

# Raptor Migration as a Conservation Opportunity: First Full-season Migration Counts in South-east Romania

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## ABSTRACT

Although there are five recognised raptor migration watchsites in Romania, data from these are based on sporadic count efforts. At least one of the watchsites, Dobrogea, which is in south-eastern Romania, between the Danube and the Black Sea coast, is along a major migration corridor for northern European and western Asian migrants. Recent counts made by volunteers and staff of the Association for Bird and Nature Protection 'Milvus Group' suggested that migration might be more substantial than presumed. In 2002 we conducted a two-month migration count in this region at Macin. Hourly records include weather conditions and numbers of migrants. 10,663 birds of 26 species were recorded, including nine complete and 17 partial migrants. Four threatened species migrated at the site: Eastern Imperial Eagle *Aquila heliaca*, Greater Spotted Eagle *Aquila clanga*, White-tailed Sea Eagle *Haliaeetus albicilla* and Pallid Harrier *Circus macrourus*. The flagship species of the site is the Steppe Buzzard *Buteo b. vulpinus* (5,463 individuals, 2,483-max. one-day count on 8 Oct.) In this paper we present the results of the counts made in September-October 2002 and conclusions based on analysis of these data.

## INTRODUCTION

All 38 European breeding raptor species engage in seasonal movements between their breeding and non-breeding grounds. Monitoring numbers of raptors at migration watchsites is of special importance, particularly when counts are conducted in conjunction with those at other watchsites (Porter & Beaman 1985; Bildstein 2001).

Although there are five recognized raptor migration watchsites in Romania, (Zalles and Bildstein 2000) data from these are based on sporadic count efforts.

At least one of them, Dobrogea, which is in south-eastern Romania, between the Danube and the Black Sea coast, is along a major migration corridor for northern European and western Asian migrants.

The Macin watchsite, 28 11'E and 45 15'N, is situated in the hilly area of North Dobrogea. For the first time in Romania the Association for Bird and Nature Protection 'Milvus Group' conducted here a season-long raptor migration count, during September and October 2002.

In this first year of study our main objective was to find the best vantage point for counting, and to develop cost-effective data collection methods that will ensure the long-term efficiency of this project.

## STUDY AREA AND METHODS

Parallel peaks in a NW-SE direction form the Macin Mountains north of Dobrogea. We used only one count point, the Macin Lookout, situated 344m above sea level. Raptors pass over the watchsite in a south and south-easterly direction, but weather conditions can cause the stream to change course.

We covered the period between 1 September and 29<sup>th</sup> October, 2002. On days with bad weather, such as heavy rain and fog, when migration is practically non-existent in the area, counts were cancelled. Observations usually started at 7 a.m. and continued as long as any migrating raptors were seen. During the season these were adjusted according to the migration pattern, but the interval between 9 a.m. and 4 p.m. was covered throughout the study period. A minimum of two observers was always present at the countpoint. We used standard datasheets, recording the weather condition (visibility, wind direction and intensity, air temperature and sky cover) and migration details (species, number of individuals or flock sizes and species association, time of sighting, flight altitude and direction). Because at the beginning of the counts there were a number of resident birds in the area, only individuals or groups of birds with migrating behaviour were recorded. For identifying species we used binoculars 10x50 and wide-angle telescopes 30x60. In every possible case birds were aged and sexed (Forsman 1999).

## RESULTS AND DISCUSSION

It is impossible to observe all migrants passing the Macin area. For this reason our main objective was not to count each and every individual but to find the best vantage point for counting and to develop cost-effective data collection methods that will ensure the long-term efficiency of this project.

In this paper we present only the results of the counts made at the Macin Lookout in September-October 2002 and conclusions based on analysis of these data. Twenty-four volunteers took part in this project, covering 59 days of fieldwork, with a total of 1,824 hours of observation.

10,663 raptors of 26 species were recorded. In Table 1 we present the number of migrants observed by species. Although at the beginning of the counts there were some resident individuals, all of these migrated later in the season, affecting only the migration dynamics, not the total number of migrants.

**Table 1 – Number of birds observed by species at the Macin Lookout in September - October 2002**

<b>Species</b>	<b>Number Counted</b>
<i>Pernis apivorus</i> *	1503
<i>Pandion haliaetus</i> *	9
<i>Milvus migrans</i>	11
<i>Circaetus gallicus</i> *	78
<i>Haliaeetus albicilla</i>	8
<i>Accipiter gentiles</i>	23
<i>Accipiter nisus</i>	514
<i>Accipiter brevipes</i>	16
<i>Circus aeroginosus</i>	675
<i>Circus cyaneus</i>	40
<i>Circus macrourus</i>	19
<i>Circus pygargus</i> *	36
<i>Circus pyg/mac</i>	7
<i>Buteo buteo</i>	651
<i>Buteo b. vulpinus</i>	5463
<i>Buteo rufinus</i>	62
<i>Buteo lagopus</i> *	7
<i>Buteo sp.</i>	2
<i>Aquila pomarina</i> *	1239
<i>Aquila clanga</i> *	4
<i>Aquila pom/cla</i>	2
<i>Aquila nipalensis</i>	1
<i>Aquila heliaca</i>	2
<i>Aquila hel/chr</i>	1
<i>Hieraetus pennatus</i>	45
<i>Falco tinnunculus</i>	53
<i>Falco vespetinus</i> *	22
<i>Falco subbuteo</i> *	90
<i>Falco columbarius</i>	6
<i>Falco cherrug</i>	3
<i>Falco peregrinus</i>	5
<i>Rapaces sp.</i>	66
<b>Total</b>	<b>10663</b>

\* Complete migrants

Re-counting of the migrating raptors is not a problem at the site. Wind conditions sometimes displace the birds from their general direction but we did not record any returning raptors. Although late arriving birds roosted in the forest situated south-east of the watchpoint, this did not influence the next day's numbers and we can be confident that the numbers counted at the Macin Lookout represent the effective number of migrating raptors. Sometimes migrants such as the Western Honey Buzzard *Pernis apivorus* will fly at a considerable height while at the same time other raptors like Eurasian Sparrowhawk *Accipiter nisus* and Western Marsh Harrier *Circus aeroginosus* can pass at low altitudes, even below the watchpoint.

We think that weather conditions greatly influence the number of migrants. When locally the weather was unsuitable (strong wind, mist, fog and rain),

birds could shift their migration route and follow other mountain ridges. We therefore think that more data from the following years are needed in order to draw the right conclusions.

In Table 2 we present the number of migrating raptors at each time interval. According to the migration pattern the daily observation period was modified throughout the season. However, the interval between 9 a.m. and 4 p.m. was covered throughout the study period, except on days when observation was cancelled due to weather conditions.

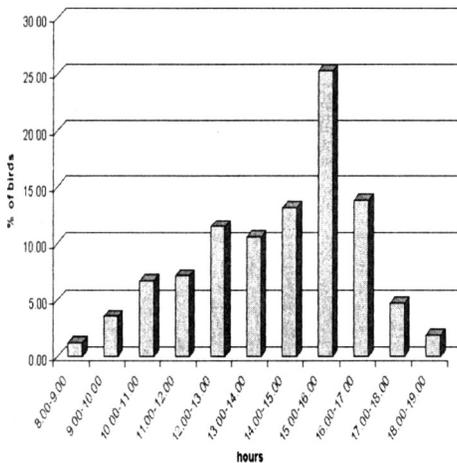
**Table 2 –Raptors counted at each time interval at the Macin Lookout in September - October 2002**

Species	8-9h	9-10h	10-11h	11-12h	12-13h	13-14h	14-15h	15-16h	16-17h	17-18h	19-20h	Total
<i>Pernis anivorus</i>	6	17	36	64	165	263	291	148	330	76	107	1503
<i>Pandion haliaetus</i>	1	2	0	1	1	0	1	1	1	1	0	9
<i>Milvus migrans</i>	1	0	2	1	0	0	3	2	0	0	2	11
<i>Circus gallicus</i>	1	5	11	5	4	5	6	9	20	10	2	78
<i>Haliaeetus albicilla</i>	0	0	1	0	1	2	2	1	0	1	0	8
<i>Accipiter gentilis</i>	0	0	3	4	7	2	1	2	4	0	0	23
<i>Accipiter nisus</i>	2	28	65	79	92	66	60	68	31	19	4	514
<i>Accipiter brevipes</i>	0	3	6	0	0	0	1	0	0	6	0	16
<i>Circus aeruginosus</i>	55	61	73	82	88	31	65	47	46	50	77	675
<i>Circus cyaneus</i>	4	2	10	3	7	3	4	7	0	0	0	40
<i>Circus macrourus</i>	1	1	1	2	0	2	1	6	2	2	1	19
<i>Circus pygargus</i>	7	2	7	1	8	1	1	2	2	2	3	36
<i>Buteo buteo</i>	52	223	339	374	695	553	729	2121	758	270	0	6114
<i>Buteo rufinus</i>	0	2	11	7	11	6	8	7	7	3	0	62
<i>Buteo lagopus</i>	0	0	1	0	1	2	0	2	1	0	0	7
<i>Aquila pomarina</i>	1	19	134	118	109	159	191	243	215	45	5	1239
<i>Aquila clanga</i>	0	0	1	1	1	1	0	0	0	0	0	4
<i>Aquila nipalensis</i>	0	0	0	0	0	0	1	0	0	0	0	1
<i>Aquila heliaca</i>	0	0	0	0	1	1	0	0	0	0	0	2
<i>Hieraetus pennatus</i>	0	4	7	4	1	6	6	4	8	4	1	45
<i>Falco tinnunculus</i>	0	5	4	6	7	8	7	10	3	3	0	53
<i>Falco vespertinus</i>	1	2	3	1	2	1	6	0	4	2	0	22
<i>Falco subbuteo</i>	0	4	5	6	13	9	13	18	14	7	1	90
<i>Falco columbarius</i>	0	1	0	0	4	0	0	0	0	1	0	6
<i>Falco cherrug</i>	0	0	0	0	0	0	1	1	0	1	0	3
<i>Falco peregrinus</i>	0	0	0	0	0	1	0	2	1	0	1	5
<i>Circus pygmac</i>	0	1	3	1	1	0	0	0	0	1	0	7
<i>Aquila pom/cla</i>	0	0	0	1	0	0	0	0	1	0	0	2
<i>Aquila hel/chr</i>	0	0	1	0	0	0	0	0	0	0	0	1
<i>Buteo sp.</i>	0	0	0	0	0	0	2	0	0	0	0	2
<i>Rapaces sp.</i>	0	0	3	6	6	14	4	3	23	7	0	66
<b>Total</b>	<b>131</b>	<b>383</b>	<b>726</b>	<b>768</b>	<b>1225</b>	<b>1135</b>	<b>1405</b>	<b>2704</b>	<b>1471</b>	<b>511</b>	<b>204</b>	<b>10663</b>

Figure 1 shows that the most intensive migrating period at the site is from 2 p.m. – 6 p.m. More that 50% of the total migrants passed at this time. The number of birds gradually builds up during the day and fades out quite rapidly. The big difference visible in the hour between 3 and 4 p.m. is connected with the massive migrating groups of Steppe Buzzard *Buteo b. vulpinus*, although the species' migration is spread throughout the day. The Western Honey Buzzard seems to prefer a more specific time of day, numbers building up in the morning, peaking between 1 and 5 p.m.. The migration fades out slowly, many individuals or smaller groups being observed at late hours looking for a roosting place. The Sparrowhawk is distributed throughout the day but the migration rate somehow contrasts with the general pattern. The preferred time of day is between 9 a.m. and 1 p.m., after which numbers constantly decrease. The Western Marsh Harrier is constantly distributed throughout the day but prefers the morning and late afternoon. Migration is really intense right from

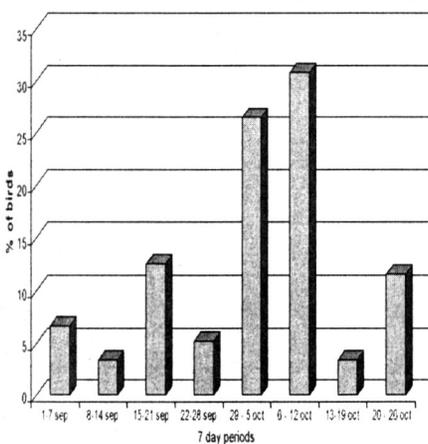
the first hours and goes on until late afternoon, with a lull around 1 p.m.. The rate shows a double peak, around 12 noon and 6 p.m.. Like other soaring species (Kerlinger 1989), the Lesser Spotted Eagle *Aquila pomarina* shows the same pattern. Numbers build up from 9 a.m. and the migration terminates rather suddenly after 5 p.m.. The peak period for the species' migration is between 2 and 5 p.m..

**Figure 1. Migration rate for all the raptors counted at the Macin Lookout during September – October 2002 (n=10663)**



To analyse the migration pattern of the raptors counted we grouped the data in seven-day periods. We managed to cover September and October, the major migration period, but it seems that counts need to be started in mid-August at least. The general pattern is presented in Figure 2.

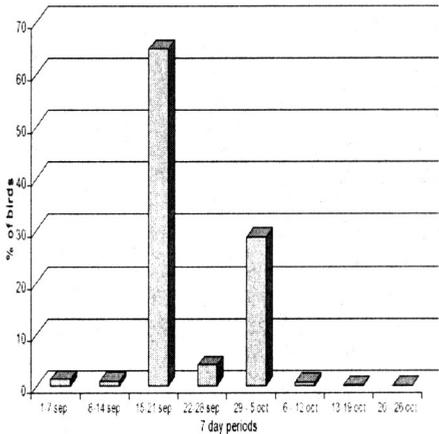
**Figure 2 . Migration pattern for all the raptors counted at the Macin Lookout during September – October 2002 (n=10651)**



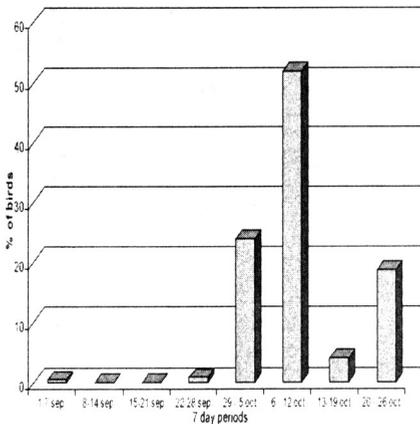
The peak of the migration coincides with the peak of the Steppe Buzzard at the beginning of October, this species representing more than 50% of the total number of migrants. Analysing the Western Honey Buzzard we realised that the migration of this species at the Macin Lookout probably begins before September because numbers were high right at the beginning and the migration

continued until the end of that month, when it suddenly terminated. The Sparrowhawk is present during the whole season; numbers peaking in the second half of September up to the beginning of October. In the second half of October numbers decreased and at the end of the month migration was practically non-existent. The peak migration of the Western Marsh Harrier was in the first week of September and numbers were relatively constant throughout the month. It seems that the counts need to be started at least two weeks earlier in order to get a relevant picture of this species' migration at the site. The Lesser Spotted Eagle passed over the site in large groups over a short period of time. In practice, the migration of this species shows a double peak: in mid- and late September.

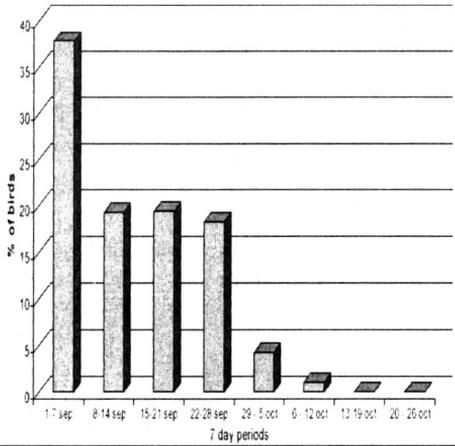
**Figure 3. Migration pattern for *Aquila pomarina* (n=1239) at the Macin Lookout during September – October 2002**



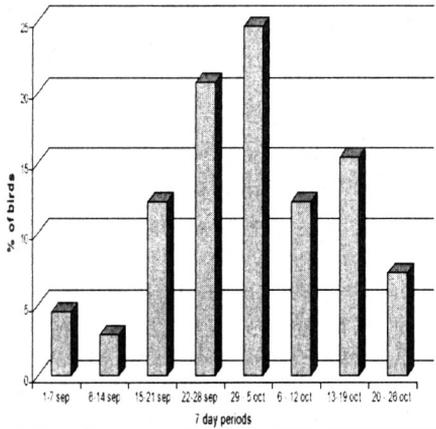
**Figure 4. Migration pattern for *Buteo buteo* (n=6109) at the Macin Lookout during September – October 2002**



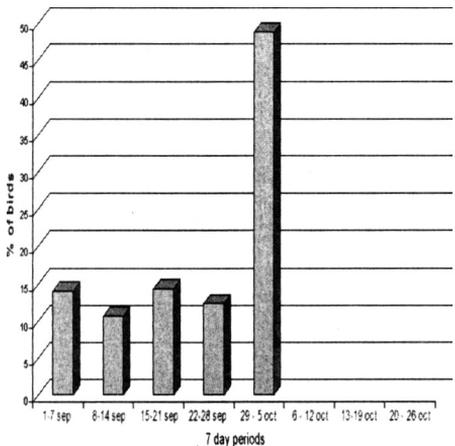
**Figure 5. Migration pattern for *Circus aeruginosus* (n=675) at the Macin Lookout during September – October 2002**



**Figure 6. Migration pattern for *Accipiter nisus* (n=512) at the Macin Lookout during September – October 2002**



**Figure 7. Migration pattern for *Pernis apivorus* (n=1503) at the Macin Lookout during September – October 2002**



## CONCLUSIONS

Migration studies must be planned as long-term projects because conclusions or conservation measures, based on analysis of the collected data, are viable only if a database from many years is available. In this first year of study we ascertained both positive and negative aspects of the migration at the Macin Lookout. It was a good opportunity to identify all the difficulties and to develop data collection methods that will ensure the long-term efficiency of this project.

At the same time a better relation with local authorities could help to improve the work conditions at the watchsite. Sustained effort is also required to maintain contact with local schools and NGOs, to educate and promote awareness of the migration and need for conservation. We hope to continue our work in the coming years, to contribute to the better understanding of raptor migration and to include the Macin watchsite in the regional, and why not global?, network of raptor studies.

## REFERENCES

- Bildstein, K. L. 2001.** Why migratory birds of prey make great biological indicators, Hawkwatching in the Americas. *In: K.L. Bildstein & Kelm (Eds.) Hawkwatching in Americas* . Pp. 169-179. Hawk Migration Association of N. America, North Wales, Pennsylvania, USA.
- Forsman, D. 1999.** The Raptors of Europe and the Middle East: a handbook of field identification. T & A D Poyser, London, England
- Kerlinger, P. 1989.** Flight Strategies of Migrating Hawks. The University of Chicago Press, Chicago, USA
- Porter, R. F & A.S. Beaman 1985.** A resume of raptor migration in Europe and the Middle East. *In: I. Newton & R.D. Chancellor (Eds.): Conservation Studies on Raptors.* ICBP Technical Publication No.5. Cambridge, UK.
- Zalles, J. I., and Bildstein K. L. 2000,** Raptor Watch: A global directory of raptor migration sites, BirdLife Conservation series No. 9, BirdLife International, Cambridge, England and: Hawk Mountain Sanctuary, Kempton, Pennsylvania, USA.

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