, we spent 2 to 15 days to find out if a pair of Fish Owls was really present at a reported breeding site. Even an exclusively negative questionnaire information may not signify that the species doesn't reliably exist in a certain location.

2. Present distribution and population of Fish Owl in the Iman River basin

According to Spangenberg (1940) the breeding density of Fish Owl in the lower stream of Iman River in 1938-39 was about 1.2-1.5 pairs per every 10 km along the main riverbed: he assumed that there existed about 12-15 pairs per a 100 km section. Unfortunately, the author had no data on the situation at the upper half of Iman and its largest tributaries, where, supposedly, the breeding density of the species was not less. Our estimation, based on modern knowledge of the ecology and biology of the given species, and also on data obtained during the retrospective inquiry among local people is that the Iman population of Fish Owl at that period of time could amount to 60-70 breeding pairs (Surmach, in print). Up to now we've been certain only of 7 breeding sites where Fish Owls bred at least once within the last two seasons (1996-1997), besides we have 10 to 15 lots, which are very likely to have been occupied, but we cannot confirm that yet due to insufficiency of investigation there. We think that the total number of breeding population of Fish Owl in the Iman River basin today is no less than 7-10, and in most favorable years goes up to 20 breeding pairs. Thus, contrary to our previous fears Fish Owl has not ceased to inhabit Iman, but showed a steep decrease in population (at least 4 times for the last 50 years). That is to say, the changes there had approximately the same scale as the changes that took place on the less reclaimed Bikin (Pukinski, 1973, 1993).

The distribution character of confirmed breeding sites is shown on Fig. 3. Fish Owl doesn't breed any

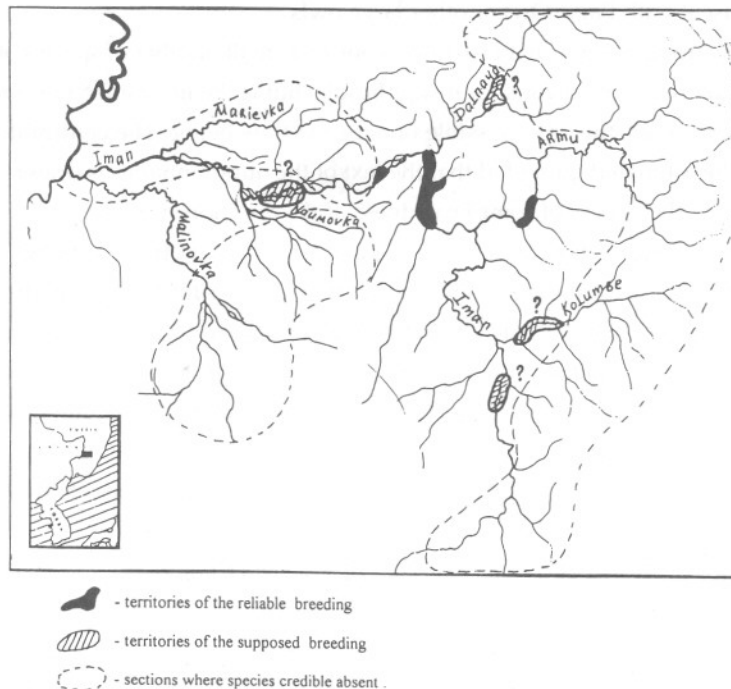


Fig.3. Distribution of Blakiston's Fish Owl in Iman River Basin.

more around the lower part of Iman River. We are sure that it doesn't exist in the basins of such big tributaries as Maryevka and Naumovka, as well as at the very upper parts of Iman and its all other branches. This species has not yet been found around the largest and most reclaimed tributary of Iman - Malinovka. There are evidences that it still inhabits only short section of the middle reaches of Iman and lower part of its tributary - Armu. Total length of the territories estimated as reliably inhabited by Fish Owl does not exceed 10% of the total length of main streams of the basin.

We may also point out 3 places where the species is likely to breed, but has not been found yet. One of them is situated around the middle stream of Dalnyaya River, the other - at the lower reaches of Kolumbe River while the third one occupies a 30 km section along the main stream of Iman just above the junction with its tributary - Kolumbe River (Fig. 3). A rather long (more than 60 km) and practically unreclaimed section of the main stream of Iman, upstream from the confluence of Armu River (Fig. 4c) seems to us to be a quite favorable habitat for Fish Owl, but neither questionnaire work nor our own searches have brought positive results as yet.

Thus, the present distribution of Fish Owl in the basin of Iman River may be characterized as existence of small, sparse, possibly isolated spots.

Together with complete disappearance of the species from certain places, we may note an amazingly dense population in other areas, conditions of which sometimes don't seem better than that of the former, at first glance.

So the density of occupied breeding lots along the middle stream of Iman River (Fig. 4) was, unexpectedly, about 2.5 pairs per 10 km of the main riverbed (*i.e.* more than along the lower stream in the 1930s), with two breeding sites located near people's dwellings, while at the other, seemingly more suitable

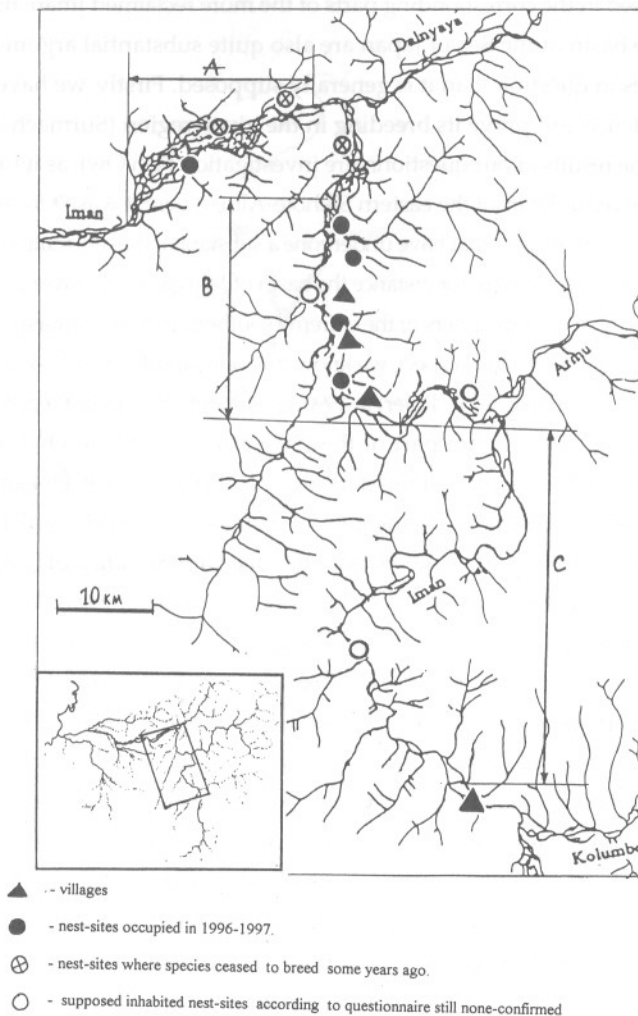


Fig.4. The main breeding place of Blakiston's Fish Owl in Iman River basin.

section of the river (Fig. 4a) we found only 1 pair (about only 0.3 pairs per 10 km). Possible causes of the given phenomenon are discussed in the chapter on "limiting factors".

3. Distribution and population of Fish Owl in Ussuriland

Encouraging data that we have obtained at the model territory give us an ample ground to revise the set opinion about, allegedly "catastrophical state" of the Fish Owl population in the Russian Far East. It is also quite natural to assume that in river basins, more favorable than that of the Iman River, the Fish Owl situation is, at least, not worse. Preliminary conclusions derived from our investigations confirm the above assumption. The general outlook on the distribution of Fish Owl in the basins of some of almost unreclaimed rivers at the western part of the Sikhote-Alin mountainous range also shows a relative well-being of Fish Owl population in those river basins. So, according to the results of questionnaire studies, the species has sufficiently inhabited, up to the present time, the lower parts of such almost unreclaimed rivers as Anyui and Gur down to their estuaries

while it has ceased to breed in the corresponding parts of the more reclaimed Iman, Bikin and Khor. Materials concerning rivers in the basin of the Sea of Japan are also quite substantial arguments in favor of notably better state of the species in question than it is generally supposed. Firstly, we have succeeded for the first time to confirm its residence and prove its breeding in the given region (Surmach and Avdeyuk, in print). Secondly, according to the results of our questionnaire investigation Fish Owl, as it turns out, is not a too rare species at the rivers of the central part of the eastern Sikhote-Alin, where it wasn't found previously (Figs. 5, 6). Thirdly, the species was found in regions that have undergone a substantial transformation process and where it had not even been thought to exist. It concerns, for instance the basin of Margaritovka River (Fig. 5). We can also assume that Fish Owl still possibly inhabits some rivers of the extreme southern part of Primorski Region, where it has long been considered a vanished species. In this respect, we know that one sample of the species was illegally collected in the South of Primorski Region (Barabashevka River) in 1990, *i.e.* 80 years since its last registration in the given region.

As it is shown on Fig. 5 the main part of the present range of Fish Owl in Ussuriland lies in its central part. We have defined the southern limit of its modern distribution at 45N and the northern limit - at 51N. In the coastal area the southern borderline goes to the basin of Seryebryanka River (it flows into the Ternei Bay), and at the western slopes of Sikhote-Alin the distribution range of Fish Owl stretches as far as the upper part of Iman River. We don't have a reliable information concerning breeding of Fish Owl southward of the indicated region, except for single point (that we have already mentioned) within the basin of Margaritovka River, that is obviously, an isolated breeding place, because the species has not yet been found around any other adjacent river in spite of special searches. It is quite likely that a very small number of Fish Owls can be found around the Upper Ussuri and its tributaries or around some of the rivers of the extreme south of Primorski Region provided that a special search is organized. We have as yet neglected these regions in spite of some positive information, because the region has not yet been sufficiently studied.

Responses to our questionnaires, our single field searches and last publication (Mikhailov *et al.*, 1997) make us believe that the majority of rivers flowing within the basin of the Sea of Japan from the Ternei Bay to the Tumnin River (about 500 km stretch along the coast) are inhabited by Fish Owls, though the density of its population and stability of its existence there are unknown. We can trace a certain specific character in the birds' keeping to a habitat and their territorial distribution in the given region compared with that of the continental part of Primorski Region. A very important distinguishing peculiarity of the described place is that species is present and, therefore probably, breeds at some very small, not exceeding 15 km long rivers, that are usually, thought of as inappropriate for breeding of Fish Owl. By the way, part of rivers inhabited by Fish Owl in Hokkaido pertain to the same category. The other peculiarity that we have not seen at the continental regions is that Fish Owls occupy the territories around the very sources of some rivers (we don't know if it is a common regularity or not), though places at the estuaries with prominent valleys are preferred. The fact that we have received a multitude of positive responses concerning the region (only its most credible part marked on Fig. 6) made us show the inhabited area in the form of an uninterrupted stripe stretching along the coast from Ternei to the estuary of Tumnin River (Fig. 6). We provisionally assume that its width is about 20 km on average, while at places of confluence of relatively large rivers it may reach 60 km and more due to penetration of the species into their upper reaches. With all of that in the background the lack of any information concerning Fish Owl in the basin of the largest river of the region - the Tumnin River and further northward from it is rather strange (Fig. 5). We are inclined to explain this fact as a mere shortcoming of the postal questionnaire inquiry method (the return of mail from the given region

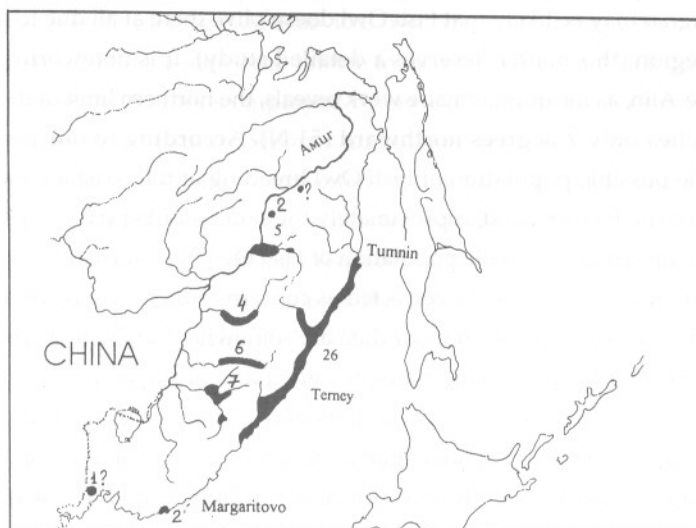


Fig.5. Current distribution of Blakiston's Fish Owl in Ussuriland.



Fig.6. River network and locations of nest-sites in southern part of Ussuriland

was rather bad), though it may be likely that Fish Owl doesn't live there at all due to landscape or climatic peculiarities of the region (this matter deserves a detailed study). It is noteworthy that at the western grand slope of Sikhote-Alin, as the questionnaire work reveals, the northern limit of the present distribution range of the species lies only 2 degrees northward (51 N). According to our preliminary and quite modest estimation the possible population of Fish Owl breeding at the coastal zone may reach 50 to 70 pairs (including that of small rivers) and approximately the same number (50-60 pairs) in the continental part of the studied region. Thus, the whole population of Fish Owl in Ussuriland may reach 100-130 pairs. This number is but preliminary and may be corrected as concerns either increase or decrease as a result of next, more detailed studies. We suppose that our data are somewhat diminished. Theoretically speaking, judging by the present density of breeding pairs in some parts of the model territory (Fig. 4), we can assume that the volume of potential breeding habitats may allow for a three-times bigger population, provided that their qualities (feeding potential, human influence, peculiarities of the hydrological features of rivers etc.) are at an appropriate level. To solve this issue additional special researches are required.

Anyway, the most important and irrefutable result of our researches is the stated fact that in spite of a steep downgrade of the situation in some parts of the Fish Owl area, the general state of the species turned out to be considerably better than it had been thought before. In the first place it refers to the basin of the Sea of Japan. The reason why the species was found so late has not yet been clarified. There are two alternative viewpoints on the matter. According to the first one, the species was overlooked by previous researchers and its relatively good state, in comparison with the past data, is just a remnant of its former, unobserved by researches, prosperity. The second viewpoint is that the good state of Fish Owl nowadays at the coastal zone is just a result of a presently inexplicable betterment of the state of the species that has been taking place for the last years. Either the species was nonexistent at all formerly, or was quite a rare one for the given region. A very hefty argument in favor of the second viewpoint is the follow circumstance: three Nature Reserves with their own staff of researches have been acting for more then 50 years within the coastal zone of the Sea of Japan but in spite of that, Fish Owl had not been found in either of them, judging by the published lists. Fish Owl had not also been discovered by the faunistic studies conducted at some rivers of the coast beyond the borders of the reserves. Among the studies a work by L. M. Shulpin (1927) deserves particular attention. The author conducted an earnest study, but failed to find Fish Owl in the basin of Margaritovka River where the species surely breeds nowadays.

We are inclined to accept the first viewpoint due to the following reasons. First, we've managed to find several published evidences unmistakably proving that the species was present, and therefore bred (because it's a resident species) at some rivers of the coast, but such evidences were probably neglected afterwards by researchers. For example, V. K. Arsenyev in his semi-popular edition (Arsenyev, 1949) gave a detailed description of hunting behavior, by, undoubtedly, a Fish Owl at the Samarga River and such observations were made by him in 1908 (!). That fact was missed out from the field of vision of ornithologists because the author mistook the observed bird for an Eagle Owl. We think that 3 other birds that he met at different places of Ussuriland (including Anyui and Tumnin Rivers) were Fish Owls too. One more credible but unattended by ornithologists evidence of breeding of Fish Owl in the discussed region was a short information by Rakhilin (1986). He informed on 2 records of the species on the Seryebryanka River mistakingly believing them to have flown from the western Sikhote-Alin, though the age of one of them (the specimen kept at Zoological Institute, Saint-Petersburg) clearly indicates that the species bred at place where the specimen was taken (its feathers

contains some remnant of juvenile plumage). As is obvious from the questionnaire work, the majority of presently inhabited breeding sites shown at Fig. 6. have been known to the responders for a long time (from 3 to 50 years).

Having scrutinized the methods employed by several authors who worked at the coastal zone (Shulpin, Labzyuk, Nazarenko, Yelsukov, Shibnev and others) we came to a conclusion that the species could have been overlooked by them because the field work was conducted, as a rule, in inappropriate season and time of day and (most impotent reason) in wrong places.

Besides that investigations had quite different goals. Though, as it presently turns out, some of the researchers used to come across Fish Owls, but took them for Eagle Owl, or these facts were not printed because they were treated as unimportant.

4. Limiting factors

It is traditionally and, apparently, not unreasonably believed that the main cause of progressing deterioration of the state of Fish Owl in Ussuriand is the negative human influence upon it. It includes both direct pursuit of birds and indirect influence, for example, via damage to the foraging supplies or via destruction of valley forests. Among the factors limiting population of this endangered species the leading role is given to reduction of fish sources in mountain rivers and death of the birds in traps. Other possible factors acting in combination are also mentioned in literature, for example, killing of birds for different purposes, their dying in fishing nets, disturbance factor and also a rank of natural factors such as severe and foodless winters, intraspecific and interspecific (with Eagle Owl) competition, falling prey to some natural enemies (such as Black Bear *Ursus thibetanus*) and others. Some of the abovementioned factors are quite obvious and their detrimental role is undoubted, but it is difficult to estimate the meaning of each factors or the grade of its negative influence, what is essentially need for working out of effective measures on protection of the species.

We have paid a special attention in the given issue conducting our studies. The collected actual material has once more emphasized the complicatedness of the problem and exposed a number of common prejudices as concern some sides of the life of Fish Owl. As a matter of fact, the material has posed many more questions than it gave answers. Among the most common prejudices we may place, as our opinion is, a set notion of foraging ecology of the species and its adherence to the habitat. So, abundance of fish (of salmon family, as a rule) and well kept valley forests are considered to be indispensable conditions for normal existence of Fish Owl, but it is unknown what state of fish resources and what grade of the preservation of forests are to be considered optimal. We have a number of credible evidences that Fish Owl can nestle normally at rivers that are usually considered to be totally devoid of fish in some seasons of the year, and at those sections of rivers whose valley forests are almost completely destroyed. The species still remains in the proximity of villages where according to logic it should have disappeared first of all.

Such discordance can be explained if we assume that our understanding of the ecology and biology of the species are improper. After special researches it became evident, for instance, that the species does not necessary need a large-sized prey and it can easily manage with small-sized so-called "non-commercial" fish (minnow, lamprey, fry of salmon species etc.) that inhabit the majority of our rivers and are of no interest to local people (Surmach, in print). It turned out as well that in order to normally fare through the winter Fish Owl doesn't need vast surfaces of unfreezing water, it can live by only a few square meters of open water, besides, the most important are not fast flowing unfreezing sections of the main riverbed, but shallow and

slow-moving springs that, generally, situated on outskirts of river valleys. The species turned out to be not finical about the state of ligneous vegetation either. For instance, a pair that breed for no less than 15 years in the basin of Margaritovka River used a single appropriate tree in the vicinity for nesting.

All these facts give us evidence that the species can easily adapt themselves to the conditions of quickly changing environment and that it can coexist with people provided that the latter treat them in a good way.

Our studies of interrelations of Fish Owl and people made us adamant on the conclusion that direct man's influence on the birds poses the greatest threat to the stability of population of the species in reclaimed regions.

First of all, local population is totally ignorant Fish Owl as well as number of other bird species. Few people are aware of its existence, and those who have some knowledge cannot realize the danger that overhangs it.

Such ignorance is the main cause of unjustified perishing this rare species. The matter is that vast majority of hunters are biased against all owls in general. They treat owls as rivals, because the latter sometimes prey on fur-bearing animals or they are a hindrance to fur-hunting because owls are known to eat animals entrapped by hunters. That being the reason why owls are intentionally shot by hunters during the season of fur-hunting. Ural Owl is the main victim and Fish Owl has sometimes the same destiny. Only in the Iman basin we have identified 12 cases of intentional shooting of Fish Owl for the last 10 years (the real amount is, certainly, higher). It is noteworthy that only in two cases out of the 12 it was commercial killing (stuffing for sale), but in other cases the birds were killed either out of plain curiosity (in order to watch them closely) or just because they are owls too. The overwhelming majority of hunters told us they would not have killed them had they known that it was a rarest species.

Similar situation accounts for death of Fish Owls in traps. During the hunting season of 1997 in the model territory only, there were entrapped 14 different species of birds. As we estimate it, almost every hunter at whose hunter lot Fish Owl lives, got them in trap at least once in his life. This rather serious problem can be overcome completely only by means of total prohibition of trapping, unfortunately it is unthinkable of nowadays. Anyway we suppose, there is a real opportunity to decrease the death-rate of Fish Owl and other rare birds that happened to get into the traps if to educate hunters on the problem. The matter is that owls usually stay alive being entrapped for quite a long time (3-5 days) and they can continue to exist normally after being released from the trap. But the problem lies in the fact that most part of trapped owls is killed by hunters mainly due to negative prejudices toward them. Such an occurrence is common not only for Ussuriland but also for the whole range of the species. Only near 15 percent of 48 cases of Fish Owl entrapment that we know of, the captives were released back into nature. Real meaning of the human factor is much more serious that it seems at first sight. The situation at Iman illustrates the problem in full color (Fig. 4). We know for sure (Surmach, in print) that such a sheer difference in the nesting density at two neighboring cuts of Iman - 2.5 pairs per 10 km (section B) and only 0.2 pairs per 10 km (section A) - is caused by direct man's pursuit.

Nowadays an active work on extension of the network of already existing and creation new protected territories of different status ranging from strict nature reserves to buffer zones and national parks (Fig. 7) will undoubtedly play a positive role in preservation of Fish Owl. Ecological propaganda and education must become a real step in this direction as well.



Fig.7. Protected areas in southern part of Ussuriland important for Blakiaton's Fish Owl (according to Yu. Bersenev, 1997).

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要 旨

ウスリーにおけるシマフクロウの生息状況と 保護のための対策に関する研究

セルゲイ・スルマチ

シマフクロウ *Ketupa blakistoni* の現在の生息状況と分布をウスリー川の一支流であるイマン川流域 (モデル調査地) で調査し, アンケート調査によってウスリー地方全域における生息数を推定した. シマフクロウはまだイマン川やその他の改変された河川に生息してはいるが, 生息数は急激に少なくなっており, この50年間で1/4に減少した. 日本海側の河川ではシマフクロウの繁殖が初めて確

認され, 少なくとも50~70つがいが生息しており, シホテアリン山脈の西側でもこれまで知られていなかった生息地が見つかった. ウスリー地方全域のシマフクロウ個体群は100~130繁殖つがいと推定される. 調査方法, 生息数の制限要因, 保護対策についても論議した.

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