



E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2017; 5(1): 39-43
© 2017 JEZS
Received: 07-11-2016
Accepted: 08-12-2016

Anar T Mamedov
Baku State University, Baku, Az
1141, Z. Khalilov str., 23, Baku,
Azerbaijan

Qara T Mustafayev
Baku State University, Baku, Az
1141, Z. Khalilov str., 23, Baku,
Azerbaijan

Long-term dynamics of quality and quantity of populations of birds of prey in forest of mountain Talysh

Anar T Mamedov and Qara T Mustafayev

Abstract

The article describes the qualitative and quantitative dynamics of populations of birds of prey at the population level in the forests of Talysh for 1960-2016 years. Information is of comparative chronological character, allowing to install a multi-year trend and prospect of population of birds of prey in the forests of mountain Talysh. A large change in birds of prey in quantitative and qualitative terms in the mountain forests of Talish has been established. This is due to the fact that the forest intensively had been cut from all 4 sides. Unlike other mountain ranges, above the mountain forests of Talysh there are no high mountains but densely populated upland steppe people. Degree of startle of the birds from people was expressed more than in other regions. Settling of studied birds is low. Throughout our studies the reduction of population density took place, but slowly.

Keywords: Birds of prey, population, condition, quality, quantity, dynamics, changes, species

1. Introduction

Talysh forests are taken as a separate zoogeographical area, clearly different from that of the Eastern Caucasus [13, 19, 20]. The local climate is subtropical, the forest is deciduous, and there are many endemic plants and animals (Non/Chordata) [4].

Ornithological notes in Talysh made in the nineteenth century, listed by M. Bogdanov [3]. They relate mainly to the Talysh Lowland. However, the low-lying Hirkan forest in the Talysh occupies a small area and almost cut down. The study of birds of Talysh Mountain more or less was detailed and belongs to G. Radde [18], and partial notes are available from K.A. Satunin [22]. Some zoogeographic connections of avifauna of Talysh with Central Asia are given in articles of A.K. Rustamov [19, 20]. Further studies of birds of Talysh belong mostly to the local staff [1, 6, 7, 8, 10, 11, 12, 16]. However, they still had faunal character. Long-term dynamics of the quality and quantity of avifauna at the population level is estimated for the first time. At the same time the human impact on the fauna has been in the spotlight [14, 17].

Talysh forests were subjected to human-induced changes from all 4 sides, as above mountain forest there are not high mountains, but densely populated upland steppe [8].

2. Material and Methods

The main material of the article is the results of long-term field study by authors. The studies were conducted from 1962 until recent years by G.T. Mustafayev, and Mamedov A.T. deliberately took up the study of this group of birds from 2004 to 2016 years. Long-term studies had been repeated, usually after 10 years. Attention is paid to habitat location and nature of the stay of birds. Degree of startle of the birds from people remained in the spotlight. The populations of the same species differ mainly by registering their time of presence and absence on one and the same place. Comparative behaviour of birds took on added significance. The dynamics of the nature of stay, habitat distribution and population density are set by comparing the data every 10 years.

Routes of authors covered all habitats on the study of birds of prey in the mountain forests of Talysh:

- *Lankaran-Lerik. Deciduous mountain forest. The lower, middle and upper mountain forest zone, along the paved road.*
- *Those forests far away from the road at 500-1000 m.*
- *Aurora- Khanbulan. Primeval mountain forest with lush undergrowth.*

Correspondence
Anar T Mamedov
Baku State University, Baku, Az
1141, Z. Khalilov str., 23, Baku,
Azerbaijan

- Lankaran- Astara. Eastern forest slopes of Talysh Mountains.
- Astara-Shandan-kala. Forests on the left coast of Astarachay River.
- Mountain forests with primitive undergrowth from Masalli to Yardimli.
- Mountain forests, subjected to anthropogenic changes from Yardimli to Masalli.
- Tea plantations and other subtropical crops created on the site of the mountain forests of Talysh.
- Residential habitats created on the site of felled mountain forests of Talysh.



Map-scheme of Azerbaijan Republic (the area of study is marked with black colour).

3. Results and Discussion

As a result of our research for more than 50 years in the mountain forests of Talysh, the presence of 21 species of birds of prey was established. There were not and there are not now 15 species of studied class found in other regions of Azerbaijan: *Circus macrourus*, *C. pigargus*, *C. aeruginosus*, *Buteo lagopus*, *Buteo rufinus*, *Aquila nipalensis*, *Haliaeetus leucoryphus*, *Haliaeetus albicilla*, *Gypaetus barbatus*, *Falco cherrug*, *F. biarmicus*, *F. columbarius*, *F. vespertinus*, *F. naumanni*.

Sedentary birds of prey in the forests of Talysh were

surprisingly very low. The only *Buteo buteo* has a stable sedentary population [8]. But species arriving for reproduction by populations (N) turned out to be 14: *Pernis apivorus*, *Milvus migrans*, *Circus cyaneus*, *Accipiter gentilis*, *A. nisus*, *A. brevipes*, *Hieraaetus pennatus*, *Aquila heliaca*, *A. chrysaetos*, *Neophron percnopterus*, *Aegypius monachus*, *Gyps fulvus*, *Falco subbuteo*, *F. tinnunculus*. In addition to these 14 species to the last 20-30 years 4 more species, which have already ceased reproduction here (NI), nested in the forests of Talysh: *Pandion haliaetus*, *Accipiter badius*, *Aquila pomarina*, *Falco peregrinus* [10].

Table 1: The modern accommodation of birds of prey in the mountain forest of Talysh

Species	Nature of stay			
	Winter	Spring	Summer	Fall
1. <i>Pandion haliaetus</i> Linn., 1758 – Osprey	Nil	Tr	NЛ	Tr
2. <i>Pernis apivorus</i> Linn., 1758 – honey-buzzard	Nil	Tr	N	Tr
3. <i>Milvus milvus</i> Linn., 1758 – red kite	Nil	Er	Nil	Nil
4. <i>Milvus migrans</i> Bodd., 1783 – black kite	Nil	Tr	N	Tr
5. <i>Circus cyaneus</i> Linn., 1766 – hen-harrier	Nil	Tr	N	Tr
6. <i>Accipiter gentilis</i> Linn., 1758 – goshawk	H	Tr	N	Tr
7. <i>Accipiter nisus</i> Linn., 1758 – (sparrow-)hawk or small hawk	H	Tr	N	Tr
8. <i>Accipiter brevipes</i> Sev., 1850 – Levant sparrow hawk	Nil	Tr	N	Tr
9. <i>Accipiter badius</i> Gm., 1788 – shikra	Nil	Tr	NЛ	Tr
10. <i>Buteo buteo</i> Linn., 1758 – buzzard, ordinary buzzard	S	S	S	S
11. <i>Aquila pennatus</i> Gm., 1788 – booted eagle	Nil	Tr	N	Tr
12. <i>Aquila clanga</i> Pall., 1811 – greater spotted eagle	H	Tr	Nil	Tr
13. <i>Aquila pomarina</i> Brehm., 1811 – lesser spotted eagle	Nil	Tr	NЛ	Tr
14. <i>A. heliaca</i> Sav., 1809 – burial bird	Nil	Tr	N	Tr
15. <i>A. chrysaetos</i> Linn., 1758 – golden eagle	H	Tr	N	Tr
16. <i>Neophron percnopterus</i> Linn., 1758 – Egyptian vulture	Nil	Tr	N	Tr
17. <i>Aegypius monachus</i> Linn., 1766 – black vulture	H	Tr	N	Tr
18. <i>Gyps fulvus</i> Habl., 1783 – griffon vulture	H	Tr	N	Tr
19. <i>Falco peregrinus</i> Tunst., 1771 – peregrin(e)	H	Tr	NЛ	Tr
20. <i>Falco subbuteo</i> Linn., 1758 – hobby	Nil	Tr	N	Tr
21. <i>Falco tinnunculus</i> Linn., 1758 – common kestrel	H	Tr	N	Tr

Legend: S – sedentary, of N - flies for reproduction, H - flies for wintering, Tr - migrating, NЛ – deprived of reproduction, ЛЛ – deprived of the winter, Er – flies in not stably.

The averaged dynamics of the reproductive population density of birds of prey in the forests of Talysh (Table 2) shows that these birds are not characterized by a sharp decrease in a short period of time, such as that of waterfowl and small passerines [2, 16]. Reproductive populations reduced their density on average for 61.7% according to our data for the years 1962-2016. However, some species characteristics are certainly not excluded. For example, *Pandion haliaetus* is a lowland-coastal bird. In 1866 G. Radde (1884) was able to get 8 of this species [18]. Couple of ospreys nested there for

almost 20 years after creating Khanbulan reservoir in a mountain forest of Talysh, but still could not stand an increase of anthropic factors and disappeared after 1990. [16]. The main reason for the deprivation of osprey reproduction was an increase in the number of people involved in sports catching fish with a fishing rod on the shore of the reservoir. Almost simultaneously *Accipiter badius*, *Aquila pomarina* and *Falco peregrinus* stopped reproduction in Talysh forests. In any case, we have not found them in the nesting season.

Table 2: Dynamics of reproductive density of populations of birds of prey in the mountain forests of Talysh

Species of birds	Average density of population of birds of prey on decades					
	1962-1970	1971-1980	1981-1990	1991-2000	2001-2010	2011-2016
<i>Pandion haliaetus</i> – Osprey	Nil	2	2	Nil	Nil	Nil
<i>Pernis apivorus</i> – honey-buzzard	7	8	2	3	2	2
<i>Milvus migrans</i> – black kite	35	38	32	23	8	6
<i>Circus cyaneus</i> – hen-harrier	14	16	11	8	2	2
<i>Accipiter gentilis</i> – goshawk	8	6	5	4	4	2
<i>Accipiter nisus</i> – (sparrow-)hawk	30	28	30	22	10	13
<i>Accipiter brevipes</i> – Levant sparrow hawk	8	8	6	5	4	4
<i>Accipiter badius</i> – shikra	4	2	2	Nil	Nil	Nil
<i>Buteo buteo</i> – buzzard	62	58	48	44	42	30
<i>Hieraetus pennatus</i> – booted eagle	14	12	9	8	6	6
<i>Aquila pomarina</i> – lesser spotted eagle	8	9	7	3	Nil	Nil
<i>Aquila heliaca</i> – burial bird	4	4	6	2	4	2
<i>Aquila chrysaetos</i> – golden eagle	5	6	4	3	2	2
<i>Neophron percnopterus</i> – Egyptian vulture	12	10	9	12	6	6
<i>Aegypius monachus</i> – black kite	14	12	10	12	8	4
<i>Gyps fulvus</i> – griffon	8	6	7	5	4	4
<i>Falco peregrinus</i> – peregrin(e)	6	7	6	4	Nil	Nil
<i>Falco subbuteo</i> – hobby	20	26	15	14	11	8
<i>Falco tinnunculus</i> – kestrel	36	40	32	30	24	22
Total	295	298	243	202	137	113

The density of populations of winter birds of prey in the forests of Talysh is much lower than that of the nesting population. In summer, they are attracted to the protective nesting advantage of forest. However, in the winter season, they need a forest only to spend the night. They are searching for food on an open landscape with hovering in the air. Therefore, species and individuals are few. The overall

decrease in population density for the period 1962-2016 averaged 75%. Before all *Buteo lagopus* and *Haliaeetus albicilla* stopped to spend the winter in the forests of Talysh. Relatively later *Aquila clanga*, *A. chrysaetos* stopped to spend the winter here. *Falco cherrug* and *Falco peregrinus* wintered unstably. However, *Falco tinnunculus* spends winter in a small amount (4-9 individuals), but more or less stable.

Table 3: Long-term dynamics of the averaged density of winter populations of birds of prey in the forests of Talysh

Species of birds	Average density of population of birds of prey on decades					
	1962-1970	1971-1980	1981-1990	1991-2000	2001-2010	2011-2016
<i>Accipiter gentilis</i> – goshawk	4	4	2	3	Nil	Nil
<i>Accipiter nisus</i> – (sparrow-)hawk	18	14	10	8	6	4
<i>Buteo lagopus</i> – Roughleg	3	Nil	Nil	Nil	Nil	Nil
<i>Buteo buteo</i> – buzzard	31	27	21	15	11	9
<i>Aquila clanga</i> – greater spotted eagle	3	4	2	Nil	Nil	Nil
<i>Aquila chrysaetos</i> – golden hawk	2	3	1	2	Nil	Nil
<i>Haliaeetus albicilla</i> – erne	1	2	Nil	Nil	Nil	Nil
<i>Aegypius monachus</i> – black kite	4	5	3	1	2	2
<i>Gyps fulvus</i> – griffon	6	4	2	3	1	Nil
<i>Falco cherrug</i> – saker falcon	Nil	Nil	1	2	1	Nil
<i>Falco tinnunculus</i> – kestrel	7	9	8	5	4	5
Total	79	72	50	39	25	20

Apparently migrating birds of prey fly not over the mountain forest, but over open terrain in Iran and Turkey in the autumn and in the Kura-Araz lowland in spring. Just as in other parts the overflying birds in the forests of Talysh is greater in autumn than in spring. It is probably due to the fact that in fall due to the reproduction of this year and before the spring migration is reduced as a result of the winter elimination.

Large birds of prey, as if they were not enough and clearly visible in flight, to count the individuals by a piece is impossible. Nevertheless, our digital information on the subject allows setting a trend of long-term dynamics of density of migrating populations (Table 4).

Reducing of the spring migration for the period 1962-2016 makes 61% after the winter elimination of the population, and

the same in the fall after the reproduction is 54%. As can be seen from Table 4, in any case, for a half century migrating

population of bird of prey decreased by more than 50%.

Table 4: The averaged density dynamics of populations of migrating birds of prey in the forests of Talysh (a-spring, b- autumn)

Species of birds	Density of population on decades											
	1962-1970		1971-1980		1981-1990		1991-2000		2001-2010		2011-2016	
	a	b	a	b	a	b	a	b	a	b	a	b
<i>Pandion haliaetus – Osprey</i>	Nil	Nil	1	3	2	4	Nil	Nil	1	2	Nil	Nil
<i>Pernis apivorus – honey-buzzard</i>	4	8	3	7	1	3	2	5	1	3	1	2
<i>Milvus migrans – black kite</i>	30	41	32	40	30	42	18	30	8	14	7	15
<i>Circus cyaneus – hen-harrier</i>	10	18	11	20	15	23	12	20	9	12	2	15
<i>Accipiter gentilis – goshawk</i>	4	8	6	9	3	6	2	4	2	5	2	4
<i>Accipiter nisus – (sparrow-)hawk</i>	36	45	24	33	30	41	24	40	11	20	12	22
<i>Accipiter brevipes – Levant sparrow hawk</i>	10	21	10	20	8	15	5	11	4	8	4	7
<i>Accipiter badius – shikra</i>	4	6	3	6	2	5	2	3	1	3	3	5
<i>Hieraetus pennatus – booted eagle</i>	15	26	13	24	10	23	8	17	6	12	7	15
<i>Aquila clanga – greater spotted eagle</i>	8	5	7	5	5	3	5	4	3	2	2	1
<i>Aquila pomarina – lesser spotted eagle</i>	10	18	10	20	8	15	4	8	3	2	2	1
<i>Aquila heliaca – burial bird</i>	6	10	4	9	6	12	3	7	4	8	3	7
<i>Aquila chrysaetos – golden eagle</i>	5	9	6	11	4	8	3	7	2	4	2	3
<i>Neophron percnopterus – Стервятник- Egyptian vulture</i>	13	25	10	19	10	18	12	23	6	11	6	10
<i>Aegypius monachus – black kite</i>	24	20	12	18	10	14	12	15	8	10	4	5
<i>Gyps fulvus – griffon</i>	8	14	6	11	7	11	5	8	4	6	4	7
<i>Falco peregrinus – peregrin (e)</i>	7	13	6	12	5	9	4	8	4	3	3	2
<i>Falco subbuteo – hobby</i>	22	50	27	55	18	40	15	41	12	40	9	33
<i>Falco tinnunculus – kestrel</i>	40	96	38	91	35	73	31	70	25	50	23	53
Total	256	433	229	423	209	365	167	321	115	215	96	187

Reducing of birds of prey in Talysh forests, in our view mainly associated with declining of fodder. The fact is that the population of wild boar, deer, squirrels, and pheasant heavily reduced over the past 50-60 years, and hare, partridge, gray partridge around forests were becoming less; residential and agricultural landscapes dramatically expanded, to which birds of prey are fearful. Therefore, it is necessary somehow to restore a stereotype trust of birds of prey to human.

4. References

- Agayeva Ch A, Short message about some of the birds in the mountains of Talysh Sc. records of ASU, series of biol. Sciences, Baku, 1972; 2:54-58.
- Babaev IR. Placement, the number of waterbirds and the factors influencing them in the coastal strip of Absheron, Gobustan Azerbaijan sector of the Caspian Sea Proceedings of the Institute of Zoology of the Azerbaijan SSR. Baku, Elm, 2010; 2:816-824.
- Bogdanov M. Birds of Caucasus works of society of natural tests Kazan University, 1979; 8(4):314.
- Hajiyev DV. Essay on the history of formation of the vertebrate fauna of Azerbaijan Ornithology, Moscow, MSU, edit 1965; 7:66-99.
- Drozdzov NN. Geography of summer population of birds in different landscapes of Azerbaijan. "Ornithology", Moscow, publishing of the Moscow State University, 1965; 7:166-199.
- Mustafayev GT. New data on the distribution and nature of the stay of some species of birds in Azerbaijan Sc. records of ASU, series of biol. sciences, 1968; 3:60-66.
- Mustafayev GT. Change of avifauna in Azerbaijan over the past 100 years Materials of VII All-Union. ornitol. Conf., Moscow, edit. 1974; 11:219-221.
- Mustafaev GT, Agayev Ch A. Avifauna of Talysh mountain Coll. Fauna, ecology and conservation of animals in Azerbaijan Sc. records of ASU, series of biol. sciences, Baku, 1974; 1:60-65.
- Mustafayev GT. Roadside population of birds in the

mountain forests of Talysh Sc. records of ASU, series of biol. sciences, Baku 1975; 2:45-51.

- Mustafayev GT. Talysh region as a characteristic of transitional forms and endemic birds Materials of VII All-Union. Ornitol. Conf., Kiev, Naukova Dumka, Academy of Sciences of Ukraine, 1977, 34-35.
- Mustafayev GT. The analysis of the avifauna of terrestrial habitats of Azerbaijan Scientific records of ASU, series of biol. sciences, Baku, 1978; 3:24-29.
- Mustafayev GT, Agayev Ch A. Birds of terrestrial biocenoses of Talysh inside Azerbaijan Coll. Fauna, ecology and conservation of animals in Azerbaijan» Proc. The impact of anthropogenic factors on the fauna and ecology in Azerbaijan. Baku, ASU, 1981, 107-116.
- Mustafayev GT. Birds terrestrial ecosystems of Azerbaijan (Abstract of Doctor. Diss.). Moscow, MSU, 1985, 54.
- Mustafayev GT. Influence of anthropogenic factors on birds of prey in Azerbaijan Coll. Some of the questions and problems of ecology the Azerbaijan. SSR. Baku, BSU, 1990, 57-61.
- Mustafayev GT. General characteristics of fauna and bird population in Azerbaijan Animal World of Azerbaijan. of, Vertebrates, Baku, Elm, 2000; 3:261-272.
- Mustafayev GT, Sadigov NA. The results of direct persecution of terrestrial vertebrates person in Azerbaijan First Internat. Conf. Becker readings. Volgograd, 2010, 319-321.
- Mustafayev GT. Protection of birds in Azerbaijan and public tasks. Baku, Azerneshr, 1984, 60.
- Radde G, Ornithological fauna of the Caucasus Tiflis, publishing of Caucasian Museum, 1884, 451.
- Rustamov AK. European Forestry Hirkan fauna in the Kopet Dag Periodicals of TFAS of USSR, 1945; 3-4:132-135.
- Rustamov AK. About ornithological links of Kopet Dag with Hyrcania Periodicals of TFAS of USSR, 1945; 3-4:132-135 Proceedings of the Institute of Zoology of the

Academy of Sciences Kazah. SSR, Alma-Ata, 1961;
15:132-138.

21. Sadigova NA. Comprehensive assessment of forest avifauna of Talysh Report of ANAS, 2007; 63(3):84-91.
22. Satunin KA. Materials to the knowledge of the birds of the Caucasus region Notes Caucasian Dep. RGO, Tbilisi, 1907, 144.