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BIODIVERSITY OF BIRDS IN ARTIFICIAL PLANTING OF SAXAULNIKS ON A DRAINED BOTTOM

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ANNOTATION

The article presents the materials of ornithological research carried out in 2012-2013. in artificial plantings of saxaul forests on the drained bottom of the Aral Sea, where a small area of saxaul forests was studied in the Aralkum desert. The modern species composition and nature of the stay of birds in this region have been revealed. For the first time in Karakalpakstan, artificial nests for passerines and owls have been installed in artificial saxaul plantations, recommendations are proposed for the protection and attraction of birds to this territory.

KEY WORDS: *Aral Sea, saxaul, land, avifauna, landing, population.*

INTRODUCTION

Artificial planting of saxaul in Karakalpakstan is a widely held event covering large areas on the drained bottom of the Aral Sea (post-aquatic land). According to the Karakalpak branch of the International Fund for Saving the Aral Sea (IFAS), from 1989 to 2011, salt-tolerant plants were sown on the drained bottom of the Aral Sea on an area of more than 270 thousand hectares. [1, 2, 3]. Since 2018, great work has been carried out here and plants have been sown on 1 million 600 thousand hectares. At the same time, according to our data, the avifauna of these landings is extremely poor and is represented by a few widespread species. Work on the study of the avifauna of artificial plantings of saxaul forests on the drained bottom of the Aral Sea was not carried out before our study.

MATERIAL AND RESEARCH METHODS

The study was carried out in Karakalpakstan on the drained bottom of the Aral Sea in spring, summer, autumn and winter. Field work was carried out in 2012-2013. in the Muynak region, mainly on the territory of sown artificial saxaul plantations.

For the study, we selected the drained bottom of the Aral Sea, bordering from the north with the Kuat system of lakes. From 2000 to 2007. according

to the GTZ project (Germany), saxaul was sown on this territory on 27,000 hectares.

When studying the species composition and nature of the stay of birds, the number and seasonal dynamics, we used the generally accepted methods of GA Novikov, EV Rogacheva and NG Chelintsev [8, 9, 11]. The species composition of the identified species is given according to the list of birds of Uzbekistan O.V. and MG Mitropol'skikh [7]. When determining the density of birds, a survey was carried out on an area of 10 hectares.

Bird counts on saxaul forests were carried out using 8x binoculars and a 60x Viking tube. The duration of observations at the registration points was from 10 to 30 minutes. The coordinates of observation points and landmarks were recorded using GPS Garmin.

The length of automobile counts was 258 km in the Aralkum desert, of which 122 km in artificial saxaul plantations.

RESEARCH RESULTS

According to the results of our research (six trips), 34 bird species were recorded in artificial saxaul forests (Table 1).



Table 1
List of bird species recorded in artificial plantings of saxaul forests on the drained bottom of the Aral Sea

№	Bird species	Number of individuals				Nature of stay
		Spring 6-10.04.2012/ 5-8.04.2013	Summer 13- 18.06.2012/ 29.06.- 03.07.2013	Autumn 7.10.2012- 10.10.2012	Winter 22.02.2013- 25.02.2013	
1	<i>Circus cyaneus</i>			2	3	h, tr
2	<i>Buteo lagopus</i>			3	1	h, tr
3	<i>Buteo buteo</i>			2		tr
4	<i>Buteo rufinus</i>	2	1		2	n, h, tr
5	<i>Circaetus gallicus</i>	1		1		n, tr
6	<i>Aquila rapax</i>	1		1	1	n, h, tr
7	<i>Aquila heliaca</i>	2	1	2	1	n, h, tr
8	<i>Aquila chrysaetos</i>	1/1	2/1	1	1	s
9	<i>Burhinus oedicephalus</i>	2	1			n
10	<i>Pterocles alchata</i>			22		n
11	<i>Pterocles orientalis</i>	2/3		64	5	n, tr
12	<i>Bubo bubo</i>	1			1	s
13	<i>Athene noctua</i>	3	4/6	8	2	s
14	<i>Caprimulgus aegyptius</i>		1			n
15	<i>Merops persicus</i>		18/12			n
16	<i>Upupa epops</i>	2	4/3			n, tr
17	<i>Galerida cristata</i>	4/8	6/11	13	11	s, tr
18	<i>Calandrella cinerea</i>	2	3	4		n, tr
19	<i>Calandrella rufescens</i>	4	2	6	6	n, h, tr
20	<i>Melanocorypha calandra</i>			4		tr
21	<i>Alauda arvensis</i>			18		h, tr
22	<i>Lanius meridionalis</i>	3/4	2/5	6	5	s
23	<i>Corvus ruficollis</i>	1	2		1	n, tr
24	<i>Hippolais languida</i>		2			n
25	<i>Sylvia communis</i>	2				tr
26	<i>Sylvia curruca</i>	4				n, tr
27	<i>Sylvia nana</i>	3	2			n, tr
28	<i>Phylloscopus collybita</i>	3/4		14		tr
29	<i>Scotocerca inquieta</i>	2	1		4	s
30	<i>Oenanthe oenanthe</i>			8		tr
31	<i>Oenanthe isabellina</i>	8/6	12/9			n, tr
32	<i>Erythropygia galactotes</i>		6/5			n, tr
33	<i>Passer indicus</i>		62/84			n, tr
34	<i>Passer ammodendri</i>	1			2	s
	Bcero	21/59	116/152	179	46	

Note: in the numerator, in normal print, the number of birds recorded in 2012, and in the denominator, in bold in 2013, n - (nidulns) nesting, s - (sedens) sedentary, tr - (transvolans) migratory, h - (hyemalis) wintering species.

As you can see from the table. 1, the largest number of birds was noted in the fall (179 individuals), during the period of migration, and during the nesting period, this area is inhabited by the Indian Sparrows *Passer indicus*, and the total number

of birds is much higher than the spring and winter population of birds.

By the nature of their stay, the birds can be divided into 4 groups. These are sedentary, nesting migratory, migratory and wintering species (Table 2).



Table 2
Distribution of birds in the study region
by the nature of their stay

Groups of bird species	Number of species	%
nesting migratory	19	55,9
Flyby	23	67,6
Wintering	7	20,6
Sedentary	7	20,6
Total	34	100

From table. 2, it can be seen that out of the total number of species, migratory-nesting birds in this area account for more than half of all species found, i.e. 55.9%, migratory - 67.6%, wintering and sedentary 20.6% each.

The total number of species grouped by the nature of their stay is greater than that of species in the fauna of the surveyed territory due to the fact that many nesting and wintering species are also migratory for more northern geographic populations.

In 2012 and 2013. In the course of our research, 85 artificial nests for hollow-nesting birds were established in saxaul forests. Of these, 60 are

for small passerines, 25 for owls. All nests were attached with metal wire to saxaul trees at a height of 1.5 to 2.3 meters and were located at a distance of no closer than 30-50 meters from each other.

Of the 30 nests established in 2012 for small passerines, 22 nested Indian sparrows. In addition, in 2 nests out of 15 established for owls, house owls nested, and in 2 - hoopoes [2]. The following year, out of the established 30 nests for small passerines, 24 Indian sparrows nested again. In 3 nests out of 10 established nest boxes for owls, house owls nested, and in 2, as in the previous year, hoopoes (Table 3).

Table 3
Bird nesting rate in artificial nests

Years	Bird species	Total installed slots	Number of sockets used	Number of empty slots	% use of nests
2012	<i>Passer indicus</i>	30	22	8	73,3
	<i>Athene noctua</i>	15	2	11	26,7
	<i>Upupa epops</i>		2		
2013	<i>Passer indicus</i>	30	24	6	80
	<i>Athene noctua</i>	10	3	5	50
	<i>Upupa epops</i>		2		
Bcero		85	55	30	64,7

From table. 3 shows that the rate of used nests by Indian sparrows in 2012 was 73.3%, and in 2013 - 80%. Apparently, such a high rate of nesting is explained by the ecological plasticity and good adaptability of the Indian sparrow in different landscapes and the high abundance of the species [2, 6].

And for hollow nests (house owl and hoopoe), the landscape of artificial saxaul forests is not entirely convenient for nesting, which explains the

high percentage of nest occupancy - from 26.7 to 50%.

The overall rate of the use of artificial nests by birds in saxaul forests was 64.7%. This indicator, we think, is a good result if we compare it with another landscape and region, for example, in the forest of the Voronezh State Reserve (Russia), more than 71% of hanging nesting sites are inhabited by birds [10].

Analyzing the registered by us in 2012-2013. saxaul birds, we have identified rare and endangered species that need protection (Table 4).

Table 4
Rare and endangered birds of the studied region

№	Bird species	Population status	Conservation status
1	<i>Circaetus gallicus</i>	RR	UzRDB-2(VU:D)
2	<i>Aquila rapax</i>	RR	UzRDB-3(NT)
3	<i>Aquila heliaca</i>	R	RL-[VU] , UzRDB-2(VU-D)
4	<i>Aquila chrysaetos</i>	R	UzRDB-2(VU-R)
5	<i>Pterocles alchata</i>	R	2(VU:D)



Note: RL - International Union for Conservation of Nature (IUCN) Red List of Threatened Species. UzRDB - Red Book of the Republic of Uzbekistan (2019). 2 (VU: D) - Vulnerable: shrinking, 2 (VU: R) - Vulnerable: naturally rare. 3 (NT) - are in a condition close to threatened. R - rare species, RR - very rare species.

CONCLUSION

The work on attracting birds, carried out on the drained bottom of the Aral Sea in saxaul forests, is important not only for the protection of biodiversity, but also for the successful colonization of artificial nests by hollow-nesting birds and increasing the productivity of desert ecosystems. These works will ensure the creation of a nesting base for the subsequent staging of experiments on attracting the corresponding species to saxaul forests.

Therefore, we recommend in other areas of saxaul forests, on a large scale, the creation of various artificial nests (primarily nesting owls) for birds. As for the rare and endangered saxaul birds, these are birds of prey, suffering from direct persecution by humans and from the general deterioration of the environment.

In our opinion, migratory species do not need special protection measures. To preserve the rest of the rare and endangered species, first of all, it is necessary to conduct propaganda among the population, talk more about the useful and aesthetic side of these birds [4, 5].

We consider the main task of further studies of the fauna of terrestrial vertebrates in the Aralkum desert to be a comprehensive ecological study of individual species in connection with environmental conditions. Such works will give us the opportunity to protect and rational use the biodiversity of the region, including the Aralkum desert, in particular.

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