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**INFORMATION ON THE ECOLOGY OF GLOSSY IBIS-  
 (PLEGADISFALCINELLUS L.1766) ANDEURASIAN SPOONBILL-  
 (PLATALEA LEUCORODIA L.1758) 'S SOUTH-KYZYLKUM WATER  
 DISTRIBUTION**

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**ABSTRACT**

*The article presents the data on the ecology of colonially nesting birds in the reservoirs of desert zones of Uzbekistan, the ways of colony formation, the influencing factors and features of the adaptation of birds. In the formation of colonies involving mixed species, the attitude of the members of the colony towards vital needs, especially food and nesting site, plays a decisive role. The flight of the bird during the spring and autumn migrations is recorded in the literature in a number of regions of the country, such as Tashkent, Bukhara, Navoi, Kashkadarya, Samarkand, Surkhandarya (Maslov, 1947, Sagitov, 1989, Mitropolsky 2007).*

**KEYWORDS:** *Desert Zone, Colony, Environmental Factor, Adaptation.*

**INTRODUCTION**

Every change that occurs in natural biotopes due to human economic activities is primarily noticed by the representatives of the fauna of the region and reacts to it with appropriate ethological actions (Turaev, 2019). As far as we know, the Aral Sea waters of the Republic and the surrounding tugai forests have long been chosen as a favorite habitat of representatives of the fauna of the region, including birds. However, since the 1950s, the unfavorable ecological situation that has arisen has begun to have a negative impact on the life of aquatic and underwater bird species, as well as all representatives of animal autonomy. As a result, species that have lived for many years have left the area one after another. This situation requires a re-analysis of the ecology of the distribution of species in the country.

The following article provides information on the ecology of the distribution of caravans and spoons from a small number of species in the country, where in recent decades there have been attempts to build nests in the ornithofauna of water bodies in the desert zone of the republic.

## MATERIALS AND METHODS

These data were obtained on the basis of our observations in the south-western part of the Kyzylkum in Karakir, Zamonbobo, Dengizkul, Khadicha, Zikri, Cho'chqaxona lakes, Tudakul Water Reservoir and Kagan fishery during 2001-2020. It should be noted that during our observations, 16 species of birds listed in the Uzbek and International Red Data Books were recorded among the birds registered in the reservoirs. Below we find the following species of glossy ibis (*Plegadis falcinellus* L.1766), spoonbill (*Platalealeucorodia* L.1758). In this case, the analysis of species home ecology was based on the method of Novikov (1949), the ecology of birds was based on the method of Kashkarov (1927), the collective analysis of species was based on the method of Lanovenko, Felatov, Felatova in 2017

## RESULTS AND DISCUSSION

Glossy ibis (*Plegadis falcinellus* L.1766) and spoonbill (*Platalealeucorodia* L.1758) which are analyzed in this article, are considered to be migratory, nest-building species of our country's ornithofauna. Due to its small number and the limited size of the nesting area, the species mentioned above are listed in the "Red Book" of Uzbekistan as a declining species.

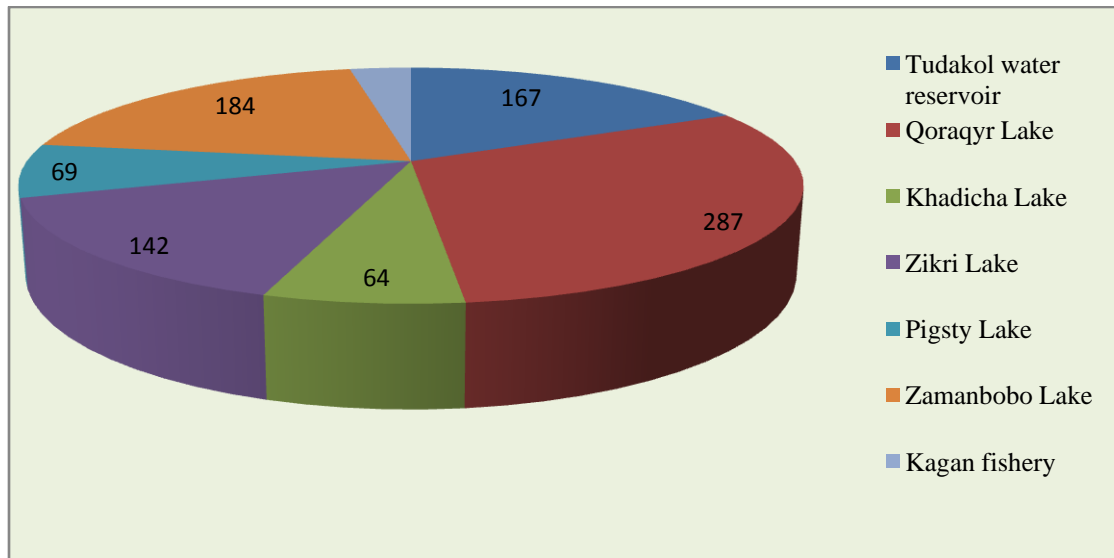
***Glossy ibis (Plegadis falcinellus L.1766)*** - There are 3 subspecies of blackbirds in the world fauna, which are found in a number of countries (Africa, America, Europe, Asia, Australia) on almost all continents of the world, and in different types - in flight, wintering, reproduction.

The only subspecies of glossy ibis (*Plegadis falcinellus* L.1766) found in the territory of the Republic is believed to be a migratory nest-building species. In the literature, until the second half of the last century, the species' nest-building efforts were reported to occur only in the Aral Sea basins of the lower reaches of the Amudarya (Sagitov, 1987). The flight of the bird during the spring and autumn migrations is recorded in the literature in a number of regions of the country, such as Tashkent, Bukhara, Navoi, Kashkadarya, Samarkand, Surkhandarya (Maslov, 1947, Sagitov, 1989, Mitropolsky 2007).

In the literature on the occurrence of the species in the basins of the Zarafshan downstream, Lemmani (1882), Gladkov (1932), Maslov (1947) and others have noted that it occurs in small numbers in spring and sometimes in autumn flight.

Our long-term observations show that in the basins of different types of water formed in the southern part of the Kyzylkum Desert, there are some changes in the number, range, duration and habitat of this species, as observed today in the lives of a number of water and underwater birds. Spring migration of the bird takes place a little later. In our long-term observations, the spring flight time of the bird was observed from the second half of March (14.03.2020, 26.03.2017) to the first ten days of April, depending on the air temperature, and these movements lasted until mid-April (7.04.2002; 11.04.2011;) continues. In the first days of migration, the glossy ibises form a small herd (from 5 to 25) and are in the shallows and ponds of almost all water basins of the region - actively feeding, and from the last ten days of April (25.04.02) the glossy ibises begin to build nests.

During our observations, the first attempts of the birds to build nests in the waters of Bukhara region and adjacent regions were recorded in the reeds of the Kagan fishery (Turaev, 2003). 287 nests were registered in Qoraqyr Lake, 64 nests in Khadicha Lake, and 69 nests in the reeds of Cho'chqaxona Lake. In 2015-2018, 184 nests were recorded in Lake Zamanbobo and 142 nests in Lake Zikri.



### Distribution of glossy ibis involved in reproduction across regional waters

It should be noted that in the regional water basins, the movement of cattle to build nests is often changed. This is due to the strength of anthropogenic impacts in water bodies and human control of the hydrological regime in water bodies (in Kagan fishery ponds, Zikri and Khadicha - frequent changes in water levels), reed mowing in reefs or "weeding" reeds ("Foot rot" (Oyoqog'itma), Qoraqyr, Khadicha lakes), sometimes associated with high levels of poaching activity.

The movement of laying the first eggs in the nests in the observed basins (depending on air temperature) begins in the last days of April (27.04.02., 30.04.03) and lasts until the first half of May.

Glossy ibises are a species that lives as a community. This bird builds nests in a mixed community with blue and straw crows, little blackbirds, some white crows with some snouts, and straw crows.

In the formation of colonies involving mixed species, the attitude of the members of the colony towards vital needs, especially food and nesting site, plays a decisive role. Usually in the colony the nutrient composition of the species or the location of the hive, the homogeneity of the building material of the hive forms them as competitors for these elements and the species try to squeeze each other out of the colony, otherwise harmony between different species is observed (Sioxin, Chernichko 1988; Turaev, 2019).

Therefore, during our observations in the ponds of Tudakul and Kagan fisheries of Bukhara region grey heron - *Ardea cinerea*, purple heron - *Ardea purpurea*, little egret - *Egretta garzetta*, pygmy cormorant - *Phalacrocorax pugmaeus*, Eurasian spoonbill - *Platalea leucorodia* and glossy

ibis - *Plegadisfalcinellus*, the diversity of species in the food spectrum and the presence of hierarchical features in nest placement showed that a healthy environment between species was formed. There was a consensus among the members of the colony on the placement of the nests of the species in the reeds on the reeds and in some external disturbances (Turaev et al., 2019).

In the community, the nests of caravans are 3.0-5.5 cm above the water level in the lowest tier. placed at a height of 15.0–17.0 cm. The nests were placed between reeds, reedbeds (Kagan fishery, Zikri Lake, Khadicha Lake) or on the branches of a willow bush (Tudakul Reservoir, Zamonbobo Lake, Qaraqyr Lake), depending on the vegetation cover of the water basin where the community is located.

The composition of the building material of the hive also varies in terms of the amount of material. We observed that the nesting material of nests placed between reeds and reeds was low (in Kagan fishing ponds, Khadicha and Zikri lakes), but in nests located in willow bushes (Tudakul reservoir, Zamonbobo, Qaraqyr lake) the weight of construction material was used.

The composition of the building materials of the hive consists of thin stalks of reeds, leaves, balls of flowers and slender twigs. Nest size (n -10): nest height-190 mm, nest width - 210 mm, nest width 170 mm, nest depth 31 mm (Turaev, 2006).

Caravans' nest-building activities were first recorded in May 2003 among gargoyles in the watershed in the Kogon fishery.

We have witnessed that the nests were completely laid in eggs in the first ten days of May. Efforts to build the nests were made almost simultaneously, with the number of nests in the community on May 6 being 29, and on May 10 laying eggs in 50 nests. Up to 4-6 dark blue eggs (n-40) are laid in the nests, with an average of 4.2 eggs per nest. The dimensions of the eggs are very close to the dimensions recorded in the literature, length 57.0-54.0 mm, width 37.0-35.0 mm. average 52.0-36.0 mm. Also, the weight of low-pressed eggs was 31.4 to 42.0 g (n-17) with an average of 38.0 g. (Turaev 2006).

Eggs are laid for 21 days in the presence of both sexes, and the bird, which is released from laying eggs, feeds along the shores of the shallows of the water basin.

In the observed nests, the first chicks appear in the second half of May. On May 20, we noted that there were 3 chicks of 4-5 days old in one of the nests on the team. The body of the chicks is covered with a sparse black downy feathers, when their body size is measured: the weight of the chicks - 53 g; 59 gr; 69 gr ;, beak length - 14mm; 16 mm; 16.5mm ;, wing -23mm; 25mm; 26mm ;, tarsus - 26mm; 27mm; 29mm;, were identified.

Examination of food debris in the hive revealed that the hive consisted of shrimp, perches, water beetles and aquatic insects. 05/26/02 we observed the discovery of chicks in almost all nests of the colony. However, the percentage of hatching from eggs laid by cattle was relatively low (72.3%). The average number of opened chicks in 14 surveyed nests (p = 14) was 3.1. The main reasons for this are:

-First of all, due to the fact that the nests are located too close to the water level, the water level in the pools fluctuates, which leads to the partial death of chickens and eggs in the nest.

- In addition, due to the inconvenient placement of thrush nests between reed stems and reeds, it is sometimes observed that when the parent bird flies out of the nest and lands, eggs and young chicks die, falling into the water. On the first day of May 2003, during our observations, it was noted that 3 eggs from 2 nests were released into the water.

From the first days of July, chicks begin to fly out of the nest. It is observed that birds of prey arrive from the shores of islands near reed thickets, where nests of communities are located, and then feed in groups in neighboring water bodies. Since August, shepherds completely leave the nesting site. It prepares for the flight since the last days of August, and in September it meets its last representatives for feeding only in some waters of the region, including the Tudakul reservoir, the Kagan fishing ponds, the shores of Dengizkul and Zikri lakes. In warmer autumn years, the autumn emergence of glossy ibises can last until the last days of October (10/29/2013, 10/27/2017, 10/30/2019). Hunting for cattle is prohibited. Protected in the waters of Sudocha, Tuzkon, Qaraqyr, Dengizkul of the republic.

**Spoonbill- (*Platalea leucorodia* L.1758)**- It belongs to the family of ibises of the genus spoonbilled-stork and is one of the weakest, most endangered species of flying or nesting species in the avifauna of Uzbekistan. Listed in the Red Book of Uzbekistan 2 (VU: D).

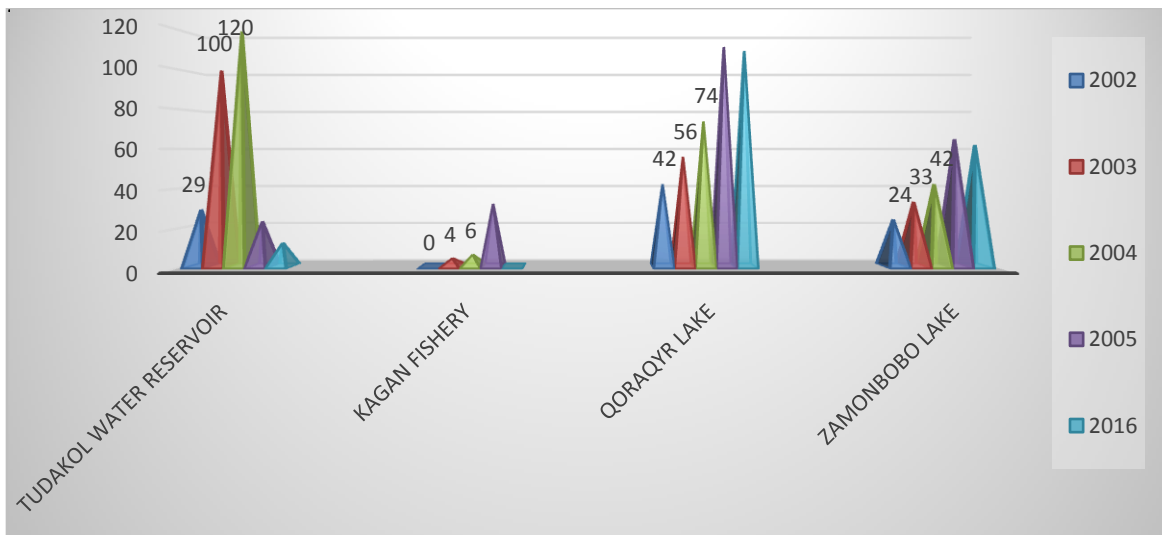
In Uzbekistan, there is a subspecies *Platalea leucorodia* L. Information is presented in the works of a number of researchers on the ecology of the distribution of this species in Uzbekistan (Kenzhegulov, 1967, Ametov, 1984, Zagitov, 1987, Shernazarov, 1996, Mitropol'skiy, 2007). These data indicate that reed habitats around the waters of the Lower Amu Darya and Syr Darya deltas are the main breeding grounds for the species.

In the middle reaches of the Audarya and the lower reaches of the Zarafshan River, snails are noted as a small migratory species (Maslov, 1947, Akhmedov, 1950, Salikhbaev, Ostapenko, 1966, Sagitov, 1987, Mitropolsky, 2007).

However, as a result of the ecological crisis in the Aral Sea region, from the second half of the last century, changes began to be observed in the ecology of the distribution of snails, like all species of the Aral Sea. By the second year, the bird's range expanded southeast of the Aral Sea. Confirmation of our opinion is the fact that in the last years of the century birds met during the construction of nests in the lakes Aydarkol and Alan of the republic.

It was noted in our observations that similar changes have taken place in Bukhara region and adjacent areas. On March 27, 2002, in the pond of the Tudakul Reservoir, in the center of a colony of grey herons and large glossy ibises, 29 nesting holes were recorded (Turaev etc., 2003, 2006).

After that, the nest-building efforts of squirrels were recorded in a number of water basins of the region, including Kagan fishery (32), Khadicha Lake (6), Zikri Lake (12), Zamonbobo Lake (65) and Cho'chqaxona Lake (29). was found. Although this species seems to have adapted to the region's waters for a short time and is growing in numbers, their numbers have been observed only in the spring and autumn migrations in the Tudakul Reservoir and Kagan fishery ponds, where the first nests were built (Turaev, 2003).

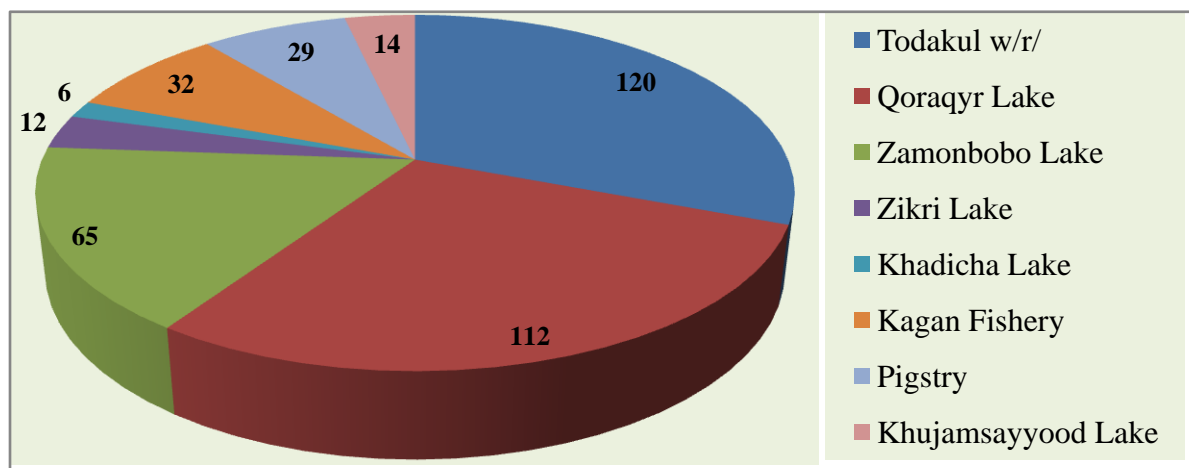


### Dynamics of change of nesting movements of spoonbills over the years in water reservoirs

By 2016-2018, the nest-building efforts of squirrel nests show that the number of nests in the newly selected Lakes Zamonbobo, Qoraqyr, Zikri, Cho'chqaxona, Khojamsayod remains relatively stable.

If one of the largest reservoirs of the country, Lake Aydar, has been observed to nest on the same island for several years (Shernazarov, 1996), in our observations, it is noted that spoonbills often change their nesting sites in the waters of Bukhara region.

This is due to the high impact of anthropogenic activities around the region's waters (reed harvesting, weeding of reeds, grazing of livestock around water bodies and frequent control of water levels in water bodies, etc.), as well as the proximity of water bodies. due to which it is done in the short term.



### Pools where nesting attempts of spoonbills are recorded

Spring migration of spoonbills in the region is observed from the second half of March to the last days of March, depending on the air temperature (27.03.02., 21.03.13.). From the first ten days of April, nest-building efforts begin (4.04.04., 8.04.16.). Spoonbills are a species that lives as a

community at all stages of life (migration, feeding, resting and nesting). When building a bird's nest, sometimes a small number of nests is formed, consisting of 6-12 nests (in Zikri, Khadicha, Kagan fisheries), sometimes up to 47-130 nests (Tudakul reservoir, Qaraqyr, Zamonbobo lake). The nests are mainly composed of grey heron - *Ardea cinerea*, purple heron - *Ardea purpurea*, little egret - *Egretta garzetta*, great cormorant - *Phalacrocorax carbo*, pygmy cormorant - *Phalacrocorax pugmaeus* and glossy ibises - *Plegadis falcinellus*. In this case, the bird chooses its nests in a separate part of the colony (often the center of the colony). The distance between the nests is 44.3cm depending on the nesting capacity. from 2.0 to 3.0 meters, at a height of 44.2 to 86.3 cm above the water level. As a building material for the nests use last year's dried stems and leaves of reeds.

The earliest egg-laying movements in the mentioned colonies were recorded in the Tudakul Reservoir pond in the first ten days of April (09.04.2002, 12.04.2008), while in the second half of April to the first half of May (19.04.2002, 24.04.2004). , 5.05.2012.). attempts to lay eggs en masse in the nests are observed. But the number of nests in the colony increases throughout the season. Due to this, the time of egg laying in the nests in the colony varies. In particular, on May 18, 2008, when inspecting the colony in the ponds of the Kagan fishery, it was noted that in 10 out of 12 nests eggs of different stages were laid, and in 2 nests the chicks hatched from eggs (Turaev, 2012).

Similarly, on May 31, 2009, 16 of the 29 nests recorded in Cho'chqaxona Lake had 4 eggs, 3 eggs in 8 nests, 2 eggs in 2 nests, and construction of 3 nests had already begun. The nest-building efforts of snails, like most aquatic and underwater species in the region, have been shown to continue until July, depending on air temperature. During our observations, chicken nests were recorded in the last days of August (23.08.2003) in a colony in a pond west of Tudakul. In one of the nests, 3 and in the remaining 2 nests, 3 bird nests were registered, with 2 hatchlings (approximately one month old). We can observe that this condition occurs only under the influence of air temperature, and most importantly anthropogenic factor. Such actions were recorded in 2008 in the Kagan fishery ponds. Due to the sharp drop in the water level, the island where the 12 chicks nested was connected to the coast, and the chicks in the nests were completely killed by jackals and stray dogs. This forces the birds to rebuild their nests.

During our observations, we have seen that the number of eggs in re-laid nests is 2, sometimes 3 (Turaev, Azimov, 2012). In the nests lay up to 3–5 large brown-spotted, white eggs. An average of 3.8 eggs were observed in 60 nests recorded in the colony. This figure corresponds to the figure in other waters of the republic (Shennazarov, 1994). The period of laying eggs in the basins of the region begins in the second half of April (18.04.2003, 16.04.2016). The eggs are laid for 21-25 days in the presence of both sexes. x 44.3 mm. From the second half of May the chicks hatch from the eggs, and in June and July the chicks leave the nests completely and spread out to feed on the shallow shores of the ponds. The food composition of snails is based on various aquatic invertebrates, aquatic insects, shrimp, small fish, dogs, and sometimes young frogs. It has been preparing to fly since the last days of August and in September it feeds only on the last representatives in some waters of the region, including the Todakol reservoir, Kagan fishing ponds, Zikri, Zamonbobo, Dengizkul, Qaraqyr, Oyoqogitma lakes. In the warmer years of autumn, the autumn flight of spoonbills can last until the last days of October (29.10.2013, 27.10.2017, 30.10.2019).

## CONCLUDING

During the ecological crisis around the Aral Sea, a number of birds of the republic, including sparrows and blackbirds, a rare species of our fauna, have been expanding their range in the waters of Bukhara region since the last century and becoming regular nesting species. As mentioned above, the habitat of these species in the region is observed in the lakes Zamonbobo, Qaraqyr, Zikri. Given the fact that these reservoirs, in turn, are included in the list of important ornithological regions (IOR) of international importance, the opportunities for further increase in the number of these species in the regional reservoirs are expanding.

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