

The Pallid Harrier *Circus macrourus* as an Endangered Species in the Palaearctic

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INTRODUCTION

The following analysis is based on material collected by the authors in 1967-1990 in the steppe regions near the Caucasus and the Urals, down the lower and middle Don and between the Volga and the Don, together with publications and oral reports by fellow ornithologists.

The major part of the population and optimal breeding area for the Pallid Harrier are located in Eastern Europe and Northern Asia, although in some cases the species is reputed to invade North-west and Western Europe too. In the east the breeding area may spread a little further on into Mongolia.

Thus the general status of the Pallid Harrier is determined by its major population within the former USSR — in Russia, Ukraine and Kazakhstan.

RESULTS

Analysis of the collected data proves that the Pallid Harrier has practically vanished from south-east Europe, including the steppe regions in southern Ukraine, from the near Caucasus, down the lower and middle Don, to north-west of the Caspian Sea (Ivanov & Chunikhin 1959; Zubarovsky 1977; Kostin 1983; Melgunov *et al.* 1983, 1984; Vetrov 1986; our data). The species seems to have vanished from these places in the 1960s, apparently after the last stretches of virgin lands there were ploughed up. Now scattered nests have survived only along the northern border of the forest-steppe zone. (Eliseeva 1983; Strigunov 1984, 1987; our data). Separate pairs can spread to the south of the forest zone (Kuznetsov 1986; V.T. Afanasiev, pers. comm.; V.V. Frolov, pers. comm.).

Incidentally, the Pallid Harrier can be seen back in its former long-abandoned breeding areas during migration in places which abound in small rodents, as reported in 1988 from the middle Don (V.V. Vetrov, pers. comm.).

Regular breeding invasions outside the original area reported in the early 1950s in Western and North-west Europe (Formozov 1959) are, in our opinion, the result of a disastrous reduction in the number of such rodents as mice in the major part of the Pallid Harrier's breeding area. This is typical of those species whose food supply is unstable over the years.

In Northern Asia the Pallid Harrier breeds in the steppe regions of the near Urals (Davygora & Gavlyk 1980; Davygora 1981, 1985), but its numbers here are not great — 2.2 to 6.2 (on average) breeding pairs per 100 km².

In northern Kazakhstan (Naurzum Reserve) this harrier is now rare and fewer in number than Montagu's, *C. pygargus*. (E.A. Bragin pers.comm.; Pererva 1984). It is breeding in Central Kazakhstan, where its number is also much inferior to that of Montagu's Harrier (Krivicky 1983). The situation is similar in the Irtysh region at Pavlodar (Solomatin 1984).

The most recent decades have witnessed a decline in numbers to the south of Western Siberia — in Barabinsk steppe (Danilov 1976; Sagitov 1977). Farther to the east the Pallid Harrier spreads up the Minusinsk depression (Prokofev & Kustov 1988) but is extremely rare south of central Siberia (Kuchin 1976; Tsybulin & Bogomolov 1983; Neifeldt 1986; A.A. Baranov, pers.comm.).

The latest research has shown a greater dependence for breeding on mesophyllic biotopes — steppe brushwood, low-lying marshy lands and water meadows (Davygora 1986). Thus, out of 25 nests that we found in the steppe region of the near Urals, 24 (96%) were located in wetland biotopes along rivers and hollows in the steppe. One nest only (4%) was found away from water.

We have discovered a greater trophic dependence of the Pallid Harrier on birds than was previously considered, particularly when rodents are scarce or unattainable. This dependence, like the swing of a pendulum, increases automatically when rodents become scarce and *vice versa*. In this case it is typical of the Pallid Harrier in the steppe region of the near Urals to hunt for the young of passerines such as *Alauda arvensis* and *Melanocorypha leucoptera*, *Motacilla flava*, *Anthus campestris*, *Oenanthe oenanthe* and *Oenanthe isabellina*. This is done in an unusual manner, with the harrier like the Hobby forcing its prey to climb high enough for it to be caught in flight (Davygora 1985).

This method is more used during migration and on the wintering grounds than during the breeding season, at which time the prey become more varied at the expense of both sparrows and other larger birds. Thus a sharp increase of birds is reported in the harrier's diet during migration in south-east Kazakhstan (Selevin 1934), including Short-toed Lark *Calandrella cinerea*, *Alauda arvensis*, *Sylvia communis* and *Sylvia curruca* as well as *Vanellus vanellus*.

In Askania-Nova Reserve (Southern Ukraine) the Pallid Harrier was reported attacking flocks of doves (species unidentified) in autumn and winter (Sokolov 1928). It was also reported to attack Hooded Crows *Corvus cornix* in the sandy region between the Volga and the Ural (Chevchenko *et al.* 1978).

There are numerous reports from the western coast of the Caspian Sea (in Daghestan on the Samur estuary) on attempts by immature male harriers on migration to catch in flight small birds such as *Galerida cristata*, *Alauda arvensis*, *Calandrella cinerea*, *Anthus* sp. and *Emberiza schoeniclus* (V.T. Butiev, pers.comm.). According to the observers the harriers executed complicated aerial pirouettes in pursuit of their prey 2-5m above the ground. Considering the numerous prey remains of such birds their hunting proved quite successful.

Thus the Pallid Harrier is not the typical mouse-eater it is traditionally believed to be (Dementyev 1951; Cramp & Simmons 1980). Birds are equally an important element in its diet as the above data show.

The wing formation of the Pallid Harrier has some peculiarities due to its need to procure food in flight (Davygora 1986). Objectively speaking, it belongs among those birds of prey that profit by their speed of movement. It has rather short and pointed wings as compared to other harriers, with a high ratio between primaries and secondaries (1.41) and a wedgelike tail. Its high cardiac index (9.09) points to speed in regular flight.

All these features are especially typical of males. Their similarity to bird-eaters is justified by a comparatively high index (0.7) of sexual dimorphism overall, hence morphological features that bring Pallid Harriers and bird-eating falcons together.

DISCUSSION

The above data show that the Pallid Harrier has sharply declined in numbers while its breeding area has undergone great changes in the past 20-30 years. To-day its breeding range comprises three zones — an optimal zone (steppes, forest-steppe and semi-deserts in Eurasia), a zone of sporadic breeding (south of the forest zone in Europe and northern deserts in Kazakhstan), and a zone of incidental breeding invasions (northern and western Europe). The European part of the breeding area has undergone, as was to be expected, some major changes leading to the species'

disappearance from the south European steppes and its becoming infrequent in the northern steppe and forest-steppe. Separate pairs may nest to the south of the forest zone.

The Asian part of the breeding area has changed less. It is evident, however, that the species is declining here, whilst its sporadic presence in marginal zones is increasing, especially to the east. At the same time the Pallid Harrier is spreading south to inhabit the reeds by artesian wells in northern deserts east of the Caspian Sea.

The most numerous population is now located in the optimal zone of its Asian breeding area.

The question remains as to why the area of distribution and the number of individuals have grown smaller. This, in our view, can be answered in the following way.

1. Breeding conditions have deteriorated due to anthropogenic influence on their main breeding areas through clearance of the steppe brushwood (in the European part) and by the destruction of the vegetation of mesophyllic biotopes in the steppe hollows, low-lying water meadows and along streams and rivers by grazing cattle (Asian part).

Looking for better breeding places, the Pallid Harrier has to move farther into the forest-steppes and southern forest zones, promoted by a growing (over the last century) variety of open biotopes — forest clearings and clear-felled areas. This is more typical of the European part of the bird's breeding area, where the primary breeding biotopes have almost disappeared.

2. Feeding conditions have deteriorated also, since the number of common Field Mice - the main prey item in the breeding season - has dwindled. This has been brought about by the general degradation of the vegetation and drying up of the hollows and low-lying meadows — the habitual places for this rodent in summer.

3. The virgin terrain has been almost entirely ploughed up, and this has affected hunting conditions for this bird of prey. Cultivation has made it almost impossible for the harrier to hunt over high grass in which rodents become unattainable.

4. Finally, the Pallid Harrier can be over-sensitive to pesticides, due to a possibly greater contamination by them considering their feeding habits (with small rodents prevailing).

A drastic reduction in its habitat and numbers, as these conditions continue to deteriorate, causes great concern over the fate of this species, whose breeding area is almost entirely located within the former USSR. It is essential to devise a package of special measures to restore the population, one of the most essential being to census the present number of breeding pairs and to include it in the Red Data books of Russia, Ukraine and Kazakhstan.

REFERENCES

- CHEVCHENKO, V.L.E.I., GAVRILOV, V.A. NAGLOV, A.Y. FEDOSENKO & O.M. TATARINOVA 1978. Ob Ornitofaune Volzhsko-Uralskogo mezhdureshya (Khishchnye ptitsy i sovy), *Tr. In-t zool. AN KazSSR*. T. 38: 99-114.
- CRAMP, S. & K.E.L. SIMMONS 1980. *The Birds of the Western Palearctic*. Vol. 2. Oxford Univ. Press.
- DANILOV, O.N. 1976. Khishchnye ptitsy i sovy Baraby i Severnoi Kulundy. Novosibirsk. 158 pp.
- DAVYGORA, A.V. & E.V. GAVLYUK 1980. K biotopicheskomu raspredeleniyu khishchnykh ptits v usloviyakh stepnykh landshaftov Orenburgskoi oblasti. Oblastnaya konf. molodykh uchenykh VUZov: Tez. dokl. Orenburg: 32-34.
- DAVYGORA, A.V. 1981. Khishchnye ptitsy yuga Orenburgskoi oblasti. Ekologiya i okhrana ptits: 8 Vsesoyuz. ornitol. konf.: Tez. dokl. Kichinev: 66-67.
- DAVYGORA, A.V. 1985. Vidovoi sostav i chislennost khishchnykh ptits stepei yugo-zapadnogo Preduralya. Nauchnye osnovy okhr. prirody Urala i probl. ekolog. monitoringa: Tez. dokl. obl. konf. molodykh uchenykh i spetsialistov. Sverdlovsk: 15-16.
- DAVYGORA, A.V. 1985. K okhotnichemu povedeniyu lunei. *Ornitologiya*. Vyp. 20: 182-183.
- DAVYGORA, A.V. 1986. Morfo-ekologicheskii analiz lugovogo i stepnogo lunei v usloviyakh sovmeistnogo obitaniya. Izuchenie ptits SSSR, ikh okhrana i rats. ispolzovanie: Tez. dokl. 1-go s'ezda Vsesoyuz. ornitol. obsch-va i 9-i Vsesoyuz. ornitol. konf. Ch. 1: 184-186.
- DEMENTYEV, G.P. 1951. Otryad khishchnye ptitsy. *Pticy Sovetskogo Soyuza*. T. 1: 199-221.
- ELISEEVA, V.I. 1983. Izmenenie chislennosti khishchnykh ptits v Tsentralno-Chernozemnom zapovednike (TsChZ) za 20 let, Okhrana khishchnykh ptits. *M. Nauka* 45-49.

- FORMOZOV, A.N. 1981.** O dvizhenii i kolebanii granits rasprostraneniya mlekopitayushchikh i ptits. Problemy ekologii i geografii zhivotnykh. *Nauka*: 134-168.
- IVANOV, V.G. & S.P. CHUNIKHIN 1959.** K ekologii lunei (rod *Circus*) v usloviyakh Kabardino-Balkarii. Uch. zap. Kab.-Balk. gos. un-t. Vyp. 5. Seriya shk i biologicheskaya: 177-181.
- KOSTIN Y.V. 1983.** *Pticy Kryma. Nauka*. 240 pp.
- KRIVICKY, I.A. 1983.** Dnevnye khishchnye ptitsy stepnykh rayonov Tsentralnogo Kazakhstana. Kharkov, 58 pp.
- KUCHIN, A.P. 1976.** *Pticy Altaya*. Barnaul: Alt. kn. izd-vo, 231 pp.
- KUZNETSOV A.V. 1968.** Chislennost gnezdyashchikhsya khishchnykh ptits Kostromskoi nizmennosti Vsesoyuzn. sovesch. po probl. kadastra i ucheta zhivotnogo mira: Tez. dokl. Ch. 2: 324-325.
- MELGUNOV, I.L., A.N. KHOKHLOV & A.P. BICHEROV 1983.** Luni na Stavropol'e Ekologiya khishchnykh ptits: Mater. 1 sovesch. po ekol. i okhr. khishchnykh ptits. *Nauka* 1983: 83-86.
- MELGUNOV, I.L. & A.P. BICHEROV 1984.** Luni Tsentralnogo Predkavkaz'ya. Fauna Stavropol'ya. - Stavropol: 21-38.
- NEIFELDT, I.A. 1986.** Iz rezultatov ornitologicheskoi ekspeditsii na Yugo-Vostochnyi Altai. *Tr. Zool. in-t AN SSSR*: 7-43.
- PERERVA, V.I. 1984.** Ocenka vozdeistviya khishchnykh ptits na ornitofaunu. *Ornitologiya*. Vyp. 19: 68-74.
- PROKOFEV, S.M. & Y.I. KUSTOV 1988.** Redkie i ischezayushchie vidy ptits Khakasii i ikh okhrana. Redkie nazemnye pozvonochnye Sibiri. Novosibirsk: 180-185.
- SAGITOV, R.A. 1977.** Osobennosti gnezdovaniya massovykh vidov utok v rayone oz. Malyi Chan (Zap. Sibir), 7 Vsesoyuzn. ornitol. konf.: Tez. dokl. Ch. 1: 315-316.
- SELEVIN, V.A. 1934.** Nekotorye dannye k vyyasneniyu selskokhozyaistvennogo znacheniya khishchnykh ptits Yugo-Vostochnogo Kazakhstana. *Byull. Sredne-Aziatskii gos. un-t*: 79-90.
- SOKOLOV V. 1928.** Materialy k izucheniyu ornitofauny pervogo gosudarstvennogo stepnogo zapovednika Chapli. Visti Derzhavny stepovy zapovidnik "Chapli". T. 4: 27-68.
- SOLOMATINA A.O. 1984.** O gnezdovanii lunei v Pavlodarskom Priirtsye. Probl. region. ekol. zhivotnykh v tsikle zool. distsiplin pedvu-za: Tez. dok. 3 Vsesoyuz. konf. zoologov ped. in-tov: 155-157.
- STRIGUNOV, V.I. 1984.** Chislennost i territorialnoe raspredelenie khishchnykh ptits v lesostepi Ukrainy. Probl. region. ekol. zhivotnykh v tsikle zool. distsiplin pedvuza: Tez. dokl. 3 Vsesoyuz konf. zoologov ped. in-tov: 161-162.
- STRIGUNOV, V.I. 1987.** Khishchnye ptitsy lesostepi basseina Dnepra. Avtoref. diss... kand. biol. nauk. 25 pp.
- TSYBULIN, S.M. & I.N. BOGOMOLOV 1983.** Chislennost i raspredelenie khishchnykh ptits na Severnom Altae. Ekologiya khishchykh ptits: Mater. 1 sovesch. po ekol. i okhr. khishchnykh ptits. *Nauka*: 152-155.
- VETROV, V.V. 1986.** Territorialnoe raspredelenie i sovremennoe sostoyanie chislennosti khishchnykh ptits Vorochilovgradskoi oblasti. Izuchenie ptits SSSR, ikh okhrana i rats. ispolzovanie: Tez. dokl. 1-go s'ezda Vsesoyuz. ornitol. obsch.-va i 9-i Vsesoyuz. ornitol. konf. Ch. 1: 121-122.
- ZUBAROVSKY, V.M. 1977.** *Fauna Ukrainy*. T. 5. Pticy. Vyp. 2. Khishchnye ptitsy. Kiev: Naukova jumka.

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