Online ISSN: 2588-3526

Journal of Wildlife and Biodiversity

Volume 8(2): 269-282 (2024) (http://www.wildlife-biodiversity.com/)

Research Article

The influence of the decrease in the water level in the Caspian Sea on certain species within the Gulls (Laridae) family

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Received: 29 November 2023 / Revised: 06 February 2024 / Accepted: 15 February 2024/ Published online: 15 February 2024.

How to cite: Abulfaz, T., Natavan, K. (2024). The influence of the decrease in the water level in the Caspian Sea on certain species within the Gulls (Laridae) family, Journal of Wildlife and Biodiversity, 8(2), 269-282. **DOI**: https://doi.org/10.5281/zenodo.11105711

Abstract

In 2013-2023, the influence of the water level decrease in the Caspian Sea on the reproductive behaviour of the migratory-nesting species of *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo, Hydroprogne caspia* which are in the Gizilaghaj Bay, was studied. Thousands of the migratory-nesting bird populations came to Azerbaijan from Africa and South-Eastern Asian countries and breed in the Gizilaghaj Bay of the Caspian Sea. As a result of the water level decrease in the Caspian Sea, the difference in the water level in the Northern and Southern parts of Little Gizilaghaj Bay caused a change in the reproductive behaviour of the species mentioned above of the *Laridae* family, which have been formed over many years.

Keywords: behaviour, population, nesting, breeding, migratory

Introduction

Gulf was designated as an ornithological reserve in 1926 and later as a national park in 2018 near Gizilaghaj Bay. Gizilaghaj Bay comprises the Greater and Lesser Gizilaghaj Bays and is interconnected by three channels (Fish passing channel, Crash and Spawning). Only 1/5 of the area from Gizilaghaj Bay that existed in the 1920s remains today (Vinogradov and Morozkin, 1979). In 1931, the total area of the Greater Bay was 850.0 km2, with a water volume of 3.5

km3, an average depth of 4.1 m, a maximum depth of 4.5 m, a width of 28.0 km, and a length of 40.0 km. By 1946, the area had decreased to 712.0 km2, water volume reduced to 1.5 km3, average depth declined to 2.1 m, maximum depth to 2.8 m, coastline length to 116.0 km, width to 24.0 km, and length to 29.0 km. In 1965, the Bay's area further diminished to 692.0 km2, water volume to 1.0 km2, average depth to 1.4 m, maximum depth to 2.2 m, coastline length to 92.0 km, width to 24.0 km, and length to 27.0 km (Gul 1967, Kasimov and Baghirov, 1983).

Between 1967 and 1970, the water depth in the Bay varied from 0.6 to 2.5. The Lesser Gizilaghaj Bay has a length of 16.7 km, a width of 6.5 km, a coastline length of 38.9 km, a water volume of 0.15 km3, and a depth ranging from 0.5 to 2.5 m (Kuliev, 1989). There is no direct connection between the Caspian Sea and the World Ocean, leading to periodic fluctuations in water levels. The initial instrumental observations in the Caspian Sea date back to 1837 in Baku. Over the past 186 years, the sea level has undergone significant changes three times. Between 1929 and 1977, it fell by 3.0 meters, followed by a rise of 2.5 meters from 1978 to 1995. Subsequently, from 1996 to 2023, a decrease in sea level has been observed. As of now, the sea level is measured at 28.05 meters above the world ocean level. The most substantial fluctuations occurred in 1862 (-24.0 m) and 1977 (-29.0 m) (Kuliev, 1989). From 1996 to 2023, the water level in the sea has decreased by more than 1.0 meter (Table). According to international forecasts, there is a probability that the water level will continue to decrease by 9.0-18.0 meters by the end of the century. If this occurs, the sea could lose 1/3 of its total area.

The Republic of Azerbaijan has established a legal framework for the protection of its animal world. The Law dated June 4, 1999, titled "About the animal world," is a cornerstone in this regard, included in the law collection on the environment of Azerbaijan (Baghirov, 2002). Additionally, the President of Azerbaijan issued a significant Decree on December 21, 2002, focusing on the protection of biological diversity and its genetic fund.

In 2006, Azerbaijan further demonstrated its commitment to biodiversity preservation by developing the National Strategy and Action Plan. This plan outlines comprehensive approaches for the protection and sustainable use of biodiversity within the country. In 2010, Azerbaijan reinforced its dedication to this cause with the signing of the "Gabala Declaration" on the protection of biological diversity (Baghirov, 2002). To fulfil these commitments, it is imperative to research the protection of natural habitats for animals, aligning with existing conventions and implementing the ordinances and legislative acts that have been adopted. Since 1975, Gizilaghaj Bay has held international significance as one of the world's 12

designated wetlands. Situated along the Azerbaijani sector of the South-Western coast of the Caspian Sea, the Bay's importance has intensified for water-swimming and wintering, migratory-nesting, migrant, and sedentary bird populations. This heightened importance is attributed to the complete drying up of numerous small lakes since the 1960s, a consequence of human agricultural activities.

The hydro regime of the watersheds plays a pivotal role in determining the productivity of many waterfowl and waterside bird populations (Khrokov, 1975; Linkov, 1989; Podkovirov, 1997; Skryabin, 1975). Changes in the water level within the watersheds have profound impacts on nesting places, the food base, trophic relationships, and biotopic interactions of the birds. This situation underscores the significance of bird protection (Krivenko, 1991; Nerekov, 2001). The Gizilaghaj Bay of the Caspian Sea is of particular importance for breeding of the wetland birds (Mustafayev and Humbatova, 2001, Mustafayev and Sadigova, 2005, Mustafayev and Sadigova, 2011). In the Gizilaghaj Bay of the Caspian Sea, the study of the natural and anthropogenic changes caused by the decreasing of the water level influenced the reproduction behaviour of some migratory-nesting birds of the Laridae family is important for solving the problem of preserving the genetic fund and natural biological diversity.

Although there is some information about the species belonging to the Laridae family in the Gizilaghaj Bay area, the influence of the decreasing water level on the reproductive behaviour of these birds has not been studied. In general, the world, the adaptation of the birds belonging to the waterfowl, waterside and other ecological groups to the changing of the water level is studied poorly (Nerekov, 2001; Grishanov, 2005). In ornithological local archives, the latest information about the settlement nature, reproduction, trophic and biotope relationships of the migratory-nesting bird populations belonging to the Laridae family of the South-Western coast of the Caspian Sea was given (Mustafayev and Humbatova, 2001; Mustafayev and Sadigova; 2005; 2011; Babayev et al. 2006; Taghiyev, 2013, Ahmadi and Naderi, 2020).

Table. The water level change at the "Neft Dashlari" Marine Meteorological Station in the Caspian Sea (1995-2022)

	Months													
	1	2	3	4	5	6	7	8	9	10	11	12	Annual average, cm	Baltic system
1995	149	153	158	163	165	175	179	169	155	151	150	149	160	-26.40
1996	148	147	149	152	150	154	147	133	124	119	118	115	138	-26.62
1997	116	118	115	120	123	135	142	132	119	117	120	123	123	-26.77
1998	110	110	102	102	124	139	141	132	124	118	115	118	120	-26.80
1999	112	110	114	114	119	124	127	128	123	124	109	105	117	-26.83
2000	109	108	109	105	112	122	124	120	111	105	105	101	111	-26.89
2001	90	89	92	98	107	116	121	114	108	94	84	93	101	-26.99
2002	92	90	95	99	105	118	124	120	107	99	97	98	104	-26.96
2003	95	91	94	103	109	121	125	123	115	105	108	105	108	-26.92
2004	99	105	108	109	116	122	131	130	124	115	109	110	115	-26.85
2005	103	113	115	117	124	139	145	143	129	125	122	120	125	-26.75
2006	117	115	115	117	126	131	134	123	113	102	103	101	116	-26.84
2007	98	103	102	107	117	129	129	124	114	101	104	101	111	-26.89
2008	107	105	108	113	119	130	128	123	114	106	100	104	113	-26.87
2009	101	98	103	111	114	122	124	120	107	107	107	102	110	-26.90
2010	100	99	99	105	113	122	122	112	98	90	85	80	102	-26.98
2011	80	80	77	79	87	95	96	91	76	70	72	67	81	-27.19
2012	66	71	71	73	81	89	93	73	67	72	74	64	75	-27.25
2013	58	62	62	68	75	89	92	90	76	69	58	60	72	-27.28
2014	57	57	56	62	68	75	75	62	53	71	75	33	62	-27.38
2015	31	33	33	42	44	50	52	42	31	16	9	12	33	-27.67
2016	14	9	21	31	37	49	57	51	43	32	29	25	33	-27.67
2017	23	23	23	27	37	46	47	47	39	37	25	21	33	-27.67
2018	25	21	22	28	32	43	50	41	28	16	15	6	27	-27.73
2019	9	7	7	13	18	26	29	19	6	-4	-8	-6	10	-27.90
2020	-6	-1	1	5	13	28	28	21	12	-5	-9	-11	6	-27.94
2021	-15	-9	-13	-10	-3	5	6	-3	-12	-30	-38	-45	-14	-28.14
2022	-41	-42	-39	-39	-32	-23	-24	-34	-47	-57	-63	-67	-42	-28.42

Material and methods

In the water area of the Gizilaghaj Bay, wetlands and coastal areas, the researches were carried out by route method on foot, by motorized and non-motorized boats and by car to study the influence of the decreasing of the water level in the Caspian Sea to the reproductive behaviour of the migratory-nesting species of *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo, Hydroprogne caspia* (39˚10´16″ N 49°13´52 ″ E – 38°50´55″N 48°51´44″, Fig.1). The binoculars and a Carl Zeiss telescope were used. The reproductive behaviour of these migratory-nesting bird populations was researched in May, June, July, and August. 5000 km was travelled by car, 850 km by motorized boat, 144 km by non-motorized boat, and 451 km on foot.

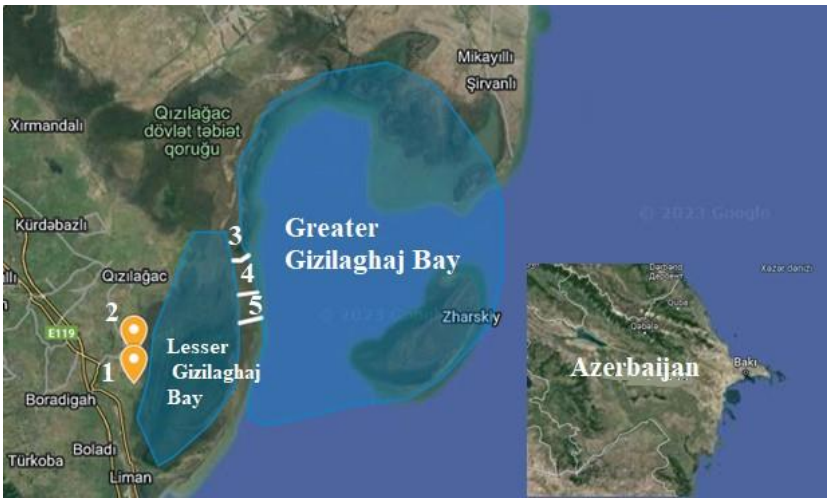

Figure 1. The geographic location of the study area: 1- Tezekend village, 2- Gumbashi village, 3- Fish passing channel, 4-Crash channel, 5- Spawning canal

Until the 1980s, in Gizilaghaj Bay, the water level was regulated by the sluices built on the channels between Greater and Lesser Gizilaghaj Bays. Later, the damage of the sluices caused changes in the water level and salinity between the Greater Bay and the Lesser Bay, affected the bird's settlement nature, and as a whole, caused the change in the flora and fauna (Kuliyev, 1989). The Lesser Gizilaghaj Bay connected with Greater Gizilaghaj Bay by the channels and pipes, in a certain sense, has become a closed water pool. Based on observation data of the "Neft dashlari" Hydrometeorological Station of the Caspian Sea, the sea level is determined due to the height calculated from the conventionally accepted horizon in the absence of surface waves and currents on the sea (Fig. 2).

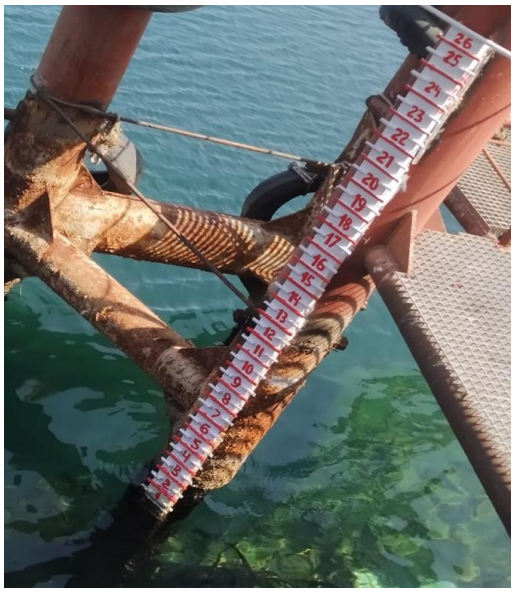

Figure 2. Tamasa is used to measure the water level at the Sea Hydrometeorological Station of the "Neft dashları" in the Caspian Sea

Despite the decreasing of the water level in the Caspian Sea, the difference occurs in the water level in the Greater and Lesser Gizilaghaj Bays of the Gizilaghaj Bay. The occurred difference influences the reproductive behaviour of some species belonging to the *Laridae* family. The decreasing of the water level in the Caspian Sea also causes to the decrease of the water level in the Greater Gizilaghaj Bay according to the Gizilaghaj Bay is adjacent directly to the Caspian Sea. In the Caspian Sea, the decrease in the water level occurs a difference in the water level in Northern and Southern parts of Lesser Gizilaghaj Bay. In the summer months, the water level is high depending on the volume of the water entering from the Kura River through the Vilash and Akkusha Rivers from the Talish mountains to the Northern part of the Lesser Gizilaghaj Bay. Those rivers do not flow into the Southern part of the Lesser Gizilaghaj Bay. The Lesser Gizilaghaj Bay is connected to the Greater Gizilaghaj Bay through the Fish passing channel (38^0 $56^/$ $50^{//}$ N 48^0 $55^/$ $31^{//}$ E) in its Southern part. Since the Lesser Gizilaghaj Bay is located higher than the Greater Gizilaghaj Bay and the Caspian Sea, the water level decreases as the water flows into the Greater Gizilaghaj Bay and from there to the Caspian Sea. In the Lesser Gizilaghaj Bay, the difference in the water level causes changes in the reproductive behaviour formed over many years of some species belonging to the *Laridae* family.

Results

As a result of the lowering of the water level in the Caspian Sea (in 1995-2023), in the Greater and Lesser Gizilaghaj Bay, more than 3,915 ha of the area became the land, the area of the Kurdili Island increased from 4,894 ha to 9,048 ha from 1995 to 2023.

The species of *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo, Hydroprogne caspia* bred in the South-Western coast of the Caspian Sea (mainly in the Gizilaghaj Bay), come from the countries of South-Eastern Asia and Africa.

Although the lowering of the water level in the Caspian Sea, the very small number of the individuals belonging to the species of *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo, Hydroprogne caspia* and the breadth of the area do not cause the serious changes in the breeding conditions of these species. In recent decades, research related to the influence of the rising and falling of the water level in the Caspian Sea on the dependence between the population density and reproduction conditions of these species belonging to the Laridae family was not conducted.

Since 2013, the disturbing factors related to the intensive hunting of the medicinal leech (*Hiruda medicinalis orientalis* Utevsky & Trontelj, 2005) by broconers, had a negative effect to the reproduction behavior of the migratory-nesting populations of the species of *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo* in the Southern part of the Lesser Gizilaghaj Bay and caused the local displacements.

The migratory-nesting population of the species of *Chroicocephalus ridibundus* nests only on the Northern border of the Southern part of the Lesser Gizilaghaj Bay ($38^0 59^/ 05^{//}$ N $48^0 50^/ 49^{//}$ E) in an area with a width of ~3.0 km and a lenth of ~1.5 km.

Since 1996, the decreasing water level in the Caspian Sea and since 2008, the mass rotting of the reeds, the multiplication of the mirror area in the Southern part of the Lesser Gizilaghaj Bay created favorable conditions for the nesting of the species of *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo, Hidroprogne caspia.* In the Northern part of the Lesser Gizilaghaj Bay from the Fish passing channel, the multiplying of the water level, the covering of the area with the newly formed reeds, the staying of the water plants below the water surface, etc. factors deprived these species from the nesting in those areas. Compared to the Lesser Gizilaghaj Bay, in the Greater Gizilaghaj Bay, the water plants are very weak, the area is mainly windy, the water is deep, etc. factors prevent to build a nest of the migratory-breeding populations of this species.

Discussion

The special regime-protected area of the Gizilaghaj Bay surrounds the area from the Fish passing channel (38056/50//N 48055/31//E) connected with the Greater Bay in the South to the Accush (39016/16//N 48057/33//E) and Garagush post (39014/45//N 49002/15//E) in the North. In the last ten years, the length of the area that is out of the Fish passing channel (over the bridge) between the water area of the Greater Gizilaghaj Bay (38056/45//N 48056/21//E), is ~1,241 meters, the length of the area that is out of the 1st post (38057/35/ N 48055/22//E) between the water area of the Greater Gizilaghaj Bay (38057/39//N 48056/49//E), is ~2,103 meters, as a whole the area of ~219.0 ha became the dry area. The land air distance between the Fish passing channel and the 1st post is ~2,802 meters.

The length of the area that is out of between the water area of the Little Gizilaghaj Bay (38057/39//N 48054/42//E) from the 1st post to the road led (38058/15//N 48055/20//E) to the Crash channel (38059/10//N 48055/25//E - the place where there are sluices), is 960.0 meters, and as a whole 116.0 ha. The land-air distance from the 1st post to the Crash channel is ~2,932 meters. The length of the area became the dry area between the water area of the Greater Gizilaghaj Bay (38059/28//N 48057/20//E) between the 1st post and Crash channel (from the place where there are sluices), is ~2,822 meters, and as a whole ~794.0 ha. The land air distance from the Crash channel (from the place where there are sluices) to the Spawning channel (over the bridge) (39004/10//N 48054/09//E), is ~9,460 meters. In the distance from the Spawning channel (over the bridge) to the water area of the Greater Gizilaghaj Bay (39003/32//N 48056/48//E), the length of the area became the dry area is ~4,029 meters. The district of the area became the dry area between the Crash and Spawning channels in the direction of the Greater Gizilaghaj Bay, is ~2,786 ha.

In contrast to the above-mentioned - from the area became a dry area, despite the decreasing water level in the Caspian Sea, the water level in the Pirman area located in the Northern part of the Spawning channel of the Gizilaghaj Bay, is high. The reason is that the rivers of Vilash, Orman, and Accusha flow into Pirman. When these rivers flood in the spring months, the pipes are unable to prevent the water passed to the Greater Bay, that's why the floods occur around. The area of the water part of Pirman, is ~3,950 ha. The distance from the entrance gate of the Pirman channel (39004/21//N 48053/27//E) to the watery shore of the Greater Gizilaghaj Bay (39003/32//N 48056/48//E), is ~5,076 meters, the distance to the land in the direction of the Gizilaghaj village (39005/37//N 48048/49//E), is ~7,090 meters.

In 1995, when the high water level in the Caspian Sea was noted, the water distance from the 1st post to the Kurdili Island was ~11,804 m. Since 1996, the water level in the Caspian Sea began to decrease, and in 2023, the water distance between the 1st post and Kurdili Island

decreased to ~10,400 m. In 1995, the length of the island was 12,758 meters, the width 5,197 meters, the area 4,894 ha, and in 2023, the length of the island was ~15,026 meters, the width ~7,720 meters, and the area increased to ~9,048 ha. In 1995, the water distance between the Kurdili and Saranski was ~10,273 m, and in 2023, it decreased to ~6,589 meters. The upper land coordinate of the Kurdili Island was - 39003/11//N 49011/07//E in 1995, and in 2023 - 39002/37//N 49010/10//E. The lower land coordinates of Saransky (39004/59//N 49012/12//E in 1995, 39006/37//N 49011/51//E in 2023) have changed. The changes influenced negatively to the trophic relationships and the significant reduction of the habitats of the waterfowl birds belonging to the Anatidae family.

During the research period, the number of pairs and nests which formed during the reproduction period of the migratory-nesting populations of the *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo, Hydroprogne caspia* species were noted. In some of these migratory-nesting species, it is difficult to get close to the nest by boat, and sometimes, in order not to destroy the nest, and sometimes not disintegrate the nest, not to disturb the species and the chicks in the nest, the bioethical rules were followed by observing the nest with ordinary eyes and binoculars.

Through the decreasing the water level in the Caspian Sea, the mirror area of the Bay has expanded due to the mass rotting of the reeds and the disappearance of the tamarisks in the Gizilaghaj Bay. In 1995, the length of the Southern mirror area of the Lesser Gizilaghaj Bay was 14,598 m, and the width was 5,903 m when the water level in the Caspian Sea was high and there were a lot of reeds. In 2023, the length of the Southern mirror area of the Lesser Gizilaghaj Bay was 16,087 m, and the width was 7,537 m, as a result of the mass rotting of the reeds and the disappearance of the tamarisks. The new ecological conditions created as a result of the changes have expanded the reproduction area of these species belonging to the *Laridae* family, and the decreasing of the water level has created favourable conditions for nesting on the surface of the water. The emergence of the jungles formed by the water plants in the Southern part of the Lesser Bay to the surface of the water has increased the nesting opportunities of these birds, as a result of the decreasing of the water level.

Since 2005, the hunting of leech by poachers has become widespread and continues until the present time due to the emergence of the demand for medical leech (*Hirudo medicinalis orientalis* Utevsky & Trontelj, 2005) in the "black" market. Intensive hunting has reduced greatly the number of leeches. This species was included in the 3rd edition (2023) of the Red Book of the Republic of Azerbaijan in 2023, due to the decreasing the number of leeches. The

period of the widespread leech hunting carried out by poachers coincides with the reproduction period of the birds. Since 1996, when the water level in the Caspian began to decrease, the decreasing water level in the Southern part of the Lesser Gizilaghaj Bay has created favourable conditions for the comfortable hunting of the medical leech, since 2005. As a result, the disturbing factors (the noise during the hunting, the problems caused by motorboats, etc.) caused by poachers hunting the medical leeches during the reproductive period of the birds had a bad effect on the reproductive behaviour of the above-mentioned birds belonging to the *Laridae* family. The nests of the above-mentioned birds are not met in the suitable biotopes near the areas where the medical leech is hunted. The hunting of the medical leech is carried out more intensively in the area between the Crash channel ($38^0 59' 10'' N\ 48^0 55' 25''$ E) and Fish passing channel ($38^0\ 56'\ 50''$ N $48^0\ 55''\ 31''$E) of the Southern part of the Lesser Gizilaghaj Bay. The leech hunting is poor from the Crash channel in the direction of the Fish passing channel and further to the South. In the Northern part of the Lesser Gizilaghaj Bay, the high water level creates certain difficulties for the poachers to hunt the medical leech, so leech hunting is rare in that area. The Leech hunting is met singly in the shallow waters near the coast of the Northern part of the Greater Gizilaghaj Bay.

The species of *Chroicocephalus ridibundus* bred in the research area has a large number during the wintering period in Azerbaijan. It was breeding in a small number in mixed colonies during the reproduction period in the Kura-Araz plain, on the Caspian Islands, until the last 30-40 years (The information system of the Azerbaijan fauna). Though the number of this species increases during the wintering and migration periods in Azerbaijan, its migratory-nesting population decreases every year, and in some years even its nesting is doubtful. This species nests in an open area of water only in the area (width ~3.0 km, length ~1.5 km) called Darbukuk ($38^0 59' 05'' N\ 48^0 50' 49''$E) in the North of the Southern part of the Lesser Gizilaghaj Bay of the Caspian Sea. It nesting in other areas of the Gizilaghaj Bay was not noted. The number of its nesting individuals is up to ~300-400. It lays its nest in mixed colonies of the terns, in relatively shallow water (~50-70 cm) in the uprooted part, in the soil part of the dense reed stumps near the water surface and the dense water plant jungle. Its nest is ~20.0-25.0 cm above the water, sometimes higher a little and the inner surface of the nest consists of the dry alga, reed, arundo, etc. plants. The height of the nest above the water surface depends on how high the reed stump is above the water surface. The number of the nests is between ~150-200. The number of eggs in the nest is 2, rarely 3 eggs.

Chlidonias niger is mainly a migrant species for Azerbaijan, observed on the shores of the Caspian Sea and in the ponds of the lower streams of the Kura River (The information system

of the Azerbaijan fauna). It nests in mixed colonies with other species of the terns in small colonies in the Southern part of the Lesser Gizilaghaj Bay. Its nests were noted in all the areas of the mirror part of the Lesser Gizilaghaj Bay with a length of ~ 16,087 m and a width of ~7,537 m (2023) (in 1995, this area was 14,598 m, and the width was 5,903 m). Its nests were noted mostly in the areas near the Northern and Southern borders of the Southern part of the Lesser Gizilaghaj Bay ($38^0 52' 32'' N 48^0 49' 43'' E$– $39^0 04' 21'' N\ 48^0 53' 27'' E$). It builds its nest at a height of ~5.0-8.0 cm above the water in the dense jungles formed by water plants on the water's surface. The inner diameter of the nest is ~6.0-10.0 cm. The number of the noted nests is up to ~200-250. The number of the eggs in the nest is usually 2, sometimes 3. The inner surface of the nest is wet, covered with water plants. The number of nested individuals is up to ~450-500. The nesting in other areas of the Gizilaghaj Bay was not noted.

Chlidonias leucopterus is mainly a migrant species in Azerbaijan, met on the shores of the Caspian Sea and in the lower ponds of the Kura River (The information system of the Azerbaijan fauna). In Azerbaijan, it nests in small amounts. In the mirror of the Southern part of the Lesser Gizilaghaj bay, the number of individuals nested in mixed colonies with other species of the terns is up to ~450-500. It has a nest consisting of the water plants ~5.0-8.0 cm high on the dense water plants on the surface of the water. The inner diameter of the nest is ~6.0-10.0 cm, the number of the eggs in the nest is usually 2, sometimes 3. The number of the nests is up to ~150-200. Their nests are met in the whole mirror part of the Southern part of the Lesser Bay. In other areas of the Gizilaghaj Bay, its nesting was not noted.

Chlidonias hybrida is mainly a migratory-nesting species, that settles on the shores of the Caspian Sea and in the lower ponds of the Kura River (The information system of the Azerbaijan fauna). It is the most numerous species among the nesting terns in Azerbaijan. The number of its nested individuals is more than ~1500-1700 in the Lesser Gizilaghaj Bay. In the mirror area of the Southern part of the Lesser Gizilaghaj Bay, it nests in mixed colonies of the terns in relatively shallow waters where the water plants grow densely. Their nests were noted in the whole area of the Southern part of the Lesser Bay. The nests are located ~5.0-8.0 cm above the water surface. The number of eggs in the nest was mainly 2. The number of its nests is up to ~ 600-700. In other areas of the Gizilaghaj Bay, its nesting was not noted.

Most individuals of the migratory-nesting populations of three species (*Chlidonias niger, Chlidonias leucopterus, Chlidonias hybrida*) met together and their nests are located near each other between the terns in mixed colonies. *Gelochelidon nilotica* is met on the shores of the Caspian Sea, in the lower ponds of the Kura River, in the Nakhchivan reservoir and the Davachi port during the migration period in Azerbaijan (The information system of the

Azerbaijan fauna). Its nesting populations were noted in small numbers in the research area. The nests of this species were noted mostly on the borders of mixed colonies of the terns. The number of individuals who met in the research area was up to ~30-50. Since their nest was in the middle of the jungle, it was difficult to get near the nest. It was observed by binoculars.

Hydroprogne caspia nests in small numbers in the Caspian Sea and nearby water pools (The information system of the Azerbaijan fauna). In the Lesser Gizilaghaj Bay, the number of individuals nested in mixed colonies of the other species of the terns is up to ~450-500. Its nests are met in all the areas of the mirror part of the Southern part of the Lesser Bay. The inner diameter of its nest is ~6.0-10.0 cm. There are usually 2 eggs in its nest. Up to ~150-200 nests of this species have been noted. It was not met in other areas of the Gizilaghaj Bay. b*Thalasseus sandvicensiz* nests in a mixed colony with the other terns in the bay. In our republic, it breeds on the shores of the Caspian Sea, at the mouth of the Kura River, in the Gizilaghaj Bay (The information system of the Azerbaijan fauna). In 1995-1998, 36% of the birds that formed the colonies on the islands belonging to the Azerbaijani sector of the Caspian Sea and on the old platforms were Sandwich Terns. In 2001-2003, one colony was observed in the Absheron archipelago, one in Mehman Lake and two in the Baku archipelago (Mustafayev and Mammadov, 2006). During the research period, the number of individuals nested in the Southern part of the Lesser Gizilaghaj Bay is up to ~100-150. It lays its nests inside the colonies. It is very difficult to go near the nest of the water plants jungle. Their nests were not met in other areas of the Gizilaghaj Bay.

Sterna hirundo is met in Aghgol, Araz River, Baku archipelago in Azerbaijan (The information system of the Azerbaijan fauna). In the Lesser Gizilaghaj Bay, the number of individuals in the nested population is up to ~450-500. Its nests were noted in the whole mirror area of the Southern part of the Lesser Bay. Their nests are located ~5.0-8.0 cm above the water like the other migratory-nesting species of the terns. In its nest, the number of eggs was mainly 2. The number of the noted nests is up to ~150-200. The nesting in other areas of the Gizilaghaj Bay was not noted.

The nestings of the migratory-nesting populations of the above-mentioned species of *Chroicocephalus ridibundus, Chlidonias niger, Chlidonias leucopterus, Childonias hybrida, Gelochelidon nilotica, Thalasseus sandvicensis, Sterna hirundo, Hydroprogne caspia* were not noted in the Northern Pirman part (3950 ha) of the Lesser Gizilaghaj Bay. In the Northern part of the Gizilaghaj Bay (in the North of the Spawning channel), according to the decaying of old reeds, the covering of the area with the newly formed reeds, the multiplying of the water level as a result of the flowing the water of the Vilash River and the Kura River came

from the Talish mountains to the Northern part of the Lesser Gizilaghaj Bay by the Akkusha River, the staying of the water plants below the water surface, the mirror part of the area being too small, etc. reasons, the species mentioned above can not already nest in these areas.

Compared to the Lesser Gizilaghaj Bay, in the Greater Gizilaghaj Bay, the water plants are very weak, the area is mainly windy, the water is deep, etc. factors prevent to building a nest of the migratory-breeding populations of this species. So as a result of the decreasing water level in the Caspian Sea, the water level was different in the Northern and Southern parts of the Fish passing channel of the Lesser Gizilaghaj Bay and has changed the breeding behaviour of the above-mentioned species of the *Laridae* family. The favourable conditions were created in the Southern part of the Lesser Bay, and in the Northern part, these birds were deprived of nesting.

Acknowledgements

We express our sincere gratitude to the staff of the Department of Zoology and Physiology of Baku State University, the employees of the Charles University of the Czech Republic, Minister of Ecology and Natural Resources of Azerbaijan Republic Mukhtar Babayev and Deputy Minister Rauf Hajiyev, Head of the Biodiversity Protection Service Firudin Aliyev, employees of Gizilaghaj National Park, acting director of the Institute of Zoology of the Ministry of Science and Education of the Republic of Azerbaijan Aladdin Eyvazov, head of Applied Zoology Center Barat Ahmadov and the driver of the motorized boat Elshan Agayev for their attention and help.

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