The Egyptian Vulture *Neophron percnopterus* in the former USSR

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INTRODUCTION

The Egyptian Vulture is widespread along the south-western and southern borders of the former Soviet Union, now CIS, occurring in Moldavia, Ukraine, the Caucasian part of Russian, Armenia, Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Uzbekistan, Tadzhikistan and Kirgistan. Paradoxically, however, it is one of the least studied large birds of prey of the CIS avifauna.

METHODS

Whilst we collected data between 1973 and 1994 from all the above countries, including Kirgistan, the bulk of the material here presented derives from our own study of this species in Caucasia (Russia, Georgia, Armenia, Azerbaijan). During our investigations, we concentrated mainly on questions of distribution, movements, numbers and threats influencing population size in the different parts of the species' breeding range. In addition we used material from about fifty publications, together with unpublished reports by colleagues.

Although not our prime concern here, we also include a summary of our findings on some aspects of the species' ecology in view of the conspicuous lack of data in the literature, both past and present.

We found 48 nests in all, in Georgia (33), Azerbaijan (10), Armenia (3), Russia (1) and Turkmenistan (1). About 90 nesting territories were recorded in Caucasia, Khazakhstan and Tajikistan.

During our field work in Transcaucasia 15 clutches were measured and 83 breeding attempts studied and controlled. Pellets and food remains were collected from under all known nest sites during the breeding seasons. Observations

were made using 7x55, 8x50, 10x50 and 12x40 binoculars and 20x60 and 30x42 telescopes.

STATUS, DISTRIBUTION AND NUMBERS

The Egyptian Vulture's breeding range in the CIS comprises open, arid areas in foothill, upland, low and middle-mountain belts (Fig.1.). This is the northern limit of the breeding range, described country by country as follows:

Moldavia

In the late 19th and early 20th centuries, 12-15 nesting pairs were estimated in the NE part of the country. The birds nested on the precipitous banks of the rivers Dniester and Reut. But by mid-1970s no more than five pairs were left in Moldavia; 3 on the Dniester (Kamensky District) and 2 in the Reut river valley in its lower parts (Red Data Book of the Moldavian SSR 1978). Our data on the species' present status in Moldavia are unreliable but, judging from information received from Moldavian colleagues, it appears that today there survive only one or two pairs on the Reut.

Ukraine

In the past the Egyptian Vulture bred in two areas - on the cliffs of the Dniester river valley and on rocky cliffs in open, dry and largely treeless slopes in the SE part of the Crimea peninsula. On the Dniester the population declined sharply after the 1930s and by the beginning of the 1950s had practically disappeared. In the Crimea the last cases of nesting were recorded in 1957/58. Solitary birds and pairs were still observed there until 1965 (Puzanov 1933; Zubarovsky 1977; Red Data Book of Ukraine 1980; Kostin, Sulitsky & Mal'tsev 1981; Chopik, Sheherbak & Ardamaskaya 1988). Although no nests were discovered in the Crimea since the late 1950s, it is nevertheless possible that the species still bred there in subsequent years. Thus, in early August 1978 we repeatedly sighted two adults on the S and SE slopes of Mt. Demerdzhi. For the past 20 years the species has been classified as a rare, occasional vagrant in Ukraine; however, we do not exclude the possibility of sporadic nesting by solitary pairs as all the necessary conditions are still present there.

Russia

The total number for Russia is unknown. According to some, about 50 pairs breed here (Red Data Book of RSFSR 1983). In our opinion this estimate is somewhat low. According to other authors the number in N Caucasia is higher than that given in the foregoing reference. Thus, P Til'ba (1986, 1989, 1990) has discovered in Krashnodar Territory at least 4 pairs in the Caucasian Nature Reserves, 3 on the upper Bol'shaya Laba river and 2/3 in the Urup river valley, while 12 birds were recorded on 19 May 1989 not far from Psebai settlement. Thus at least 15 pairs are nesting in Krashnodar Territory.

In Stavropol Territory, according to A Khokhlov (1990) in Ust-Dzegutinsky region, there are 12-15 breeding pairs; in Predgornyi region at least 4 pairs; and tens of Egyptian Vultures have been recorded feeding on a garbage dump near Mozdok. In Northern Oestia 2 pairs were recorded in a nature reserve (Komarov 1985). We have no data on Kabarda-Balkaria, Ingushetia, Chechnya or Daghestan, but in these autonomous republics the Egyptian Vulture is more common than in W Caucasia. During our field studies in N Caucasia we discovered 4 nests and 11 nesting territories, while adult birds were recorded in twenty other localities. In all, we estimate 120-140 nesting pairs in N Caucasia.

Georgia

Here the species can be classed as an uncommon breeder, rare in the west and south, common in the east. It is distributed along the southern major slopes of the main Caucasian ridge and its spurs. On the Likhi ridge, on the northern slopes of the Diareti ridge, along the Kura, Alanzi, Iori and Kharmi river valleys, and on the Iori Plateau. During the last two decades, the population has been estimated at ca.150 breeding pairs. There were no essential changes in numbers during the study period (Abuladze 1979,1994).

Azerbaijan

The total number is unknown. According to our studies here (1975-1990), consultation with local specialists and analysis of available literature, we estimate up to 200 breeding pairs. Nests and nest sites are known on the southern macro slopes of the main Caucasian range and its southern spurs (Bambarov 1954; Patrikeev 1991), on Bozdag ridge (W Azerbaijan), in the N E part of Caucasia Minor, in Karabakh (Mustafaev & Gambarov 1977), in Kura Lowland and on Mt. Talysh massif (SE along the frontier with Iran).

Armenia

The Egyptian Vulture is almost generally distributed, but is more common in the northern, central and south-eastern parts of the country. Its range covers Bazum, Pambak, Sevan, Gegam, Vardenis, Zangezur Range and its spurs (Dal'1954; Geilikmann & Unanyan 1975), nesting in mountains up to 2000m a.s.l. The total number is unknown. According to our data, collected in 1975-77 and 1981-89 in different parts of the country, there are 40-50 pairs supposedly breeding.

Kazakhstan

The north-eastern border of the breeding range runs south of Kazakhstan and the Egyptian Vulture is rare here. It is known to nest in the S and SE of the country: throughout all the Karatau ridge in Kuzgurt area, on the foothills and low and middle mountain vertical belts of the following mountain-mass: Talas Alatau, Kyrghyxz Alatau, Kurdai, Chu-Ili, in W (Kendyktas) and E (Syugaty, Boguty) parts of Zaili Alatau, SW spurs (Chulak, Matai, Altynemel, Katutau) of Dzhugar Alatau, and also on rocks along Ili River valley, lower Kapchagai. Isolated nesting sites are known in W and NW Kazakhstan - on the Mangyshlak peninsula and on the precipices of the Ustyurt Plateau. Besides this, the Egyptian Vulture is quite often sighted northwards, in Central and Eastern Kazakhstan, close to Alakol' Lake, the Sarysu river valley and Markakol' Lake. It possibly nests here in small numbers but more probably these birds are regular nomads outside the northern border of the breeding range (Red Data Book of Kazakhstan 1978; Shnitnikov 1949; Korelov 1962). Numbers are not known, as no special census of Egyptian Vultures was ever conducted. In modern Kazakh ornithological literature we could not discover any estimates. Taking into account the huge territory of Kazakhstan (2.717.300km²) and the fact that about half of this area provides suitable habitat for Egyptian Vultures, at least 300 pairs breed in this country.

Turkmenistan

Egyptian Vultures can be classed as a common raptor (Rustamov 1958; Sukhinin 1960; Tashlev 1991), particularly in southern areas - Kopet-Dag Mountains, Badkhyz depression, along the Tedshen and Murgab river valleys, and also in the southern Hkara-Kum desert, and in the NW part of the country. Total numbers are unknown. However, taking into account the large areas of suitable habitat, as well as the high density of the species, it could be supposed that several hundred pairs breed there in total (certainly no less than 300 pairs)

Uzbekistan

The species is distributed in the NW, central and SE parts of the country. It is one of the commonest raptors in the foothills and low mountain regions of Tashkent, Fergana valley, ridges of the Pamiro-Alai such as Turkestan, Nuratau, Zataphshan, Gissar, Baisun, Kugitang, Babatag, and also in some small isolated montane areas in the Zaraphshan, Kashkadarja. Sherabad and Surkhandarja river valleys. Here the Egyptian Vulture is common, its numbers being estimated at not less than 500 breeding pairs (The birds of Uzbekistan 1987; data from local ornithologists).

Tadzhikistan

We have no exact data on the species' status in this country in recent decades. According to literature published in the mid-1980s, the Egyptian Vulture in Tajikistan in that period was rare, little observed and decreasing, especially in recent decades. Its number was estimated at 25-30 pairs (Red Data Book of the Tajik SSR 1983). However, in our opinion this estimate is somewhat low since no special study of the Egyptian Vulture was ever conducted here. It was recorded in lowland regions and foothills: in the western part of the Zerafshan valley, in the western part of the Gissar valley, on the

mountain ranges between Kafiringan and the Vakhsh river valley. It breeds in mountains up to 1800-2000m a.s.l., the distance between known breeding pairs ranging from 50 to 100km (Red Data Book of the Tajik SSR 1985; Ivanov 1940; Abdusalyamov 1971).

Kyrgyzstan

Published data on this region are lacking, but analysis of the literature indicates that the species is also rather widely distributed there, as in other Central Asian countries. Probably several hundred breeding pairs.

Thus, we can conclude, that on CIS territory (by the end of the 1980s and early 1990s) 3 Egyptian Vulture populations survived isolated from each other -in Moldavia, Caucasia and Kazakhstan in Central Asia (one further population still existed up to the 1960s in the Crimea peninsula). Their status is very variable; if the Moldavian had practically vanished, the Caucasian is in a considerably better situation: at least 450 pairs are breeding here. The species is most common in central Trancaucasia; E Georgia; W Azerbaijan and north-central Armenia. The situation is best in the Asian part of the CIS; while the total numbers in this region are unknown, it can be supposed that at least 1500 pairs are breeding here.

If urgent measures on the Moldavian population are not carried out, its history can be the same as the Ukrainian one. There were no essential changes in the Caucasian population's numbers during the last two decades. In our opinion, the most favourable times for the species lie in the past. Some elements of adaptation to new conditions are apparent; the birds have taken to nesting in inhabited environs, even in large towns (Tel'pov, Khokhlov & Bicherev, 1984). However, whereas the overall size of the population has remained relatively stable during our period, a decline is possible in some regions due to the involvement of Caucasian states and autonomous republics in armed conflicts: military operations in some districts of Karabakh, the environs of Gyandzha (Azerbaijan), areas along the frontier between Armenia and Azerbaijan, some districts in Georgia (South Oestia, Ablhazia) and along the frontier between North Oestia and Ingush Auton. Republic, and all the territory of Chechen Auton. Rep. (Russian Federation). Unfortunately, we have no concrete data regarding the impact on nature of military operations. Field work here is at present impossible.

In Kazakhstan in Central Asia the situation is the same as in Caucasia. There have been no negative changes in Egyptian Vulture populations during the last decades. The status in Tadjikitan can excite apprehension due to military operations, now into their 5th year. Comparison of results of our analysis with material published from the mid-19th century up to the 1970s shows that there has been virtually no change in the species' breeding range in Caucasia, Kazakhstan and Central Asia (Samsonov 1875; Kessler 1878; Mikhalovsky 1879; Radde 1884; Molchanov & Zarudyi 1914; Zarudyi & Bil'kevich 1918; Meklenburstev 1936a; 1936b; Invanov 1940; Lyaister & Sosnin 1944; wildlife of Azerbaijan 1951; Dement'yev, Kartashov & Soldatova 1953; Dal' 1954; Gambarov 1954; Rustamov 1958).

Spring and autumn passage of Egyptian Vultures on the Caucasian Isthmus is extensive. Birds usually fly in pairs or singly or more rarely in threes (in autumn parents with young). Only once, in October 14, 1994, near Batumi, a group of 5 adult birds was recorded. During censuses of migratory raptors near Batumi (Adjaria, SW Georgia), where a well-known 'bottle-neck' is situated, Egyptian Vultures during autumn migration formed from 0.24% to 0.66% of total raptor numbers.

Sometimes Egyptian Vultures stray to areas north of their breeding range. Such sightings have been recorded in the European part of Russia, near Lipetsk and Voronezh, in Bashkiria, in Ukraine near Poltava, in West Siberia - in Konda river valley and near Tary in Northern Prikaspiy on the lower Uil river and Ural river valley (Ivanov 1976; Dubanov & Troshchenko 1978; Saraev 1995; Koblink in press).

Some authors have indicated that Egyptian Vultures overwinter in the Crimea, Caucasus, and Central Asia. We consider these as inaccurate, although we do not exclude the possibility that some weak or wounded birds may winter in southern parts of Central Asia. In the Caucasus, during 20 years of studies, we never recorded Egyptian Vultures between 2 November and 27 February, and even these dates are the extreme for single birds. Usually, the first individuals appear in spring in the Transcaucasus in the second half of March - early April. Geilickman (1966) reported even later dates of arrival for Armenia, with first birds from the second half of March, and mass arrival in the middle of April.

Phenological Event	Extreme Dates	Average
Spring transmigration	Feb 21 - Apr 09	2nd half March
Arrival at Breeding Habitats	Mar 03 - Apr 10	3rd decade Mar - early Apr
Repair/Construction of Nests	Mar 16 - Apr 14	1st decade Apr (usually 5-7 days)
Copulation	Mar 19 - May 07	1st decade Apr (usually 5-7 days)
Egg Laying	Mar 19/22 - Apr 16/18	1st half April
Hatching of Young	May 01 - May 27	2nd decade May
Fledging of Young	Jun 10 - Jul 21 (1 case Aug 8)	end of June - 1st half July
Post-breeding Nomadism	Jul 28 - Oct 22	August - September
Autumn transmigration	Sep 06 - Nov 02	1st half October

Table 1. Some Phenological Data on the Egyptian Vulture in Caucasia

	Clutch	Size (mm)	
	Eggs	Length	Width	Weight (gr)
E Georgia, Kaspi District	1-1	66.8	48.0	86.3
	1-2	65.3	46.8	83.5
E Georgia, Gori District	2-1	70.0	48.4	-
	2-2	67.5	48.0	-
E Georgia, Iori Plateau	3-1	71.5	50.3	88.3
	3-2	68.0	47.2	81.8
W Azerbaijan, Bozdag Ridge	4-1	68.0	48.5	87.0
	4-2	64.3	48.0	83.0
NW Azerbaijan, Zakatala District	5-1	72.5	51.7	-
	5-2	71.3	50.0	-
E Georgia. Tblisi Environs	6-1	70.2	49.5	90.0
SE Georgia, Vashlovani Reserve	7-1	65.0	46.8	83.2
	7-2	63.5	46.5	82.0
E Georgia, near Rustavi	8-1	69.0	47.3	87.4
	8-2	60.0	46.8	81.5
W Azerbaijan, Turianchai Reserve	9-1	71.5	51.0	90.6
	9-2	65.2	50.0	85.3
E Georgia, Alazani River Valley	10-1	65.5	48.5	-
	10-2	64.0	47.5	-
N Armenia, Alverdi district Mt. Lalvar	11-1	68.0	48.2	87.5
	11-2	63.5	46.5	82.3
SE Georgia, Kharmi River Valley	12-1	70.0	49.8	-
	12-2	66.8	48.0	-
E Georgia, Tblisi Environs	13-1	67.5	47.5	84.8
E Georgia, Tziv-Gombori Ridge	14-1	68.3	47.0	85.0
	14-2	64.0	46.5	82.2
W Azerbaijan, near Kazakh	15-1	67.5	49.0	83.8
Min:		60.0	46.5	81.5
Max:		72.5	51.7	90.6
Average:		67.2	48.3	85.0
		(n=27)	(n=27)	(n=19)

Table 2. Size (mm) and Weight (gr) of Egyptian Vulture Eggs in Transcaucasia

BREEDING BIOLOGY IN THE CAUCASUS

Arrival at nesting habitats in Trans and North Caucasia has been recorded in the third week of March - 1st decade of April, with extremes of March 3 -April 10. Soon after arrival (1-3 days) the birds start to repair old nest sites or build new ones (2-7 days). All known nests were located in caves, niches or on ledges on vertical cliffs, rocks, canyons. Exposure of the niches was SE-31%, S-27%, SE-21%, E-15%, W-4%, NW-2%.

Copulation usually occurs only during repair or building of nests. However, we observed it later too, during incubation, and once even after hatching of nestlings.

Indices	78	79	80	81	82	83	89	90	91
Checked Territories	4	5	5	8	8	10	16	15	12
Occupied Territories (with eggs)	3	5	5	8	8	10	14	12	11
Territories with Eggs	3	5	4	7	6	9	14	12	11
Number of Successful Nestings	3	3	3	5	5	6	11	9	9
Percentage of Successful Nestings	75	60	75	71	83	67	79	75	82
Number of Young Capable of Flying	4	3	3	6	7	6	10	10	8
Number of Young Capable of Flying per Successful Nesting	1.3	1	1	1.2	1.4	1	0.9	1.1	0.9
Number of Young Capable of Flying per Established Nesting	1.3	0.6	0.8	0.9	1.1	0.7	0.7	0.8	0.7
Territories with No Activity	0	0	1	0	0	1	0	0	0
No Data	1	0	0	1	2	0	2	3	1

Table 3. Breeding Success of Egyptian Vulture in Transcaucasia

Years 1978-1983 and 1989-1991

Egg laying starts in the first half of April, more rarely at the end of March, the extreme dates being March 19 - April 18. A full clutch usually consists of two eggs, very rarely one. Out of 57 known clutches, 53 (about 92.1%) were of two eggs and only 4 (7.9%) were of one, the average clutch size being 1.93. We could collect material on size (27) and weight (19) of eggs from 15 clutches in Caucasia (Table 2). The breeding success and productivity of the Transcaucasian population (mostly in East Georgia) have been monitored from 1978 to 1983 and from 1989 to 1991. The total number of occupied territories controlled each breeding season ranged from 3 to 10 in 1976-83 (2 plots, 284km²) and from 11 to 14 in 1989-91 (3 plots, 681km²). The results of breeding success are presented in Table.3. In Central Transcaucasia the average of successful nestings was 74.08%. Average number of young capable of flying per occupied territory 1.09%, average number of young capable of flying per established nesting 0.84%. Many known pairs were unsuccessful, probably due to human disturbance during incubation. Food composition in the Transcaucasus shown in Table 4.

CONSERVATION

The species has been legally protected since the 1970s. It is included in the Red Data Books: of Moldavia (1978) as 'endangered'; of Ukraine (1980) as 'extinct; of the Russian Federation (1983) as 'very rare'; of Kazakhstan (1978) as 'rare'; of Tadzhikistan (1985) as 'rare'. In the second edition of the Red Data Book of Georgia, the species is listed as 'threatened'. This raptor also is included in the lists of protected species of Azerbaijan, Armenia, Uzbekistan, Turkmenistan and Kyrguzstan. In the legislation on nature

MAMMALS	Quantity	%
European Hare Lepus europaeus (young)	2	0.41
Hedgehog Erinaceus europaeus	1	0.20
Common Shrew Sorex spp	2	0.41
House Mouse Mus musculus	27	5.49
Wood Mouse spp. Apodemus sylvaticus	11	2.24
Mouse spp Mus & Apodemus	18	3.66
Brandt's Hamster Mesocricetus brandti	1	0.20
Grey Hamster Cricetulus migratorius	1	0.20
Hamster spp Cricelinae	3	0.01
Pine Vole Microtus majori	2 4	0.41
Common Vole Microtus arvalis	4	0.81
Social Vole Microtus socialis	47	9.55
Voles spp Microtinge	14	2.85
Norway or Brown Rat <i>Rattus norvegicus</i>	16	3.25
Rodent ssp <i>Rodentia</i>	28	5.69
Feral Cat	1	0.20
Totals	182	36.99
Totais.	102	30.77
BIRDS	_	
Chukar Alectoris chukar (chick)	2	0.41
Domestic Hen Gallus domesticus (chick)	2	0.41
Feral Pigeon Columba livia domestica	3	0.61
Scops Owl Otus scops	l	0.20
Common Swift Apus apus (chick)	l	0.20
House Martin <i>Delichon urbica</i> (chick)	5	1.02
Skylark Alauda arvensis	1	0.20
Larks ssp Alaualaae	2	0.01
Low Common Starting Sturnus Vilguris	2	0.41 0.20
Jay Garruius gianaarius Magnia Rica nica (chick)	3	0.20
Carrien Crow Corvus corone (chick)	1	0.01
Passerines snn	9	1.83
Tussernes spp	24	6.01
lotais:	34	0.91
REPTILES		
Mediterranean Turtle Testudo graeca	28	5.69
Caucasian Agama Agama caucasica	72	14.63
Grass-snake Ophisaurus apodus	9	1.83
Five-streaked Lizard Lacerta strigata	6	1.22
Rock Lizards Lacerta saxicola spp	10	2.03
Lizards <i>Lacertidae</i> spp	67	13.62
Caucasian Snake Elaphe hohenackeri	1	0.20
Rat Snakes (young) Coluber spp	_2	<u>0.41</u>
Totals:	195	39.63
AMPHIBIANS		
Lake Frog Rana radibunda	34	6.91
Iranian Wood Frog Rana macrocnemis	4	0.81
Frogs Ranidae spp	11	2.24
Totals:	49	9.96
Dead Fish Pisces spp	12	2.44
Large Insects Insecta spp	in 20 pellets	<u>4.07</u>
TOTAL	492	100.00

Table 4. Food Consumption by Egyptian Vulture in Transcaucasia

conservation and hunting, operating throughout the CIS, all birds of prey are under protection. Fines have been established for the killing of raptors. However, we know of no case of this regulation being adhered to.

The Egyptian Vulture, its nest sites, breeding and feeding habitats are protected in the following Game (G.R.) And Nature (N.R.) Reserves within the CIS (Nature Reserves of the USSR, 1987; 1990a; 1990b):

Moldavia Some years ago one nest was protected within Trebuzhany Nature Park (6,000ha).

Ukraine Yalta (14,589 ha), Crimea G.R. (42,962 ha).

Russia Caucasian (263,300 ha) Teberda (85,000 ha) Kabarda-Balkarian (74,000 ha) North Osetian (30,000 ha) Dagestan (19,600 ha) N.R. and in Guton G.R. (34,600 ha).

Georgia Vashlovani (8,034 ha) Algeti (6,000 ha) Lagodekhi (17,800 ha) Kazbegi (8,700 ha) Borjomi (18,000 ha) Akhmeta (16,297 ha) N.R. and in Gardabani (11,000 ha) Chachuna (31,400 ha) Kabali (6,500 ha) G.R. Two nests are known in the protected territory of Saguramo-Zedazeni Nature Park (c.60,000 ha), in the environs of Tblisi, and 1 nest in Tblisi Botanical Gardens.

Azerbaijan Zakatala (23,800 ha) Ilisu (9,345 ha) Ismaily (5,800 ha) Pirkuli (1,520 ha) Turianchai (12,634 ha) Shirvan (25,761 ha) Gobutan (4,400 ha) Karaijazy (4,855 ha) Gei-Gel' (6,739 ha) N.R.

Armenia Dilijan (28,000 ha) Shosrov (29,200 ha) Erebuni (89 ha) Shikakhokh (10,000 ha) N.R.

Kazakhstan Ustyrt (223,300 ha) Aksu-Dzhabagly (74,400 ha) N.R., Sarykamysh (210,400 ha) Shakhsenem (270,000 ha) G.R.

Turkmenistan Kopetdag (50,000 ha) Kaplankar (570,000 ha) Badkhyz (86,640 ha) Syurt-Khasardag (29,700 ha) N.R. and Maeno-Chaachen (75,000 ha) G.R.

Uzbekistan Nurata (22,135 ha) Kitab (5,378 ha) Gissar (76,890 ha) N.R.

Tadzhikistan Tigrovaya Balka (50,000 ha) N.R. Kyrgystan Naryn (19,060ha) N.R.

THREATS AND LIMITING FACTORS

Since 1973 we have known of 62 cases of adult mortality (24 in Georgia; 9 in Azerbaijan, 2 in Armenia, 8 in Northern Caucasia, I in Kazakhstan, 18 in Central Asia). These are summarized in Table 5. As can be seen, illegal shooting is the main cause of adult mortality. This is also the main cause of mortality in the other areas discussed (Red Data Book of Kazakhstan 1978 etc.,).

Table 5 Causes of Egyptian Vulture Mortality in CIS

	No.	%
Shooting	41	66.1
Deaths in traps and on poisoned baits	6	9.7
Poisoning by chemicals - mainly on garbage dumps	12	19.4
Loss on electric power lines	1	1.6
Reason unidentified	2	3.2
Total:	62	100.0

CONSERVATION MEASURES NEEDED

In our view, the general conservation measures required for different populations are the following:

Moldavia Urgent surveys of all remaining nests for adequate designation as protected sites.

Ukraine Undertaking of a special expedition in the area of probable breeding, i.e. the Crimea, Dniestr river valley; captive breeding with eventual reintroduction, for which purposes birds from CIS zoos could be used.

Russia National survey of sites in the Northern Caucasus, with further establishment of protected sites.

Georgia Continuation of the Action Plan for Raptor Research, carried out until 1990 by the Institute of Zoology. Recently after a three-year interval, this has again become possible.

Armenia Censuses in all known areas of breeding, and survey of new breeding sites. These works could be conducted within the already existing 'Birds of Armenia' project. Similar surveys need to be done in Azerbaijan.

Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan. National surveys and monitoring programmes.

Tadzhikistan Unfortunately in the current situation of military conflict, field studies are practically impossible. Questioning of local specialists could reveal the recent state of the species.

It is essential to renew and strengthen co-operation between all raptor specialists within the former USSR for the study and conservation of this species.

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