

PROJECT REPORT

Conservation of the critically endangered east Asian population of Dalmatian Pelican *Pelecanus crispus* in western Mongolia

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Introduction

2005 was an important year for the Dalmatian Pelican *Pelecanus crispus* conservation project in western Mongolia. This is a new initiative for the conservation of the critically endangered eastern subpopulation of Dalmatian Pelican. The species is the largest of the eight pelican species known in the world, and the majority of its world population is found in the wetlands of south-eastern Kazakhstan, Turkey and Greece; it has an IUCN global threat status of Vulnerable but the easternmost population, in Mongolia, is at a much higher level of risk at the national level.

Until the 1960s and 1970s, Dalmatian Pelicans were rather common in western Mongolia, with several hundred pairs breeding in the region's large lakes and wetland areas. In the early 1970s the population started to decline mostly because of habitat degradation and, in particular, shooting, because the upper mandible is a much-favoured material for sweat blades for horses. In 1999 the highest number consisted of 31 birds (24 adults and 7 young) at Airag Lake, one of the two known breeding sites in the Great Lakes Basin in western Mongolia. Since then no-one has seen such a big flock in Mongolia. Today there is very little evidence of nesting pelicans. In spring of 2004, some 26 pelicans including some young were observed in the Minjiang River estuary of China. It is possible

that these pelicans might have been birds that summer and breed in Mongolia. The closest breeding birds to Mongolia are found in eastern Kazakhstan, but there is no good evidence that birds from these areas mix.

At present, the eastern Asian subpopulation is estimated to comprise fewer than 130 birds that breed only in western Mongolia and winter in south-eastern China. The species is seriously in danger through habitat degradation and human impacts. The overall aim of our work for Dalmatian Pelicans in western Mongolia is to ensure the survival of the species through protecting the pelican habitats and the lake ecosystem with its rich waterbird communities and nationally and internationally important sites for migratory birds.

The objectives of the project are to understand the role and consequences of changes occurring in the wetland ecosystem, human use, demography and socio-economic transitions on Dalmatian Pelicans and their wetland use; and to develop a mechanism to safeguard the Dalmatian Pelican and fish habitats in western Mongolian wetlands where pelicans breed. The programme consists of three phases. Phase I focuses on collecting basic information (species status, ecology and socio-economic influences, etc) that is useful to determine future research and conservation needs. Phase II focuses on understanding of the breeding habitat,

Plate 1. Dalmatian Pelicans *Pelecanus crispus* nesting in a mixed waterbird colony at Airag Lake in 1998.



feeding ecology, migration, impact of livestock and muskrat on wetland systems, etc., in order to determine the essential management and monitoring activities for the species. Phase III will initiate high-priority management actions and continue population monitoring.

In 2005, we carried out a series of surveys for the Phase I in cooperation with wildlife biologists from Mongolia's Wildlife Science and Conservation Center (WSCC), National University of Mongolia, Mongolian Academy of Sciences, and Khar Us Lake National Park.

Methods

We organised three field trips to lakes and wetlands where pelicans bred and have been recorded in the Great Lakes Basin of western Mongolia. Several important large lakes with extensive reedbeds *Phragmites communis* are located in the Great Lakes Basin. These lakes are highly important places for the nesting and summering of many wetland and waterbird species including Dalmatian Pelican. Besides that, a large number of birds regularly use these lakes during spring and autumn migration.

The first survey was conducted in July–August 2005 with the aim of finding the present number and breeding locations of Dalmatian Pelicans in western Mongolian lakes. The team spent nearly two weeks in the field searching nearly all known historical breeding and roosting sites for pelicans in two provinces, Khovd and Uvs. We scanned the lake surface with 10 × 50 binoculars and 32 × telescopes to spot pelicans and other waterbirds. Because western Mongolian lake shorelines have little or mostly no vegetation, it was not very difficult to watch birds from the beach in most places. When there were reeds or tall grasses we walked along the shore. We also used inflatables and motorboats to survey lakes and visit sites where pelicans used to breed. Islands were checked for pelican nests and any signs of nesting activities. Measurements of pelican nesting islets were taken.

At the end of August and early September of 2005 we again surveyed the southern part of Khar Us Lake. This time our objective was to replicate the survey to verify the number and location of the pelicans that we recorded earlier in August and search for other pelicans. We followed the same route and checked locations where we saw pelicans.

In January 2006, we went to the southern and western side of Khar Us Lake when the lake was frozen. This time our objective was to gain a better understanding of the livestock number present at or near pelican habitat and their possible impacts. We counted the number of families and their livestock, collected GPS locations of families, and observed livestock activities. During this fieldwork



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Plate 2. Khar Us Lake National Park, an important bird area, probably one of the last few breeding sites for the Dalmatian Pelican in Mongolia.

we carried out a short questionnaire survey on herders' knowledge on pelicans and threats.

Results

Current population number and location

In the period of field survey in 2005 we recorded a total of 14 pelicans at one location, which is the southern part of Khar Us Lake. The number was confirmed after the second trip to the same area. This suggests that there are at least 14 pelicans in the southern tip of Khar Us Lake. No pelican nestlings were seen during the survey period. Although some birds may have been missed in other areas, a dangerously low number of pelicans suggests that this subpopulation is at the critical period of disappearance from the wild. We collected 52 GPS locations of sites and islands with pelican records. We classified these locations into four groups based on their history of pelican usage.

Group A consisted of islets with nests or where active nests still can be found. Although there were no confirmed nesting activities for the last seven years and during our survey no active nest was found, we assume that there are at least two sites (4%) for Group A. Those are Bombogor Island in the Tsagaan Gol area at Khar Us Lake and an island in the southern part of Airag Lake. During our survey we saw pelicans roosting at Bombogor Island for several days, and we saw young pelicans near this island. Also the park ranger informed us that this island has been used continually by pelicans for the last several years. However, he had made no close check for breeding. Accordingly we conclude that Bombogor Island might be an important place for pelican breeding and may be still supporting nesting pelicans. For Airag Lake, on 24 June 1998 Liegl (1998) recorded 23 individuals, but in the following two days only six were seen at a time. An empty nest was found. In September, during a repeat visit a maximum of seven birds were present, two

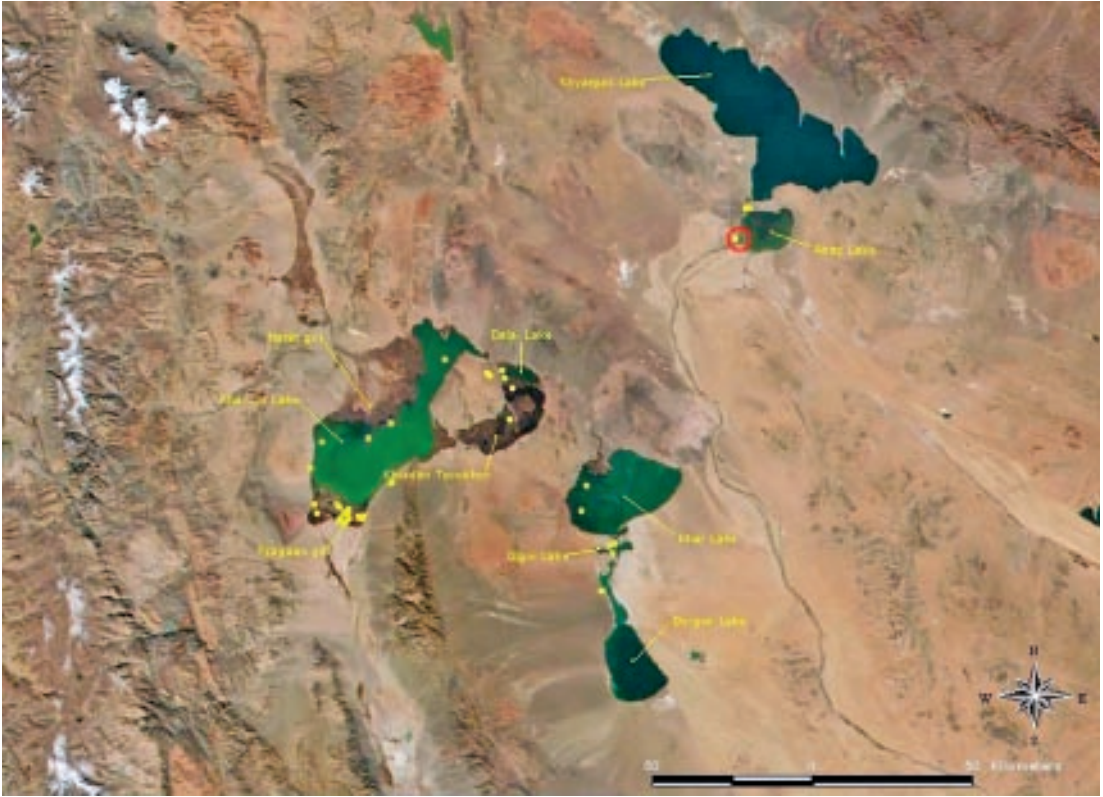


Figure 1. Locations associated with Dalmatian Pelican records (red circle represents the areas in Group A).



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Plate 3. Suljeenii Urd Island, a historical pelican nesting islet.

of them young of that year. In 1999, some researchers found flightless pelican nestlings on the island mentioned above. This was the last known breeding by Dalmatian Pelicans in western Mongolia until recently. There was a single pelican in Airag Lake on 6 July 2004, but the lake was not scrutinised for breeding evidence. However, in September 2006 Martin Gilbert of the Wildlife Conservation Society (WCS) found a dead young pelican (old carcass from this year) in almost the same area. The head of this bird had been chopped off and was missing.

Group B consisted of former nesting sites. We found a total of four such areas (8%). These are Suljeenii Urd Island, Tasag, Bombogoriin Zuun Island, and Khordiin Tsookhor. Our main source on the history of these islands was park rangers and herders. We were able to visit the first three of the islands. Suljeenii Urd Island is 154 m long and 20 m wide, with no vegetation, located in a large lagoon in the north-eastern part of the Tsgaan Gol area. We saw a pelican roosting on this island on 30 July. At present this island is full of nests of Great Cormorant *Phalacrocorax carbo* and Mongolian Gull *Larus (argentatus) mongolicus*. Bombogoriin Zuun Island is 44 m long and 26 m wide. Its south side was lined with tall reeds, but the north part faced open water. It was covered with nests of Great Cormorant, Mongolian Gull and Grey Heron *Ardea cinerea*. Tasag Island is part of a big fragmented island with dimensions of 30 × 15 m, and is now used only as a roost-site by various birds. Khordiin Tsookhor is a well-known historical pelican nesting place. Until the 1970s, pelicans nested regularly on several islands in this area (Bold pers. comm.).

Group C consisted of submerged historical nesting places. These are islets that disappeared because of mechanical destruction and

fragmentation. Physical damage by muskrat causes large islands to break up into smaller fragments. Such small islets are vulnerable to breakdown and are carried away by strong waves and currents. Also the many years of constant movements of islets and reedbeds by lake currents make it hard to locate them. We were only able to record the GPS location of one place of this type (2%). They are no longer visible.

Group D consisted of roost-sites and foraging locations, where pelicans have been found over time. We documented a total of 45 such points (86%). Most of them were located in Khar Us Lake. This bias might be due to more human and research activities near this lake.

Impact of human activities on pelicans and their habitat

The general form of land use around the wetlands in western Mongolia is semi-nomadic animal husbandry. The herdsmen breed sheep, goats, camels, horses and cattle. The annual nomadic migration system is very complex. The main moving directions are from the lakeshores to the foothills of the adjacent mountains and back again, but not all families are moving into the same direction at the same time of year. However, concentrations of families and large numbers of livestock occur in winter at the vast reedbeds, which are used as grazing areas (Liegl & Nyambayar 1999).

Until the 1970s and 1980s there were almost no livestock grazing problems related to those extensive reedbeds. The area was used only for hay production. Nowadays, however, livestock impacts have become a great concern for the protected areas administration because livestock numbers have dramatically risen in the last decade and pasture management is not well developed. According to

the district governors and national park staff, herders start moving off the lakeshores around 15 April, with some staying till 1–10 June. There are no herders and animals near the lakes in summer because of the superabundance of insects (especially mosquitoes) in Khar Us, Khar, and Dorgon Lakes, but some herder families stay throughout summer on the west and south sides of Airag Lake. In the fall, herders move down into the lake area and islands from the mountains around 15–20 August at the time when mosquitoes and other insects disappear. At first, herders start settling along the lakeshore, but when the lake is well frozen they occupy the large islands. Over 30,000 head of livestock from Chandmani, Mankhan, Buyant and Jargalant districts graze grass on the islands and inhabit the area until the end of spring in the Tsagaan Gol area in the southern part of Khar Us Lake, and in the Nariin Gol area in the north-western part of the same, where pelicans regularly summer and attempt to breed.

In January 2006 we recorded 113 herder families and over 22,000 livestock, consisting of goats, sheep, cows, camels and horses of three districts. Also we saw how livestock depletes islands used by pelicans in summer. Especially cattle, camels and horses were most destructive because of their large size. Mandal Island, where we saw some pelicans roosting in August 2005, was full of cattle, horse dung and hoof prints. There were vehicle tracks all over an island where we saw three pelicans roosting in summer in the Nariin Gol area. Therefore, the protection of islands seems to be very important.

We talked to herders about what impacts their livestock might have on the pelican habitats. Many of them said they “don’t know”. Some herders said “fire is accidentally set to reeds by herders and fishermen”. According to the Khar Us Lake

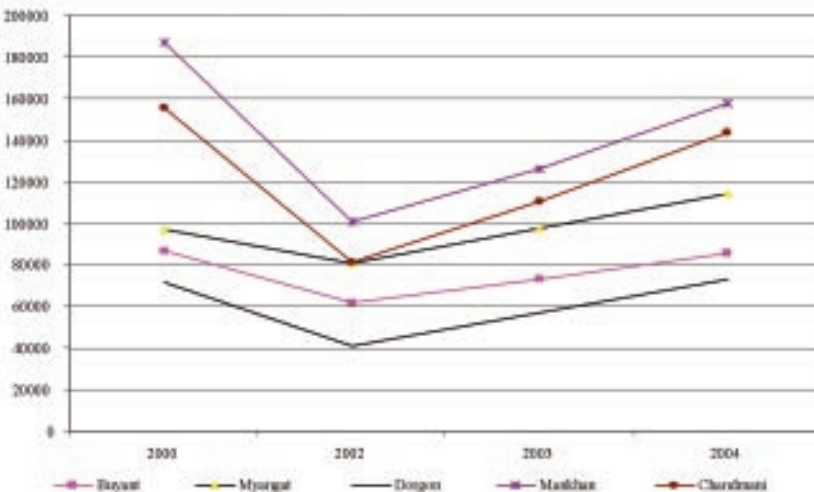


Figure 2. Recent livestock number change in districts around the Khar Us Lake NP. Each line refers to a different district. Data provided by KUNNP administration.



Figure 3. Tsagaan Gol area in the southern part of Khar Us Lake is rich in lagoons and islands suitable for pelican nesting. Blue square dots show the pelican locations collected during the survey. In the 1970s over 300 pelicans were recorded in this area.

administration, the frequency of reed fire is increasing year by year, although the area affected is relatively small.

Unsustainable use of wetlands

Two current human uses of wetlands have a major impact, fishing and muskrat-farming. Fishing brings cash and a considerable amount of income to local people, but uncontrolled fishing has become a major threat to the lake ecosystem. WWF sponsored a fishery survey of Khar Us Lake and showed that there had been a 19% decrease in fish stock within a few years. The cause of this drop was large-scale uncontrolled harvesting in winter and fish habitat destruction by drag nets. Also there was a significant change in the distribution of fish in the lake system. Such changes in number and location of fish may well have influenced the Dalmatian Pelican's foraging and feeding habits. Therefore, fishery management and law enforcement control must be seen as potentially very important.

In 1967, the Muskrat *Ondatra zibethica* was introduced to Khar Us Lake for fur production. Since then the species has spread widely and successfully invaded the whole lake and wetland ecosystem. Muskrats cause damage to reedbeds by eating reed shoots and roots which causes the death of the tussocks, and by making holes and burrows on islets suitable for bird nesting. After years of such damage islets become fragmented, unstable and

weak in strong waves. According to park rangers and herders, several large islands with pelican nests have disappeared in the last two decades because of mechanical deterioration.

Poaching

Nomads use the upper mandible of pelican bills to groom their horses because they believe that using the pelican beak makes their animals stronger and faster. On 3 August we counted about 50 pelican bills in Chandmani district when there was a local *naadam* festival. We measured and photographed one pelican bill (Plate 4). The length from tip of bill to back of head was 47.7 cm and the length from bill-tip to forehead was 38.2 cm. The owner

Plate 4. Horse scraper made with a pelican bill.



of this bill told us it was over 10 years old. However, shooting pelicans for the bill still exists in Mongolia, but it is mostly clandestine. Only a single case of pelican shooting was recorded by the Khar Us Lake NP law enforcement officers in 2004, and according to herders no poaching of pelicans has occurred in the last decade.

One pelican bill can now be traded for 10 horses and 30 sheep on the black market in Mongolia. This price is much higher than ten years ago. Because pelican numbers are low, the price of a bill is likely to increase, and this is likely to intensify interest in supplying bills for the market.

Public awareness

We have produced a poster on the conservation of the Dalmatian Pelican. This poster was printed in two languages, Mongolian and English, and it has been distributed to individuals, local administrations, and conservation groups etc. Over 300 copies were sent to local nomad families. Over 200 posters have been distributed to individuals and organisations in capital cities of 19 provinces and in Ulaanbaatar, the capital of Mongolia. Khar Us Lake National Park administration was responsible for distributing the poster to local communities in western Mongolia. Over 100 were sent abroad to international organisations and individuals who have an interest in Dalmatian Pelican research and conservation. Especially, we sent many posters to Hong Kong and China where observations of Dalmatian Pelicans have been made in winter.

We published an article on Dalmatian Pelicans in *Onoodoriinn Mongol* newspaper in February 2006. The article described the Dalmatian Pelican's ecology, migratory behaviour, ecosystem role and conservation needs. Recently we received feedback from two provincial environmental protection agencies. They sent us letters that discussed various problems facing waterbirds and other animals and the importance of cooperation for conservation in the future.

Plate 5. Poster and daily newsletter article on Dalmatian Pelican.



Discussion and conclusion

In 2005, we successfully started the project with funding and support from the Oriental Bird Club. The main task of Phase I was to identify significant actions needed for the management and conservation of Dalmatian Pelicans and their habitat based on fresh field research data. We have identified two important areas for further actions, Khar Us Lake and Airag Lake, and learned that habitat disturbance by nomadic herders and fishermen, and shooting by herders for the bill, are the most crucial threats to the species over other problems. Below we summarise the most important actions needed for the protection of this threatened species.

Shooting.—According to various people, over 90% of the pelican population decline was due to hunting pressure. It may cause high adult mortality because mostly breeding-age birds are killed, although young birds are hunted as well. Shooting may also disturb adults during incubation and foraging. We have discussed with the Policy Management and Implementing Agency of the Ministry of Nature and Environment (MNE) about halting the use of pelican bills (and snow leopard pelts). We have agreed initially to conduct a nationwide census of pelican bill and snow leopard pelts that are already in the hands of herders, then start to mark and issue passports to the beak and pelt holders. New unregistered bills and pelts will be regarded as illegally poached. Thus no-one should try to own a new bill or pelt; if they do they will face some strict legal measures. At present, we need funding to carry out the census nationwide and to hire lawyers to make an amendment to the law that would legalise the ownership of the two items in Mongolia.

Habitat disturbance.—Overgrazing of pastureland is a significant problem along the shorelines and the reedbeds of the wetlands as well as in the surrounding areas. Pelican nesting islands should be included in the core areas of the national park; consequently any activities must be kept away from nest-sites. Two artificial nesting platforms for pelicans were built with the support of WWF Mongolia and the French Takhi Re-introduction projects in January 2006. Monitoring of the use of those platforms by pelicans should be undertaken during the breeding season.

Research.—Further detailed research on pelican ecology is needed. For example, there is no information on pelican food supplies. Existing fishery data do not provide enough information to indicate whether fish-stock reduction is linked to changes in fish location in different seasons. We suspect that fish population declines may have an influence on fish age-classes preferred by pelicans. Also, the high input of nitrogen (droppings of over



Plates 6 and 7. Construction of pelican nest platforms at an island in the Tsagaan Gol area, Khar Us Lake National Park, January 2006.

30,000 cattle and sheep produced during winter months) into surrounding waters may have some impact on the lake bottom ecosystem. Therefore, habitat degradation research is needed in conjunction with the fishery study. Furthermore, migration stopover sites need to be identified and assessed for potential threats, so satellite-tracking pelicans from the breeding grounds will be extremely valuable.

Public awareness and participation.—People need encouragement to participate in pelican conservation work. Because public awareness of endangered species, wetlands and waterbirds seemed to be very low, we are discussing with RARE, a U.S.-based conservation organisation specialising in awareness-raising, about running an environmental campaign directed at local people, and training and supporting local leaders to organise public education activities. Furthermore, current pelican nesting and foraging areas are in the national parks and are Ramsar sites and Important Bird Areas. Establishing an IBA Site Support Group could be an approach to bring benefits to both pelicans and locals. SSGs should be identified and networked. A working plan needs to be developed that includes the promotion of species and park conservation, monitoring of biodiversity and threats, implementing environmental education and public awareness programmes, and developing ecotourism or other income-generating activities with benefits for local livelihoods and biodiversity.

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administration gave permission and provided boats during the project activities within the park. Students from Khovd University assisted in the field. We are grateful to fieldwork participant B.Nyamchuluun, ranger and motorboat driver Sanduijamts, and our driver Renchen. Trah Binh kindly volunteered to develop a concept on public education campaign targeted on local people and to communicate with RARE.

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