

PAST & FUTURE STUDY OF BIRDS OF PREY AND OWLS IN CHINA

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Prior to 1949, the study of birds of prey in China was virtually a blank. A mere few foreign naturalists and ornithologists collected a number of specimens, whilst the occasional Chinese ornithologist such as Shaw T.H. (1936, 1939) and Yen K.Y. (1936, 1941) published records and descriptions of several raptor species in reports on the avian fauna.

With the establishment of the People's Republic of China, avian studies began to develop following the reconstruction of the country.

The progress of these studies falls into three stages. The first, from 1949 to 1960, consisted in the main of the training of talented future ornithologists. Many universities established a faculty of biology, whilst the Academia Sinica combined with other departments to undertake comprehensive surveys, although only a few studies made at this time related to raptors, most of the data collected referring to the avian fauna of China as a whole. The second stage (1961-1980) saw a period of stagnation between 1968 and 1978, following which the survey of China's birds was resumed, the results of which included some works on the country's birds of prey and owls, the various species and their geographical distribution. This laid the foundations for much subsequent study. Since then, a number of researchers have begun to focus on the raptors and from 1980 onwards (Stage Three) an increasing importance has been attached to them.

Analysis of the papers on raptor fauna published in all kinds of scientific journals in China since 1980 gives a total of 51, divided as follows:

Subject	No. of Papers
New observations or discoveries	6
Breeding biology	12
Population assessments	4
Food	4
Wintering	3
Rearing	3
Conservation	3
Migration	2
Summaries and lectures	5
Fossils	1
Ringling	1
Miscellaneous	7

1. Species and Distribution

Eighty-four species of birds of prey and owls occur in China, belonging to two orders and four families. This amounts to 20.6% of the 408 known / species of birds of prey and owls in the world - a higher number than in any other country. Since 1949, five species and six subspecies have been described as new to China. Yang Lan *et al.* (1988) also identified a new owl species - *Athene poikilis* - discovered at Qiao Qi in Baoxing county and at Bajiaolou in Yajiang county, Sichuan. This was the first new species of raptorial bird to be found and named by a Chinese ornithologist since 1949.

Among the 84 species occurring in China, only nine are non-breeders; 25 species are confined to the Oriental Region, 13 to the Palaearctic, whilst 46 species are found in both regions. Bai Yukun (1985) first discovered the Grass Owl (*Tyto capensis*) breeding in Miaodao archipelago; Fan Qiendong (1987) also found it at Shandong in the same region. This is the only species of the *Tytonidae* distributed in the Palaearctic region of China.

In Yunnan there are 46 species of raptors, including 30 breeding species. Of the 46 species in Xinjiang autonomous range, 34 breed. Of the 33 species in Heilongjiang, 30 are breeders; whilst in Qinghai-Tibet Plateau 18 out of 29 species breed - a rather smaller number of species but with relatively larger populations than in the other areas. These three provinces, together with the Qinghai-Tibet Plateau, form the most important bases for the study and conservation of birds of prey and owls in north-east, south-west and north-west China.

2. Breeding Biology

The breeding biology of the following species has so far been studied: Grass Owl, Upland Buzzard (*Buteo hemilasius*), Red Kit (*Milvus milvus*), Common Kestrel (*Falco tinnunculus*), Bearded Vulture (*Gypaetus barbatus*),

Brown Hawk-owl (*Ninox scutulata*), Rufous Owl (*Ninox rufa*), Great Eagle Owl (*Bubo bubo*), Pied Harrier (*Circus melanoleucos*), Marsh Harrier (*Circus aeruginosus*), Collared Scops Owl (*Otus bakkamoena*), Long-eared Owl (*Asio otus*), Short-eared Owl (*Asio flammeus*) and Little Owl (*Athene noctua*). The most intensive study has been devoted to the Grass Owl.

Other subjects studied have been the breeding biology of the Red Kite, Upland Buzzard and Common Kestrel and plumage development of young Great Grey Owl (*Strix nebulosa*) (Fen Wenhe 1985; Zhang Xiaoi 1984; Cang Jiazhuang 1988). On Qinghai-Xizang Plateau young Upland Buzzards taken from the wild were reared in captivity, all aspects of their development being comprehensively described.

In general, study of the breeding biology of birds of prey has been scant in comparison with that of other families of birds, and the methods of study have been simple and mainly descriptive. More in-depth work is now being done, however, on such rare and endangered species as Golden Eagle (*Aquila chrysaetos*), Steller's Sea Eagle (*Haliaeetus pelagicus*), Imperial Eagle (*Aquila heliaca*), White-tailed Eagle (*Haliaeetus albicilla*), Indian White-backed Vulture (*Gyps bengalensis*) and Bearded Vulture (*Gypaetus barbatus*).

3. Population Numbers

Less work has been done on the assessment of populations. Liu Huanjian (1986, 1987) has studied the population dynamics of wintering raptors in a suburb of Taiyuan, Shanxi, including Common Kestrel, Pied Harrier and Long-eared Owl. Kestrel numbers were counted every month, their regular rise and fall confirming that the population was stable:

4. Food

Very little has been published on the feeding habits and prey of raptors. Zhang Tan Xin (1965) observed the weight and energy development of a young Upland Buzzard kept in the laboratory. Zhang Xiaoi (1984) also measured the food intake and growth in weight of young Upland Buzzards. More attention needs to be paid to this branch of research in the future.

5. Wintering

The Pied Harrier, Hen Harrier (*Circus cyaneus*), Short-eared Owl and Long-eared Owl have all been the subject of study on their wintering grounds, attention being paid to seasonal fluctuations in numbers, prey, community composition etc. Several ornithologists are working on wintering raptors in China. However, to date all reserves are concerned with breeding birds. There are no protected areas for wintering diurnal and nocturnal birds of prey.

Three theses have recently been published which are of interest: "Preliminary attempts to establish the range of Raptor Species" (Fan Qiangdong 1984) introduces the technique of capture, ringing and release, etc.: "Observations on the Ecology of migrating Raptors in Tangshan Area, Hebei" (Zhang Yinsun *et al* 1985) describes the different species on autumn migration, the routes they follow, their numbers, and behaviour, "Preliminary Study of Eagles on migration in Laotie Mountain of Lushun, Liaoning" (Yao Liwen 1981) describes the behaviour on migration of eagles.

A ringing station was established in Shandong in 1983.

The annual bird counts so widely and usefully held in various countries of the west is a practice urgently needed in China; there is a large force of potential observers among the students of biology faculties and institutes who could be enlisted to count birds of prey on migration.

6. Artificial Rearing

This has a long history in China, but has mostly been carried out in zoos, such as Beijing, Shanghai, Guangzhou, Xi'an and Taiyuan. Thirty different species have been reared in these zoos, but all eggs laid have been hatched in incubators.

Villagers in Sichuan, Gansu and Ningxia are in the habit of keeping trained Goshawks and Saker Falcons (*Falco cherrug*) and fly them against hares and birds damaging their crops.

7. Conservation

China is still one of the main countries exporting the feathers of birds of prey, chiefly to Japan and West Germany. In 1981 China adhered to the Convention on International Trade in Endangered Species of Wild Fauna & Flora (CITES). In 1988 a major conservation list was published of wild Chinese fauna and flora. Golden Eagle, Steller's Sea Eagle, Imperial Eagle, Pallas's Sea Eagle, White-tailed Eagle, India White-backed Vulture and Bearded Vulture were given full protection, whilst limited protection was given to other eagle species and hawks (*Accipitridae*).

In his article "Golden Eagle - a large Bird of Prey in Danger", Su Hualang (1988) reported a decline in numbers due to lack of prey, habitat changes, pollution and human disturbance. Limited data on raptor conservation are to be found in studies on population ecology. Out of eight refuge sites for birds in China, only one is concerned with birds of prey.

8. General

In Shanxi (1982), Hubei (1985), north-east China (Heilongjiang, Jiling, Liaoning) (1988) and Baotou of Neimongou (1988) the local raptors and

their regional distribution have been systematically described. Heilongjiang has been identified as an important breeding centre for birds of prey, whilst Jiling and Liaoning are "resting places" and "bottle-neck" sites for migrating raptors. North-east China is thus a vital area for breeding and migrating birds of prey, as the author can confirm from his own findings.

In 1982 Hou Lianhai (1984) discovered a new genus of vultures from some fossil remains in Xiacaswan Formation (Middle Miocene) of Sihong, Jiangsu; this represented a new genus, *Mioaegypius sui gen. et sp. nov.*, filling a gap in the chain of raptor fossils in China and the Eurasian continent, and providing fresh data on the evolution and geographical distribution of vultures.

"The Raptors of the World" has been published by the Shanghai Science & Technology Publishing Co., (1984), thus promoting the study and conservation of birds of prey in China.

On the other hand, reports of raptor studies in China tend to appear only in middle- or low-grade journals. There have been 16 articles in the "Chinese Journal of Zoology" however.

To summarize, the study of birds of prey in China is slight and given insufficient attention. Since 1987, no funds have been made available for special research. International aid from such bodies as the Worldwide Fund for Nature is therefore urgently needed if such studies are to develop and increase.

The following tasks need to be carried out:-

1. A census of all raptor species in China and their distribution.
2. The organisation of students and bird-lovers into regional groups to investigate the biology and ecology of their local species.
3. The popularising and publicising of ringing in furtherance of migration studies.
4. The establishment of refuge sites for birds of prey.
5. The promotion of captive breeding with regard to endangered species, with a view to increasing wild populations.

As regards methods, we need to record long-term data on environmental factors and to introduce the advanced technology employed by Western countries such as telemetry, radar, film and satellite tracking, so that the study of birds of prey and owls in China may enter a new and fruitful stage.

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Eurasian Black or Cinereous Vulture sunbathing and sheltering its young. Photo: B.-U. Meyburg