The waterfowl of Mongolia

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Introduction

From 27th September to 3rd October 1969 the author was in Ulan Bator seeking on behalf of the International Wildfowl Research Bureau to establish co-operation with Mongolia over wildfowl research and conservation. With the assistance of Mongolian colleagues this general report on waterfowl and their habitats in that country was compiled.

General description of the country

This paper deals with the territory of the Mongolian People's Republic, often called Outer Mongolia by geographers, and subsequently referred to as 'Mongolia'. This geographic region ought not to be confused with the northern province of China, often called Inner Mongolia, or with the autonomous Mongolian region of 1922, now the autonomous Buriat Republic in Soviet Eastern Siberia. The area of Mongolia comprises 1,565,000 sq. km. and extends 2,400 km. from east to west and 1,260 km. from south to north. The country is divided into 18 aymaks or provinces, and each of these into some 20 to 30 samons or districts. Mongolia has at the present time only 1,120,700 inhabitants, of whom very nearly 80% are Mongols. The average density of population is thus about 0.7 per sq. km., but in practice is less, as there are about a dozen towns, the capital city of Ulan Bator being inhabited by 240,000 people. In the past the Mongolian region was never densely inhabited and for that reason has kept until the present day the most unaltered aspect among all countries of Asia.

The configuration and physiography of Mongolia are very interesting. There are no regions at an altitude less than 500 m. above sea level, the average altitude is 1,580 m., the highest mountain peak attains 4,653 m. From the physiographic point of view there are five zones running in the direction of parallels of latitude, intergrading, of course, to some extent (Figure 1): A — mountain forests (some 7% of the country), B — mountain steppes with sparse forests (25%), C — grassy steppes (26%), D — arid steppes (27%) and E — desert (15%). The mountain ranges of the country are the Mongolian Altai and the Gobi Altai, which merge one into the other; the Khangai, situated in the centre of the country; and the Sayan and Kentei bordering on Siberia. The climate of Mongolia is decidedly continental. In the north of the country the average January temperature is −34°C, and in the south −19°C; the respective July temperatures are, however, 15° and 23°C. The whole year round there is much sunshine, and the total yearly precipitation varies between 220 and 260 mm., less in the south, more in the north. The climate of the country often exhibits irregularities, for example an early spring, strong ground frosts accompanied by

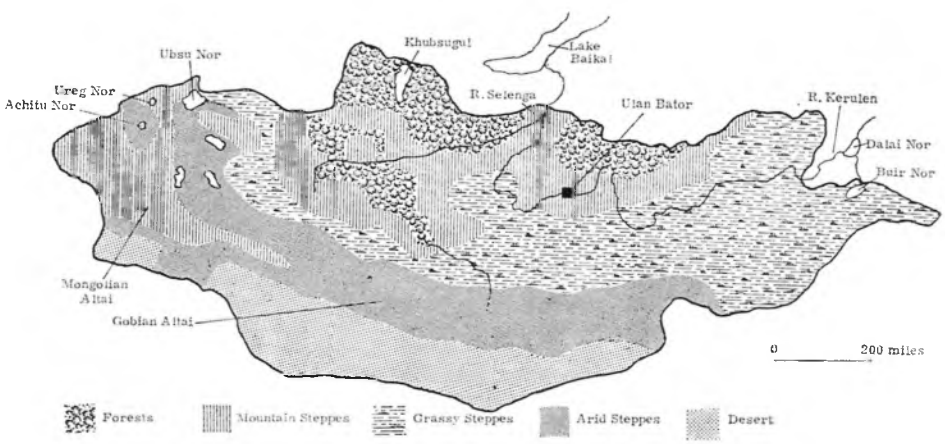

Figure 1. The five physiographic divisions of Mongolia.

snowfall in April or May, or a sudden drop in temperature in autumn. According to the most recent investigations, in Mongolia there are 2,050 species of plants (belonging to 102 families and 258 genera), 127 mammals, 340 birds, 70 fishes, 17 reptiles, 6 amphibia and more than 500 insects.

Habitats of water birds (Plate VIa, p. 49)

The Mongolian territory abounds in biotopes suitable both for waterfowl nesting and for the resting and feeding of migratory flocks. The most important area of this kind is in the west, in the Basin of Great Lakes. This group of water bodies belongs to the largest of this kind in Asia and includes, among others, Lake Ubsu-nur (3,350 sq. km.) and Khirgis-nur (1,760 sq. km.). Some of these lakes have brackish, and others fresh, water. Their shores, particularly the freshwater ones, are overgrown with exuberant vegetation, and in part surrounded by large marshes. In spring, because of the scourge of gnats, the inhabitants abandon the lakes for other regions; thus for ages nothing has disturbed the breeding of birds here. Apart from this large concentration of water bodies in the west, thousands of other lakes are dispersed over the whole of Mongolia. The second largest lake, Khubsugul (2,620 sq. km.) is situated on the border with Siberia. Hundreds of small, generally brackish, lakes or marshes are scattered all over the Gobi and the eastern plateau. Also the rivers, with natural banks generally overgrown with vegetation and often with swampy margins, and numerous old river beds, are excellent biotopes for water birds. The largest rivers of the country are the Orkhan (1,124 km. in length) and the Kerulen (1,090 km.), while the Siberian Selenga flows through Mongolia for 593 km. Other important rivers are the Dzabkhan (808 km.), Tola (704 km.), and Tes (568 km.). Soggy and wet habitats are quite numerous and are good for waterfowl breeding. These regions have for ages not been changed by man's hand and probably will remain so for a long time. Of considerable importance for the presence of high numbers of the Common Shelduck *Tadorna tadorna* in Mongolia, is the activity of numerous burrowing mammals, foxes, marmots, badgers, etc. The Common Shelducks nest in great numbers in the abandoned burrows of these animals, even at a great distance from water.

There are now eleven wildlife sanctuaries in Mongolia, of which two include nesting places of water birds. The first comprises the Galut nuur lake and, situated closely to its bank, the rocky height of Galut chijacaa in the aymak of Bajan-Changorin, a breeding place of the Bar-headed Goose *Anser indicus*. The other, the lake of Borolzurt nuur in the Tow aymak, is the breeding place of various species of ducks.

Thus there are numerous excellent biotopes in Mongolia for breeding and migratory water birds. However, because of its climate and hard winter, Mongolia is not, in general, a wintering place for these birds. Some water birds, nevertheless, spend the winter on the unfrozen rivers, just as cases are known of ducks wintering in great numbers on the rivers of Siberia, for example the Angara. This matter requires further study.

The relation between Man and water birds in Mongolia

The breeding population of Mongolia's waterfowl is exceptionally interesting from the scientific point of view, for it is a natural population, on whose species composition and numbers man has, until the present day, not been exerting any influence. This is both because their biotopes have remained primitive and because for thousands of years the peoples inhabiting Mongolia did not use wild animals or birds for culinary purposes, differing in this respect from many other primitive tribes of the world. A basic cause was that this country was always sparsely inhabited and eminently suitable for shepherding. Therefore there was always plenty of good, easily available meat, mainly from breeding sheep. In the 13th century, when the hunting of waterfowl began to spread in many European countries, the ruler of Mongolia, Kublai Khan, enacted a law forbidding hunting any kind of game from April to October, that is, in the period of reproduction. An infringement of this ban was punishable with death! In practice, therefore, this meant that water birds were not hunted at all, for they left Mongolia for the winter season. This custom was, in principle, valid until the 18th century. Meanwhile, buddhism, introduced from Tibet to Mongolia in the 16th and 17th centuries, provided a new, exceptionally strong, wave of influence, protecting the animals of the country, and waterfowl in particular. In the eyes of the Tibetan buddhist philosophy the killing of animals is a great sin. Only specially designated

people, who were never monks, could kill even domestic animals for culinary purposes. There were very few infringements of this rule, as 70% of males spent many years of their life in buddhist monasteries. The buddhist monks, lamas, did not even carry arms. The Ruddy Shelduck *Tadorna ferruginea,* on account of the similarity of the colouring of its plumage to that of the monks' robes, was declared a holy bird. Birds' nests were under particular care, as the killing of their nestlings or taking or destruction of eggs was an exceptionally serious sin. Only in the Middle Ages, when the Mongolian state had a numerous and warlike army, were special bird hunts organised to provide feathers for arrow shafts. These were mainly wing and tail feathers of predatory birds and of Sand Grouse *Syrrhaptes paradoxus*, the feathers of water birds being only substitutes. In the Middle Ages falconry was widespread in Mongolia among the ruling classes and rich people; this sometimes, but not too often, involved hunting wild ducks, geese or herons. The wives of very rich Mongols also wore outer garments made partly of skin from the heads of Mallard drakes *Anas platyrhynchos* in breeding plumage. Such a caftan is on view in one of the Ulan Bator museums. Thus the former use of water birds for military, falconry and clothing purposes was likewise insignificant. The Pelican *Pelecanus* sp. is the only water bird which, despite bans by formal law and custom, has for ages been seriously exploited by the Mongols. The dried upper part of the Pelican's bill is used for scraping sweat and foam off the body of a tired horse. The view is widespread that this method is particularly advantageous for the horses' health. Such bills were found in prehistoric ritual burials of the Mongols and even today they are found among the nomad arats.

All these circumstances for centuries enabled the fauna of water birds of Mongolia to remain in its primary state. Only after 1921, following the Revolution, when the importance of the buddhist religion considerably declined and the authorities of the republic began to utilize game animals, did the situation change. As we shall see later, the impact of these great events in the life of the country on the waterfowl population of the country continues to be slight.

Waterfowl in Mongolia

Waterfowl are represented in Mongolia by 50 species of breeding birds, namely, 2 swans, 4 geese, 17 ducks, 26 waders and plovers, and the Coot *Fulica atra.* There are 35 species of non-breeding birds, 1 swan, 2 geese, 8 ducks and 24 waders and plovers.

To date, zoological investigations on Mongolia's fauna have provided a relatively accurate list of birds occurring and information on their distribution, and the dates of breeding and migration. We owe these data to Russian and American expeditions, as well as to the latest publications on research by Mongolian, Soviet and German scientists. There is, however, scanty information on the numbers of the various species and their migratory routes and wintering places. No bird ringing has taken place as yet. However, the main species of breeding water birds are present in very great numbers and their breeding populations certainly amount to several hundred thousand pairs each. Thus Mongolia is one of the major producers of waterfowl in Asia.

Mute Swan *Cygnus olor*

Nests rarely and locally in the centre and south of the country. There are no data on its migrations.

Whooper Swan *Cygnus cygnus*

Nests in quite large numbers in suitable biotopes all over Mongolia. The birds arrive from the end of April through May. Breeding occurs through June and the beginning of July. Departure is prolonged, some birds leaving as early as August, others at the end of September or in October, and some of them stay through the winter. This may often end in their freezing; in the winter of 1967-68 several dozen died in the northern part of the Khirgis-nur lake. Migrates in flocks of sometimes 100 birds.

Bewick's Swan *Cygnus columbianus bewickii*

Bird of passage. No precise information on dates of stay or numbers.

Greylag Goose *Anser anser rubirostris*

The most numerous goose species, nesting in the western and central parts and, in smaller numbers, in the east. The spring flight begins at the end of March and lasts until April. Many birds nesting in Siberia also fly through Mongolia. Breeds in May and June. Moulting occurs from the end of July until the end of August, large flocks being found in the west. The local geese depart in mid-September, the passage of Siberian geese continuing until the end of September.

Bean Goose *Anser fabalis*

It is not clear whether this species nests at present in the northern part of the country, in very small numbers. Bean Geese do, however, pass in great numbers, mainly through central Mongolia. Numerous flocks, of up to 1,000, alight on wheat fields but no measures are taken against them, apart from frightening them away by a sentry on horseback. The spring passage lasts from mid-April until the end of May, and the autumn passage from the end of August through the whole of September.

White-fronted Goose *Anser albifrons albifrons*

Lesser White-fronted Goose *Anser erythropus*

These species have so far not been found in Mongolia, but the probability exists that they pass through as they were found in Eastern Siberia. Mr. A. Bold has oral reports from hunters of shooting geese resembling these species, but it is still necessary to acquire specimens to confirm this information.

Bar-headed Goose *Anser indicus*

Nests in suitable biotopes all over the country, but is most numerous in the central and western aymaks. After the Greylag Goose it is the second commonest goose in Mongolia. In Siberia this species has already completely ceased to nest, or appears only locally. It nests in May and at the beginning of June. Moulting time varies widely in various populations, lasting from the end of July to the end of August. It departs in the first half of September.

Swan Goose *Anser cygnoides*

Nests in large numbers in the west of the country, less so in the centre. Locally it is more numerous than other nesting geese, but as it does not spread over the whole area of the country it is the third most numerous goose. In Siberia this species still nests, but in very small numbers. It arrives from the middle to the end of April, nests typically in colonies in May, moults in August, rarely as early as July, and departs at the beginning of September.

Ruddy Shelduck *Tadorna ferruginea*

A characteristic, very numerous, nesting bird over nearly the whole country. It arrives as early as March and April, and is one of the first species of waterfowl to start breeding in the spring. But the period of reproduction is very protracted and lasts from April until the beginning of June. Probably large concentrations of moulting birds occur, but so far they have not been located. They depart in large flocks, the entire water-surface of small lakes sometimes being covered with Ruddy Shelducks, in the second half of September.

Common Shelduck *Tadorna tadorna*

Also a very numerous nesting bird over the entire country; its numbers, however, are slightly smaller than the former species, probably because of its special requirements—burrows for nesting. It comes somewhat earlier than other ducks, in May, and immediately begins to build nests. Moulting occurs at the end of July and August, but there is no data on places of concentration. It departs in mid-September.

Mallard *Anas platyrhynchos*

A nesting bird occurring in great numbers in suitable biotopes all over the country. The southern border of the breeding area of this duck passes through the south of Mongolia. This species is not so conspicuous as the two preceding ones, but it is probably the most numerous duck nesting in Mongolia. It arrives in the second half of April, nests in May and June, and begins to depart in mid-August, continuing to do so through September. It is very numerous on passage, as the flyway of Mallard coming from the north leads through Mongolia.

Gadwall *Anas strepera*

Nests in relatively large numbers in the northern and eastern part of the country, somewhat scarcer in the west. Passage and nesting times as for the Mallard.

Garganey *Anas querquedula*

Teal *Anas crecca*

Both species nest in scattered pairs all over the country, but in somewhat greater numbers in the north. The periods of passage and nesting are the same as for the Mallard, but the Garganey comes back to the nesting places in spring as one of the last water birds.

Shoveler *Anas clypeata*

Somewhat less numerous than the Gadwall as a nesting species; appears in the entire country excepting the Gobi. The southern border of their range passes through Mongolia. The periods of migrations and breeding as for the Mallard.

Chinese Spotbill *Anas peocilorhyncha zonorhyncha*
Falcated Duck *Anas falcata*
Wigeon *Anas penelope*
All three species nest only in small numbers; the Wigeon, however, is fairly numerous on passage.

Baikal Teal *Anas formosa*
Pintail *Anas acuta*
Both species are seen only on passage.

Red-crested Pochard *Netta rufina*
The Red-crested Pochard is the most commonly nesting pochard, but none attain the numbers of the Mallard, Ruddy Shelduck or Common Shelduck. Breeding is patchy, most numerous probably in the west. The northern limit of the Red-crested Pochard's breeding area passes through Mongolia. It comes in April and at the beginning of May and immediately starts nesting. At the end of June large flocks of moulting Red-crested Pochards are seen in the west. They depart at the beginning of September.

Pochard *Aythya ferina*
Tufted Duck *Aythya fuligula*
Ferruginous Duck *Aythya nyroca*
All three species nest in small numbers; the most frequent being the Pochard. The first two species nest all over the country, the third only locally in the west. The passage and nesting is similar to the Red-crested Pochard, except that the Tufted Duck comes somewhat later than the other species.

Scaup *Aythya marila*
Baer's Pochard *Aythya baeri*
The first species rarely passes through Mongolia, and the presence of the second has so far not been ascertained but is probable.

Goldeneye *Bucephala clangula*
Mandarin Duck *Aix galericulata*
Both species nest very rarely in Mongolia, in particular the second. The first is more often seen on passage.

Harlequin Duck *Histrionicus histrionicus*
A rare bird of passage.

Asiatic White-winged Scoter *Melanitta fusca stejnegeri* (syn. *M. stejnegeri*)
Rare, on passage. There are unconfirmed reports that it sporadically nests in the north-west. Also requiring confirmation are reports of migrating Velvet Scoter *M. f. fusca* and of Common Scoter *M. n. nigra* and of Eiders *Somateria* spp.

Goosander *Mergus merganser merganser*
Nests in fairly appreciable numbers all over the country. It comes in April, breeding in May and June. Flocks of moulting birds gather on the great lakes in July and August. They depart in September.

Red-breasted Merganser *Mergus serrator*
Smew *Mergus albellus*
Birds of passage. There is still no Red-breasted Merganser specimen in collections acquired in Mongolia; it is not yet excluded that it nests sporadically.

Coot *Fulica atra atra*
Among three species of rails breeding in Mongolia, the Coot is the most common, nesting in great numbers on all waters all over the country. It is somewhat less frequent on brackish waters, probably only because these lakes have a poorer vegetation. Despite being widespread it does not attain the numbers of the most common duck species in Mongolia. It comes at the beginning of April and in May, nests in June, and departs in September.

Waders

The order of waders (Limicolae) is one of the less studied groups in the Mongolia avifauna. There are relatively few data on the numbers of the various species, and only lists, divided into breeding and non-breeding species, can be provided.

A — Breeding species
Little Ringed Plover *Charadrius dubius curonicus*
Kentish Plover *Charadrius a. alexandrinus*
Geoffrey's Plover *Charadrius leschnaultii*
Oriental Plover *Charadrius varedus*
Dotterel *Eudromias morinellus*
Lapwing *Vanellus vanellus*
Temminck's Stint *Calidris temmincki*
Asiatic Dowitcher *Limnodromus semipalmatus*
Redshank *Tringa totanus eurhinus*
Marsh Sandpiper *Tringa stagnatilis*
Green Sandpiper *Tringa ochropus*
Wood Sandpiper *Tringa glareola*
Grey-rumped Sandpiper *Tringa brevipes*
Common Sandpiper *Tringa hypoleucos*
Terek Sandpiper *Xenus cinereus*
(This species was hitherto considered to be a bird of passage, but according to Bold (1966) it nests rarely in the north.)
Black-tailed Godwit *Limosa limosa melanuroides*
Bar-tailed Godwit *Limosa lapponica baueri*

Common Curlew *Numenius arquatus*
Eurasian Woodcock *Scolopax rusticola*
Common Snipe *Gallinago g. gallinago*
Great Snipe *Gallinago media*
(So far not ascertained, recently it has spread widely in Eastern Siberia, so its appearance in Mongolia is very probable.)
Swinhoe's Snipe *Gallinago megala*
Solitary Snipe *Gallinago s. solitaria*
Black-winged Stilt *Himantopus himantopus*
Avocet *Recurvirostra a. avosetta*
Eastern Collared Pratincole *Glareola maldivarum*

B — Non-breeding species

Painted Snipe *Rostratula b. benghalensis*
Ringed Plover *Charadrius hiaticula*
Mongolian Plover *Charadrius mongolus*
Asiatic Golden Plover *Pluvialis dominca fulva*
Golden Plover *Pluvialis apricaria*
(A species so far not included in Mongolia's fauna; in September 1959, near the locality of Sachoi Sarai, Transaltai Gobi, Mr. Bold shot for Professor Dementiev a bird which was identified as a Golden Plover; the prepared specimen was, however, lost from the collection of the Ulan Bator University.) The presence of this species in Mongolia needs confirmation.
Grey Plover *Pluvialis squatarola*
Turnstone *Arenaria interpres*
Little Stint *Calidris minuta*
Red-necked Stint *Calidris ruficollis*
Long-toed Stint *Calidris subminuta*
Sharp-tailed Sandpiper *Calidris acuminata*
Dunlin *Calidris alpina sakhalina*
Curlew Sandpiper *Calidris ferruginea*
Knot *Calidris canutus*
Ruff *Philomachus pugnax*
Broad-billed Sandpiper *Limicola falcinellus*
Spotted Redshank *Tringa erythropus*
Greenshank *Tringa nebularia*
Far-eastern Curlew *Numenius madagascariensis*
Whimbrel *Numenius phaeopus variegatus*
Little Whimbrel *Numenius minutus*
Pintail Snipe *Gallinago stenura*
Jack Snipe *Lymnocryptes minimus*
Red-necked Phalarope *Phalaropus lobatus*

Waterfowl hunting regulations in Mongolia

The open season lasts from 15th August to 15th May, but will probably soon be shortened to end on 30th April. Waterfowl are not named by species in the law, but in general only geese and, to a lesser extent, ducks are hunted. Coots are pursued with great reluctance and waders not at all. Whooper and Bewick's Swans, along with pelicans, the Great White Heron *Egretta alba* and the Spoonbill *Platalea leucorodia* are fully protected by law.

In principle there are no professional hunters in Mongolia, as there are in the eastern parts of the Soviet Union. Hunters voluntarily become members of the Hunting Society of the Mongolian People's Republic (Mongolyn Ancdyn Nijgemlegijn Tow Zowlol—abbreviated MANTZ—founded in 1958) and then automatically receive a licence to hunt any form of game provided they are at least 14 years old and have given evidence of hunting ability. There is an inscription fee of 5 tugriks and an annual fee of 12 tugriks (6 tugriks = $1 U.S.). Members of the Society, now numbering 30,000 and increasing every year, undertake both 'industrial' hunting—involving the sale of game and skins to the State—and sport hunting for their own purposes. The Society lays down general plans, for the taking of game and skins, which are fulfilled by local hunting collectives. In the case of certain especially good and active hunters the State purchasing centres may establish contracts for the delivery of specified amounts of game or skins. The issue of membership cards is controlled by the regional boards of the Society in samons (townships). There is provision for the issuing of temporary licences to Mongolians who are not members of the Society (several thousand at 7 tugriks a month) and to foreigners (at 13 tugriks a week). In Mongolia there is no private ownership of land and licences are valid throughout the aymak of residence, though this restriction may be eased or abolished. Temporary licences are always restricted, even to the samon in which it is issued. Annual licence fees are retained by the Society and are used in the implementation of its statutory tasks. Of temporary licence fees the Society retains 10%, the rest going to the State.

Hunting is forbidden at night but otherwise there are no temporal restrictions within the open season and there are no bag limits. The use of poison in hunting is forbidden. Certain hunting methods such as the use of live decoys, artificial decoys, bird calls, flight netting, projectile nets, duck decoys and artificial lights are forbidden but are in fact techniques which are in any case not used. The use of punt-guns and of baiting is unknown in Mongolia and the legislation

makes no provision regarding them. Two hunting methods, forbidden in a number of countries, are permitted in Mongolia, namely the use of covered butts and of motor boats in direct pursuit of game. In practice the latter method is not used as there are few outboard motors available.

It is the Council of Ministers that issues legislation on hunting and on conservation after examination by the Great Horal (Parliament). The Main Forest Administration, Hunting Section, is responsible for the enforcement of hunting legislation. There is no corresponding organisation for conservation legislation which therefore remains the direct responsibility of the Council of Ministers. The local authorities supervise the application of legislation at aymak and samon level.

The extent of waterfowl hunting

The State only purchases game for meat in the winter. This is because the use of refrigerators is not yet widespread. As waterfowl have left Mongolia by the winter, this effectively means that there is no market-hunting of waterfowl. As in the past, the meat of birds plays little part in the diet of the Mongolians and it is estimated that only between ten and twenty thousand waterfowl are probably shot each year. A considerable part of these is accounted for by foreigners working in Mongolia. Rather more than half the kill is of geese, the rest almost entirely duck. Compared with the numbers of waterfowl present in Mongolia these figures are insignificant. For instance, it has been calculated by Mr. A. Bold that in the southern part of Lake Khara-us-nur 5,000 geese and 15,000 ducks could be taken every year without impairing the local population.

Acknowledgements

The International Wildfowl Research Bureau's invitation to co-operate was favourably received by the Director of the Institute of the Academy of Sciences of the Mongolian People's Republic, Dr. O. Sagdarsuren, who was a former pupil of the late Professor G. P. Dementiev. He and his colleague, Mr. A. Bold, and Mr. J. Das of the Ministry of Forestry's Hunting Administration, offered me much information on the waterfowl of their country. This consisted mainly of oral information on recent ornithological investigations and of translations from the Mongolian language into Russian of publications and unpublished manuscripts, including extensive reports on scientific expeditions. In addition my informants prepared a synthesis of information, published and unpublished, on the waterfowl of Mongolia.

I am most grateful to my Mongolian colleagues for this assistance and I am also indebted to the Polish Chargé d'Affaires in Ulan Bator, Mr. S. Jawdoszuk, for his assistance in carrying out my mission.

Summary

The main physiographic features and waterfowl habitats in Mongolia are described, also the, relatively small, impact of Man on the birds. Data on the distribution and times of breeding and migration of each species are provided. The hunting regulations are set out and it is concluded that the kill is insignificant compared with the numbers present, which make Mongolia one of the major producers of waterfowl in Asia.

References

The list includes all the papers in Mongolian language containing information on waterfowl. Only fundamental papers of European and American relevant literature are quoted. The papers by Piechocki and by Vaurie contain lists of further papers on Mongolia's birds.

Published papers

BOLD, A. 1966. Mongol orny suvuudyn zujlijn zagsaalt (Check list of birds of the Mongolian People's Republic). *Trudy Inst. Biol. (Ulaanbaatar)* 1 : 9-16.

BOLD, A. and N. DOVCIN. 1968. Usny agnuuryn suvuu (Usable or 'industrial' water birds). *Sinzhleh uhaan Amdral (Ulaanbaatar)* No. 4 : 53-60.

DAS, J. 1969. Main migration routes of waterfowl in the Mongolian People's Republic. *Abstracts of Papers, Novosibirsk (V Symposium)*, pp. 30-31 and 110-111.

MURZAJEV, E. M. 1952. *Mongolskaja Narodnaja Respublika.* (Mongolian People's Republic). Moskva. (German edition—Gotha 1954, Polish edition—Warszawa 1957).

PIECHOCKI, R. 1968. Beiträge zur Avifauna der Mongolei, Teil I Non-Passeriformes. *Mitt. Zoolog. Mus. Berlin* 44, 2 : 149-292.

SAGDARSUREN, O. 1957. Suvuu bol manaj orny unet bajalag mon. (Birds—the riches of our country). *Sinzleh uhaan, Technik (Ulaanbaatar)* No. 5/6 : 78-79.

SAGDARSUREN, O. 1959a. Manaj orny tow ba zuun omno hesgijn aduusan amtdyn tyhai zarim barimt. (Materials on the fauna of south-eastern and central Mongolia). *Sinzleh uhaan, Technik* No. 3 : 18-21.

SAGDARSUREN, O. 1959b. *Ulsyn tow muzeji uzmert bajgaa am amtan towhimol.* (Museum guide on the fauna of Mongolia). Ulaanbaatar.

SAGDARSUREN, O. 1967a. Hangajn nuruuny bie hesgijn amtny ajmgijn sudlalaac. (Knowledge of the fauna of the central Khangai plateau). *Trudy Inst. Biol. (Ulaanbaatar)* 1.

SAGDARSUREN, O. 1967b. Agnuuryn suwuudyg asiglah bolomz. (Possibilities of utilizing game birds). *Hodoo az Ahuj (Ulaanbaatar)* No. 1 : 70-72.

SAGDARSUREN, O. 1968. Pticy Mongolskoj Narodnoj Respubliki. (Birds of the Mongolian People's Republic). Publicity article on the export of birds shot. *Mongolyn Gadaad Hudaldaa (Ulaanbaatar)* No. 1.

SAGDARSUREN, O. and Z. SOSORBARAM. 1968. Baruun Mongold Zohioggson Amtan Sudlalyn Ekspedici. (Preliminary results of the West-Mongolian expedition). *Trudy Inst. Biol. (Ulaanbaatar)* 2 : 153-67.

SAGVARAL, N. (ZHAGVARAL). 1956. *The Mongolian People's Republic.* Ulan-Bator.

STUBBE, M. 1955. Jagd, Jadgesetz und Wild in der Mongolischen Volksrepublik. *Beitr. Jagd- u. Wildforschung, Tagungsberichte Berlin* Nor. 78 : 163-77.

VAURIE, C. 1964. A survey of the Birds of Mongolia. *Bull. Amer. Mus. Nat. Hist.* 127, 3 : 103-43.

Unpublished manuscripts

BOLD, A. 1968. Hentijn uularhag rajony hohton, Suvuu. (Birds of the Kentai mountain region).

BOLD, A., S. DULAMCEREN and N. CHOTOLHUU. 1966. Chentiin uularchag raiony Suvuu, Chaton. (Birds and mammals of the Kentai mountain region).

DAS, J. and A. BOLD. 1968. Ondatra nutagsuulaltyn neg shilijn dun. (Results of the acclimatization of the musk rat). The paper also contains information on birds.

GAGINA, T. N. 1968. Pticy Vostocnoj Sibirii. (Birds of Eastern Siberia). Doctoral thesis, 4 volumes.

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