

ON THE COLONIAL BREEDING WATERBIRDS IN THE LAGOONARY COMPLEX OF KUNE-VAINI

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ABSTRACT

Immediately after World War II, considerable areas of wetlands in Albania were drained with subsequent affect on colonial breeding water birds (herons and cormorants) of Kune-Vaini lagoonary complex, either by severely affecting them or causing their extinction. Until the mid-twentieth century, only one colony of this kind had retained its characteristics: the “Ishull Lezha” colony, one of the largest in the country and Western Adriatic. In the 70s, the colony declined rapidly while during the transition period after the radical regime changes in 1991, this colony was entirely lost. In 2019 the first revitalization of this colony was observed, with counts of 550-570 breeding pairs, of which 68% *Egretta garzetta*, 23 % *Ardeola ralloides*, 5% *Microcarbo pygmaeus*, 3% *Bubulcus ibis* and less than 1% *Nycticorax nycticorax*. Direct and systematic counting of nests, as well as areal observations taken through drone were used to obtain the aforementioned data. Furthermore in 2020, a relatively similar number of breeding pairs was observed, dominated again by *Egretta garzetta* (55%), however there was a noticeable increase in percentage of other species, especially *Bubulcus ibis*. Monitoring results over a two year period show that the colony occupies an area of 0.2- 0.25 ha, far smaller than the colony in the 50s counting 2000-2500 breeding pairs occupying a 10 ha area. Historical and existing threats that led to the decline of this colony as well as the recovery measures are discussed in this study.

Key words: Colonial water birds, herons and cormorants, Kune-Vain lagoonary complex, status, trend, threats, Lezha

1. INTRODUCTION

A number of wetland sites along the Adriatic Coast are recognized as Important Birds and Biodiversity Areas (BirdLife International 2021), and identified as Special Protected Areas under Barcelona Convention (Karavasta,

Narta, Patok, Vilun-Velipoje, Orikum, and Lalzi Bay) (Bego *et.al.*, 2013.), including also the Kune-Vaini wetland, which is our study area. Kune- Vain has been widely known for the avifaunistic values. Up to now this area has had significant numbers of nesting cormorants and herons. The habitat consisted of forests with *Tamarix* (*Tamarix parviflora* mainly), surrounded by freshwater ponds and swamps. The birds used to feed in the swamps of Shëngjin, Kune, Bilanc, Ceka lagoon, and in wet meadows that stretch along Drini to Lezha. Eight species have been breeding together in a dense colony of about 10 ha located in an area separating the Kuna lagoon from the Adriatic Sea (Beudels *et al.*, 1996). Detailed studies in this area were made from 1951 to 1964 (Lamani 1966a, 1966b; Zeko and Lamani 1966), and the last time when species composing the colony have been reported nesting, were in 1998 and 2000. Since then, no more detailed studies have been made. In the colony of the years 1951-1954, 7 species of waterbirds were breeding together with a total of 2000-2500 nesting pairs. While, in 1991 and 1993, separate colonies were observed on solitary poplars and in a dense 20- year-old pine plantation (Crockford and Sutherland 1991).

2. MATERIALS AND METHODS

Data about the colonial breeding waterbirds of Kune-Vain lagoony complex were obtained in 2019 and 2020. The visits were made on May (2 expeditions), June (3 expeditions), and July, which corresponded to the beginning of the breeding process of the species, mid-phase (the end of the incubation phase and the hatching of the eggs) as well as the end of the breeding process. Based on a manual or protocol, direct and systemic nest counts have been conducted. This method provides a more reliable estimate than the counting of the total number of adults. The total number of adults includes both breeding and non-breeding birds, thus the estimation would not be that accurate. Although the preferred method for monitoring the colonies that are located in trees and large shrubs is to conduct strip transects through the colony (NACWCP 2003), the presence within the colony for a long period of time could produce excessive disturbance or abandonment of nests. Another technique for obtaining data was remote sensing with use of drone (Mavic Pro). Through drone, photos were taken from above, where the number of species present in the colony was estimated, but with difficulties to identify all the species by this method as the nests were also found inside the pine trees or its branches, not only at the top. Photos have been analyzed and georeferenced through Qgis. Aerial photographs, although giving very accurate data of the nesting surface, enable only the monitoring of the upper part of the nests, while the other nests are not visible. In order to make accurate estimates of the number of nests, it was necessary to keep records on

the average number of nests in each tree in some parts of the colony. This methodological element was followed in the present case, albeit with a specificity. Since in this case the nests are located on pine trees, then the crown of each pine is visible from satellite photography. In this way all the pines within the nesting surface were counted. To obtain the number of nests and consequently nesting pairs, the number of pines was multiplied by the average number of nests per pine.

The equipment needed for the counting comprised of optical aids like binoculars (8x40, 10x40 most widely used for birdwatchers), telescope, identification guide, drone for aerial photography, pencil and notebook for notes during the monitoring, GPS (Wetlands International 2010).

3. RESULTS AND DISCUSSIONS

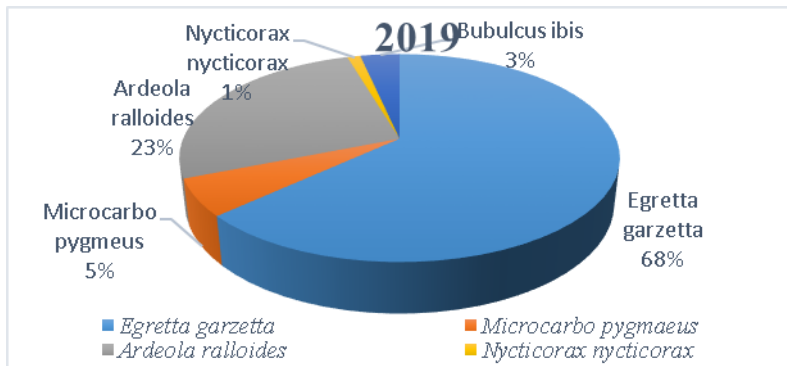
The colony is located in Kune lagoon and consists of 5 bird species breeding together: Little egret (*Egretta garzetta*), Squacco heron (*Ardeola ralloides*), Pygmy cormorant (*Microcarbo pygmaeus*), Cattle egret (*Bubulcus ibis*) and Black-crowned night heron (*Nycticorax nycticorax*). Each species covers an average percentage in the mixed colony. In 2019, approximately 550-570 breeding pairs were counted, of which circa 68% consisted of *Egretta garzetta*, 23 % *Ardeola ralloides*, 5% *Microcarbo pygmaeus*, 3% *Bubulcus ibis* and circa 1% *Nycticorax nycticorax*. Furthermore in 2020, a relatively similar number of breeding pairs was estimated (420-600 pairs), dominated again by *Egretta garzetta* (55%), however there was a noticeable increase in percentage of other species, especially *Bubulcus ibis* (15%). *M. pygmaeus* is represented with 7%, *A. ralloides* with 20% and *N.nycticorax* with 3%. In a study carried out from 1951 to 1953, it was reported that cormorants had the largest portion compared to other species of the colony (Lamani and Zeko, 1966). Monitoring results over a two year period show that the colony occupies an area of 0.2- 0.25 ha, far smaller than the colony in the 50s counting 2000-2500 breeding pairs, 7 species and occupying a 10 ha area (Table 1). *E. garzetta* and *M. pygmaeus* nests have been observed in the upper part of the *Pinus halepensis*, while other species were located mostly in the middle part of the tree.

There is no doubt that the breeding potential of this area has remarkably decreased over the last 60-70 years, and the sources are the large-scale changes that happened inside the ecosystem over more than half a century period of time, and the increased disturbance level in the area and its surroundings, particularly to the colony of the breeding birds. The quality of the *Tamarix* has decreased since 1966 due to salinization of the marshes from the digging of a channel linking the site with Merxhani lagoon. The destruction for 2-3 consecutive years of nests and the marine vegetation itself

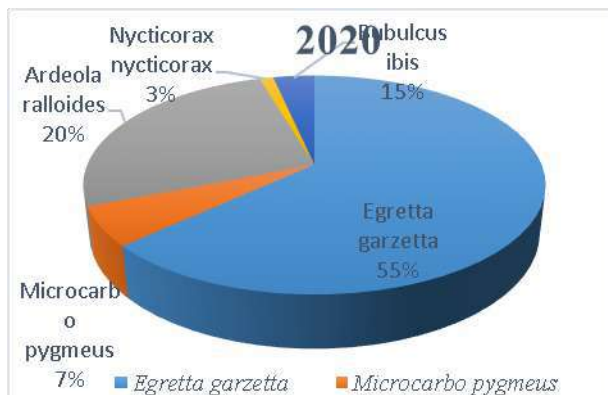
caused the changes in the colony. The reduction of these swamp areas that served as a place to provide their food has had a negative impact. In 1991 and 1993, no nests were found in the *Tamarix* vegetation. In 1991, isolated colonies were observed in solitary poplars and in a dense 20-year-old pine plantation (Crockford and Sutherland, pers. Comm.) In 1993, nests were found in only a fragment (5 ha) of forest land wet, alluvial and isolated woods of *Populus alba*. The studies carried out for a long time in the area report that the colony began to move towards pine plantations due to the drying of vegetation with *Tamarix*, which is suitable for nest construction. This may explain why the colony located in 2019 in the pine forest (*Pinus halepensis*) planted in Kune (Merxhan). Today, this habitat is totally degraded and filled with dead trees. Such an ecological upset is extremely detrimental to these populations and is most probably the main reason for the disappearance of any breeding concentration (Beudels *et al.*, 1996). Furthermore, as the size of the colony in the last two years is almost the same, we can assume that the colony has already reached the carrying capacity of the ecosystem, which is drastically reduced over the last 70 years.

Table 1. Colony composition and number of breeding pairs in Kune – Vain (Lamani and Zeko 1966; Bego and Selgjakaj 2019; 2020)

SPECIES	1951-1953	2019	2020
<i>P. CARBO</i>	400-500	0	0
<i>P. PYGMEUS</i>	600-750	25-28	*
<i>A. CINEREA</i>	200-250	0	0
<i>E. GARZETTA</i>	400-500	380-386	*
<i>A. RALLOIDES</i>	200-250	125-130	*
<i>P. LEUCORODIA</i>	100-125	0	0
<i>P. FALCINELLUS</i>	100-125	0	0
<i>N. NYCTICORAX</i>	0	3-6	*
<i>B. IBIS</i>		17-20	*
NUMBER OF PAIRS	2000-2500	550-570	420-600



The percentage that occupy the species in the mixed colony for 2019



The percentage that occupy the species in the mixed colony for 2020.

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