

Distribution, Migration and Wintering of the Rough-Legged Buzzard *Buteo lagopus* in Bulgaria

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ABSTRACT

The first birds come into Bulgaria at the beginning of October. The autumn migration is most noticeable during November (20.25% of recorded birds), a decline ensues during December, and they are most numerous during January (35.17%). The shift of birds into a northerly direction begins in February, ending on the 14th April. In Bulgaria and the neighbouring countries are found birds ringed in areas from Scandinavia to the Taymir peninsula, but most of them come from breeding territories further to the east. The East-Siberian subspecies *B.I. pallidus* has also been proved to winter in Bulgaria. The Rough-legged Buzzard is not protected yet in Bulgaria and is being hunted everywhere.

INTRODUCTION

The distribution, migration and wintering of the Rough-legged Buzzard in Bulgaria is a matter of some interest, since the southernmost wintering areas of this species in Europe are to be found here and in the neighbouring Balkan countries. Some publications several decades ago reported this bird of the tundra and northern forest zone to be a rare visitor to the Balkan Peninsula (Dementiev 1951). Later, Kishchinski (1982) gave the river Danube as the southern limit of its European wintering grounds. In fact, the bird is a regular visitor to Bulgaria and in some years winters there in sizeable numbers. It is rare in most regions in Greece and a winter visitor mainly to the north-eastern border of that country, along the lower reaches of the river Evros (Handrinos & Demetropoulos 1982). The bird is also a winter visitor to Turkey where the Black Sea coast, Western Anatolia and Central Plateau are visited by small numbers (OST Bird Report 1978).

There is no comprehensive survey of the distribution, migration and wintering of the Rough-legged Buzzard in Bulgaria, and only scant information is to be found in the literature.

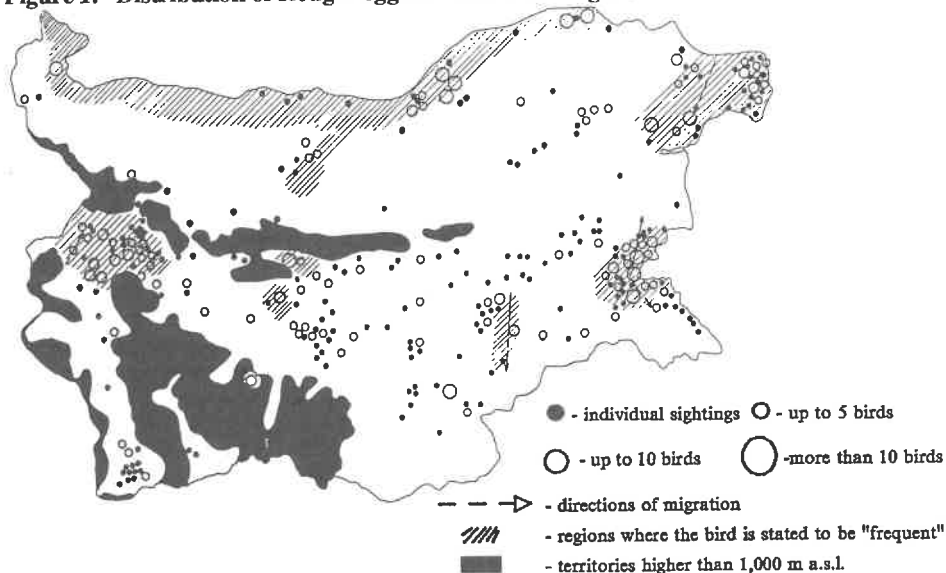
In this paper we have used both material collected during fieldwork and all facts known to us that have been published, together with unpublished data. We have in all a corpus of material about 1,052 Rough-legged Buzzards recorded on Bulgarian territory.

DISCUSSION

Judgements as to the species' distribution and numbers in Bulgaria are quite inconsistent: "a regular winter visitor" (Patev 1950); "visits in great numbers in cold winters" (Popov & Stoyanov 1962); "great numbers, especially in cold winters; if the winter is mild it stays north of the Danube and only single birds visit Bulgaria" (Peshev & Boev 1962).

As shown in Figure 1, the plains, valleys, hilly country and the mountain foothills are the haunts in Bulgaria of the Rough-legged Buzzard, which seldom occurs above 1,000m a.s.l.

Figure 1. Distribution of Rough-legged Buzzard in Bulgaria.

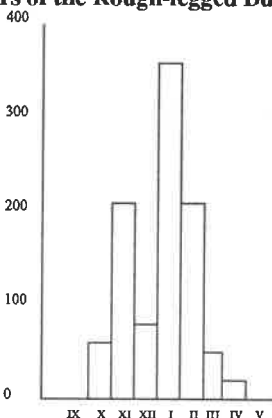


The first birds arrive in October, although Simeonov (1971) records one bird on September 16, 1965, near the village of Mousomishta in the Pirin Mountains. Earliest October appearances were on October 9, 1968, near the city of Rousse (Undjian & Braun 1984); October 10, 1984, near the village of Karloukovo; October 12, 1972, over the Aldomirtsi swamp (Nankinov 1981); and October 21, 1958, near Bourgas (Prostov 1964). In some years the birds arrive at the Black Sea coast much earlier and go farther south, e.g. the young buzzard collected by Count Amede Aleon in Turkey, at Demirci, on September 20/October 3, 1887 (Coll. du Musée d'Hist. Nat., Sophia 1907); on October 13, 1968, one Rough-legged Buzzard reached Lake Tuz in Asian Turkey (OST Bird Report 1972). In October the birds spread all over the country and make up 6.37% of the population recorded in Bulgaria (Fig. 2). We suppose that the October appearances in Bulgaria are not regular every year, and are related to sudden cold spells in Eastern Europe with cool air currents (occasionally the temperature is zero and below), heavy rainfall and occasional snow. The peak of the autumn migration wave is in November when 20.25% of the birds have been recorded with a subsequent decline in December (8.94%). A total of 90 Rough-legged Buzzards were recorded in early November 1975 in north-east Bulgaria alone; of these 70% were concentrated on a 150ha alfalfa field densely populated by Common Voles *Microtus arvalis*. The buzzards are most numerous in January (35.17%). Probably the heavy snowfalls and low temperatures are the reason for the great numbers flying from the northern regions to the Bulgarian wintering areas. The declining numbers in February (20.15%) can be interpreted in conflicting ways. In some years February is the coldest month with heaviest snow cover and the birds migrate further south to Greece and Turkey, where conditions are milder. Usually however, in February the birds begin to return gradually to their nesting areas in the north. Some authors link the slow northward movement with the melting of the snow and the reanimation of rodents (Dementiev 1951). The spring

migration is usually in March and April. The birds observed during those months make up 5.99% and 3.14% respectively. The spring migration along the Black Sea coast is prominent. Prostov (1964) writes that the spring passage at Bourgas starts around March 10 and ends around March 20-25 (once on April 7, 1952) and is most intensive between March 14 and 17. We have recorded migrating birds also in West Bulgaria on March 29, 1973, over the village of Rebro (Trun district) and near the town of Breznik. The buzzards stay in Bulgaria till April 14 (Undjian & Braun 1984) though some non-breeders remain even in summer. One bird was seen in July, 1959, in Greece (Bauer *et al.* 1969). The Rough-legged Buzzards may appear on the migration route and wintering grounds even in summer or as a result of a sudden absence of rodents in the breeding areas. After such a depression of rodents some individuals remain on the wintering grounds even during the following summer (Dementiev 1951).

All over Bulgaria the Rough-legged Buzzard population is very variable (Fig. 2), depending on the availability of rodents and the winter conditions. There exists a close relation between an increased buzzard population (winters of 1974, 1977, 1980 and 1983) and abundance of the Common Vole. The Rough-legged Buzzard visits the banks of the Danube and adjacent regions in great numbers (Paspaleva-Antonova 1961), north-east Bulgaria (Petrov & Zlatanov 1955), Pleven, Sofia, Karlovo and Bourgas districts and the valley of the river Toundja (Fig. 1). Those regions coincide largely with the zones where rodents appear in great numbers every three years, and in the Danubian Plain and Dobroudja where they appear every two to six years (Straka & Gerasimov 1977). The Rough-legged Buzzard has not been recorded in many places in the Danubian Plain, where a mass appearance of the Common Vole has not been recorded either. Thus it is established to some degree in all suitable biotopes throughout the country where food is abundant in the shape of colonies of rodents and concentrations of wintering birds. In a cold winter the birds move to the suburbs of cities (Nankinov 1982).

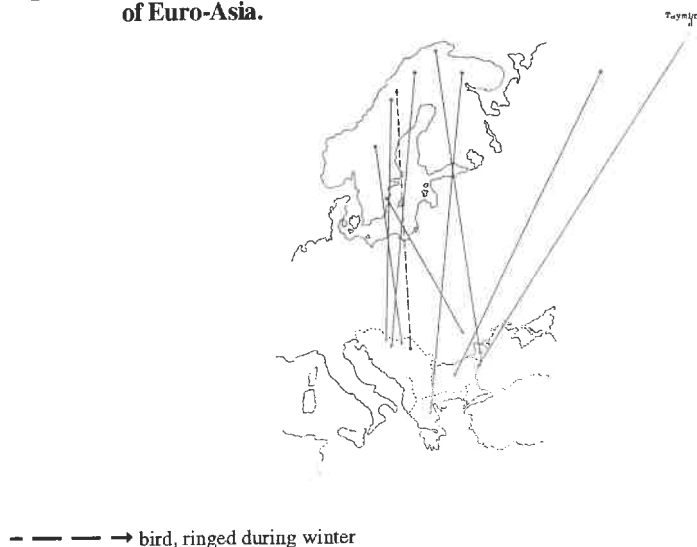
Figure 2. Dynamics in the numbers of the Rough-legged Buzzard in Bulgaria (n = 1052).



Some authors (Scott 1978) explain the greater Rough-legged Buzzard populations in wintering areas in Western Europe by a redistribution of the species' migration routes in a specific year, in addition to the overpopulation of rodents and the chilly winter. The Western Black Sea coast, via which the bird regularly flies in spring and autumn, is the main route to the Balkan wintering areas.

Ringed birds so far recovered (Plancic 1932; Kroneisl 1948; Nordström 1963; Stromar 1968; Dontschev 1976; Nankinov *et al.* 1986) show that Bulgaria and the neighbouring Balkan countries form the migration route and wintering area of Rough-legged Buzzards that have been hatched in the northern regions of Scandinavia and Russia, as far east as the Taymyr Peninsula (Fig. 3). Birds from Swedish Lapland have been found in Northern Yugoslavia; from Finland in Romanian Dobroudja; from Komi in inland Bulgaria; and from Taymyr along the Bulgarian Black Sea coast. It is interesting that these encounters have been mainly in February and March. A Rough-legged Buzzard ringed in winter in the Balkans has been found nesting in Lapland. The direction of the autumn migration of those birds is from north to south and from north-east to south-west. The distance between the breeding and wintering areas is 2,196-5,000km. The wintering areas of the Scandinavian Rough-legged Buzzard populations are along the Baltic coast and in Central Europe.

Figure 3. Sightings in the Balkans of Rough-legged Buzzard ringed in the northern regions of Euro-Asia.



In December, January and February the birds do not fly farther south than Czechoslovakia (Glutz *et al.* 1989). According to A. Kishchinski (1982) two populations are found in the Scandinavian Peninsula: a southern (65° N) and a northern (Laplandish) population which flies southwards as late as October and November. The wintering areas of the two populations are in Central Europe, seldom south of the Carpathian Mountains, but individual birds may reach as far as the river Danube. We may assume therefore that the majority of Rough-legged Buzzards wintering in Bulgaria come from nesting areas farther east via Eastern Europe. The species is well represented in the Ukraine and the Crimean Peninsula during migration, and in numbers greater in autumn. The winter migration in Poltava and Kiev regions and in the Crimea starts respectively around September 23, 26 and 28 and the *en masse* flight of parties of 8-12 birds has been recorded in early November near Kharkov and Cherkassy (Zubarovski 1977; Kostin 1983). The wide dispersion and exchange of individuals between the populations of this species is a common phenomenon. Very often birds return to one and the same wintering area. It is believed that attachment to the wintering area is stronger than attachment to the nesting site (Kishchinski 1982).

Most of the Rough-legged Buzzards wintering in Bulgaria belong to the European subspecies *Buteo lagopus*, breeding between the Scandinavian Peninsula and the valley of the river Yenisey. In cold winters, however, east Siberian birds *B. l. pallidus* arrive in Bulgaria and the neighbouring countries. These inhabit regions east of the Yenisey and have brighter plumage (especially on the back and belly), as do some transitional forms between the two subspecies. Rough-legged Buzzards with pale plumage have been observed many times in the proximity of Lake Atanasovsko, near General Toshevo, Varna, Topolovgrad, Yambol and elsewhere. Apart from visual observations a bird ringed in Taymyr (Fig. 4) and recovered near Kavarna, a town in north-east Bulgaria (February 25, 1961) is evidence of the presence of the east Siberian buzzards. Observations of ringed east Siberian Rough-legged Buzzards show that the autumn migration route of many of them is in a south-west direction, to Central Asia, the Caspian Depression, the Southern Ukraine and the Balkans. The passage of the buzzards is clearly visible in the valleys of the rivers Ural and Emba (Korelov 1962), from where some of the east Siberian birds probably move south-west. A Rough-legged Buzzard found in the Northern Black Sea Plain was ringed in North Yakutiya, at the mouth of the river Indigirka (150° E) (Kishchinski 1982). The straight line distance covered by this bird from the nesting site to the wintering area is about 6,200km. Bright-coloured individuals have been observed during passage and wintering in the Volga Region, the Caucasus, along the shore of the Sea of Azov, in the Crimean Peninsula, Romania and other regions in Eastern Europe (Dementiev 1951; Paskonschi & Manolache 1971). To the west they reach as far as Poland, Czechoslovakia, Austria, Hungary (Glutz *et al.* 1989) and Germany (Eck & Feiler 1973). They

were also observed in January 1932 near Thessaloniki in Greece (Kattinger 1934).

In the past and to-day Bulgarian ornithological literature describes the nutrition of the Rough-legged Buzzard in terms of generalities, e.g. "it attacks partridge, pheasant, duck, hare etc. and causes serious damage on hunting grounds" (Arabadjiev 1962; Popov & Stoyanov 1962). A. Prostov (1964) was more specific: he found remains of Partridge *Perdix perdix*, Teal *Anas crecca* and Common Vole *Microtus arvalis* in the stomachs of three Rough-legged Buzzards. Simeonov and Petrov (1980), who examined the stomachs of 54 Rough-legged Buzzards, found that 53.09% of the food was birds (18 species altogether), 36.42% was mammals, 5.55% was reptiles, 3.09% amphibians and 1.85% fish. However, visual observations show that the main places where the buzzards remain to winter are closely linked with colonies of the Common Vole. Usually these are alfalfa plots, meadows, rice and cornfields and fallow land where the buzzards fly low, hover like the Kestrel *Falco tinnunculus*, or watch for prey from a post or tree or by the holes of rodents. On arrival the buzzards first swallow the rodents whole. Later, depending on whether still hungry, they skin the voles and eat the flesh. In a colony supplying food for 70 Rough-legged Buzzards we found 20 fresh skins around the holes of rodents. It appears that birds make up the greater portion of the species' diet only in a winter with much snow and frost, usually short and infrequent in Bulgaria. In such weather some buzzards die of starvation since they cannot catch mice. A future survey will give a more exact description. Surveys in other countries show that rodents in general and the Common Vole in particular form the bulk of the Rough-legged Buzzard's diet; in Alaska small rodents vary between 62% and 78% (Springer 1975). Observations at the nest sites in Sweden, together with analysis of prey remains, show that 80-90% of the prey are small rodents (of which the Common Vole constitutes 50%) and birds 10-20%. A pair of Rough-legged Buzzards will fetch about 500 rodents to feed their brood. Only in years when rodents are scarce are birds the main food (70%) (Pasanen 1972). Small mammals account for 88% and birds for 11% in Norway (Ferguson-Lees 1968); in Kazakhstan rodents account for 76.8%, whilst birds and fish are few (Gusev & Chueva, 1951); in the Ukraine the Common Vole makes up 73.3% of the diet (Zubarovski 1977).

Scant information about the food of the Rough-legged Buzzard in Bulgaria is one of the reasons for misinterpretation of the bird's role in the biocoenoses and its severe persecution. No record is kept of the times it is shot. In 1960-1969 alone the Bulgarian Union of Hunters and Anglers was "successful" in the war against raptors: 458,118 accipiters, buteos and falcons (Ruskov & Kolev 1971). Some 50,000 birds were killed every year; in 1960 the number was 80,794. No doubt these figures include great numbers of Rough-legged Buzzard, for the bird visits Bulgaria during the hunting season. Despite the protective measures taken in various countries, 25-30% of Rough-legged Buzzards are shot by the end of the first winter and another 25-30% die from other causes (Kishchinski 1982). A great number were destroyed in the winter 1988/89 when, despite the protests of research workers, rodents were poisoned throughout the country with zinc phosphite, rodentin, azodrin, etc.

The Rough-legged Buzzard is the only raptor excluded from the Bulgarian Protection of Wildlife Act, setting a precedent with disastrous consequences for Bulgarian avifauna in general. Unawareness of nature protection laws and inefficient control have led some hunters to shoot down other protected species together with it, even species in the Bulgarian Red Book. The Rough-legged Buzzard is a bird that Bulgaria needs; its autumn and winter gatherings (together with other raptors) could help detect the Common Vole colonies at an early stage (Nankinov 1978), and location of such colonies in their winter biotopes (meadows) before they spread into cultivated areas makes possible timely and efficient suppression of rodents before their expansion, and the saving of enormous sums of money.

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