

Museum of Natural Sciences "Sabiha Kasimati": past and present

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ABSTRACT

The Museum of Natural Sciences (MNS) was established in 1948 in Tirana as part of the National Institute of Sciences. In 1957, with the creation of the University of Tirana, the MNS was subordinated to the Chair of Zoology in the Faculty of Natural Sciences. The Museum exhibits over 3000 native and non-native specimens and has a collection of 100,000 in storage. The MNS, recently named "Sabiha Kasimati", is a center of research specialized in collecting, monitoring, evaluating and safeguarding the Albanian biodiversity. Furthermore, the research staff contributes to university teaching in the Faculty of Natural Sciences.

Key words:

research center for flora and fauna, museum of natural sciences, Albania.

RIASSUNTO

Museo di Scienze Naturali "Sabiha Kasimati": passato e presente

Il Museo di Scienze Naturali (MNS) è stato fondato nel 1948 a Tirana come parte dell'Istituto Nazionale delle Scienze. Nel 1957, con la creazione dell'Università di Tirana, il MNS fu subordinato alla cattedra di Zoologia presso la Facoltà di Scienze Naturali. Il Museo espone oltre 3000 esemplari autoctoni e non autoctoni e ha una collezione di 100.000 esemplari in deposito. Il MNS, di recente nominato "Sabiha Kasimati", è un centro di ricerca specializzato nel collezionare, monitorare, valutare e salvaguardare la biodiversità albanese. Inoltre, lo staff di ricerca contribuisce all'insegnamento universitario presso la Facoltà di Scienze Naturali.

Parole chiave:

centro di ricerca per la flora e la fauna, museo di scienze naturali, Albania.

INTRODUCTION

Museums are responsible for promoting and preserving the cultural and natural heritage of a specific country. Natural history collections serve as important sources of biological data for scientists, educators and the general public (Bradley et al., 2014). The researchers of the Museum of Natural Sciences (MNS) in Tirana have played an active role in teaching courses in the Faculty of Natural Sciences. Originally part of the Museum, the mineralogy and paleontology specimens were transferred to the Faculty of Geology which today is part of the Polytechnic University of Tirana. In 2010, the Museum of Natural Sciences along with the National Herbarium and Botanical Garden were incorporated in the Research Center of Flora and Fauna (RCFF). The RCFF is composed of three research groups: Flora study

group, Fauna study group and Spontaneous Flora study group. At present, it includes seven botanists and five zoologists. In 2018, the Museum of Natural Sciences was named after the first Albanian ichthyologist, Sabiha Kasimati, who was killed by the communist regime in February 1951. She graduated in Turin, Italy, in 1940 with her thesis on "Fauna ittica d'acqua dolce dell' Albania - Ichthyofauna of fresh waters of Albania" (Kasimati, 1940). She was later employed as a researcher in the National Institute of Sciences (NIS), in the natural sciences section. Upon her initiative and with the support of other researchers of the NIS (among whom the famous Albanian botanist Ilia Mitrushi and the Russian ornithologist Vasil Puzanov), the Museum of Natural Sciences was established in 1948. She was an outstanding researcher and a courageous intellectual who stood up against the communist regime, the

reason for her being unjustly condemned to death. Her major scientific work, the monograph "Peshqite Shqipërisë - Ichthyofauna of Albania", was sent for publication in 1950 but was never published following her death in early 1951 (Kasimati, 1950). After the change from the communist regime, the Nation's Honor Order was awarded to Sabiha Kasimati for her outstanding scientific and intellectual contributions to the country, while the Museum of Natural Sciences was given her name.

The Museum of Natural Sciences "Sabiha Kasimati" is an important and unique research center specialized in collecting, evaluating and monitoring the diversity of Albanian fauna, specifically: Entomofauna (Insects), Herpetofauna (Reptiles and Amphibians), Ornithofauna (Birds), Mammalofauna (terrestrial and marine mammals), Macrobenthos (sponges, crustaceans, molluscs), etc.

The voucher specimens of the MNS were collected during a 70-year period of biological recording and other research. Furthermore, the museum hosts various animal collections from Africa, Asia, South America, Indian Ocean and Pacific Ocean that were transferred from the Franciscan Museum of Shkodra in 1967, just after the communist regime closed down religious institutions and declared Albania the first atheist country in the world. As mentioned, the rich collection of the MNS is due to its talented researchers such as Sabiha Kasimati, Ilia Mitrush, Vasil Puzanov, Fotaq Lamani, Kastriot Misja, Idriz Haxhiu, Vangjel Andoni, Lekë Gjiku, Islam Zeko, Andrian Vaso, Ferdinand Bego, Taulant Bino, Sajmir Beqiraj, etc. In addition, museum curators and taxidermists such as Muhamet Shpati and Grigor Jorgo contributed to preservation of the collections.

INVOLVEMENT IN TEACHING IN THE UNIVERSITY OF TIRANA

It is important to underline that the MNS and the RCFF, according to their history of foundation and main functions, are still part of the Faculty of Natural Sciences, and the research staff has continually contributed to teaching in the Department of Biology and, later on, in the Department of Biotechnology. Based on their experience in field studies, the staff members take an active role in teaching courses for the Bachelor and Master degrees in the Faculty of Natural Sciences. In addition, the staff is involved in helping young researchers completing their PhD studies in different areas of biology. They mentor students in their studies on the fauna and flora of Albanian, the protection of endangered species, habitat loss and habitat fragmentation, evaluation, protection and rehabilitation of biological diversity in Albania. The courses taught in the University include topics such as: Biogeography, Geobotany, Bases of Ecology, Plant Ecology, Phytogeography, Zoogeography, Vertebrate Zoology, Biology of Aquatic Ecosystems, Algology,

Methods of Studying Flora and Fauna, Introduction to Anthropology.

Almost all museums serve both the general public and organized groups such as schools, camp groups and senior citizens (Falk & Dierking, 2000). School visits and field trips to museums and science centers are considered a powerful learning resource (Morentin & Guisasola, 2014). Although the RCFF is mainly focused on research, it supports formal education in other educational institutions. The RCFF, including the MNS, is also important for informal science education and takes an active role in science education using various media outlets. The estimated number of visitors is about 7000 annually.

SCIENTIFIC OBJECTIVES OF THE RCFF

Scientific research is the main focus of the RCFF. Along with teaching, it complements the RCFF's philosophy and methods regarding the university mission. In this framework, the Center's mission is to contribute to scientific development in Albania and science education for the society in order to preserve the biodiversity of the Albanian flora and fauna. To complete these tasks, the RCFF continually enriches its collection via fieldwork on endangered and endemic species in Albania. Also, the RCFF contributes to taxonomic identification of flora and fauna using advanced techniques. Therefore, the further development of these techniques is very important for the RCFF. In flora studies, the researchers take an active role in flora cultivation and its distribution in different areas. Researchers working in the RCFF have been involved in several national and international projects, among which:

- "Strengthening national capacity in nature protection - preparation for NATURA 2000 network", IPA - IUCN, Sapienza University, Cooperazione Italiana allo Sviluppo, financed by the European Commission 02.12.2015 - 14.04.2018
- The First National Communication of Albania to the United Nations Framework Convention on Climate Change (UNFCCC), UNDP Albania, Tirana, July, 2002
- The Biodiversity Strategy and Action Plan-Albania, Tirana, 1999
- Implications of Climatic Changes on the Albanian Coast, UNEP, Athens, 1996
- National indicators for the monitoring of the environment, Tirana, 2005, Regional Environmental Center (REC) for Eastern and Central Europe, Project no. REReP 1.8.
- The inventory of Albanian Wetlands. Greekbiotope/Wetland centre – ECAT Tirana, December, 2003
- Marine underwater meadows – The green lungs of the Mediterranean, Tirana, 2005.

ANIMAL COLLECTIONS

As already mentioned, there are around 3000 specimens exhibited in the Museum of Natural Sciences and there is a scientific fund of over 100,000 specimens belonging to the Albanian fauna. Meanwhile, the museum is enriched almost every year with new collections, mainly coming from fieldwork with the students of Biology but also from other researchers from Albania and abroad. The most active part of the Museum today is the Zoology Sector, organized as an exhibition in several halls. Table 1 reports the number of individuals and species for each taxonomic group found in the museum.

Invertebrates

Invertebrates represent the largest number of faunal specimens exhibited in the museum and kept in the scientific storage area. Albanian researchers have made valuable contributions to this collection (Misja, 2005; Vrenozhi & Jäger, 2012; Halimi & Paparisto, 2013). The invertebrate collections are organized in two sections: Aquatic invertebrates and Terrestrial invertebrates (Insects).

Aquatic invertebrates. In this section the largest number of species and individuals belongs to the phylum Mollusca (gastropods and bivalves), but there are also several collections of sponges and Cnidaria (mainly coral species).

Terrestrial invertebrates (Insects). 217 species are exhibited and many others are kept in the scientific storage area for research purposes (helping Master and PhD students as well as other researchers from Albania and abroad). The largest collections of insects belong to the orders Lepidoptera (butterflies), Odonata (dragonflies), Hemiptera, Coleoptera, Neuroptera, Orthoptera, Hymenoptera, etc. It is worthwhile mentioning here that new species and

Collections	No. of individuals	No. of species
Aquatic invertebrates	693	488
Terrestrial invertebrates (Insects)	812	217
Fishes	167	156
Amphibians and reptiles	55	37
Birds	380	201
Mammals	52	44
Total	2159	1143

Tab. 1. Data about animal collections in the Museum of Natural Sciences.

subspecies of insects are exhibited in our museum, e.g. the species *Peripodisma llofizii* Lemonnier-Darcemont & Darcemont, 2015, reported for the first time at Llofizi Mountain, Gjirokastra, Albania (Lemonnier-Darcemont & Darcemont 2015), and the subspecies *Melanargia galathea vrenozina* Aistleitner, 2017, reported for the first time at the northwestern hill of Durrës, Albania (Aistleitner, 2017) (fig. 1). *P. llofizii* was recently included in the IUCN Red List as NT (Near Threatened).

Vertebrates

Fishes. There are 157 fish species belonging to 73 families exhibited in the museum, from around 467 species in total known for Albanian (Kasimati, 1940, 1948, 1950; Rakaj, 1995). Families with the largest number of species represented in the Museum of Science are Sparidae, which includes marine fish species, and Cyprinidae, consisting of freshwater species. Moreover, alien species, coming from tropical seas and introduced into the Mediter-



Fig. 1. a) *Peripodisma llofizii* (Albanian mountain grasshopper) exhibited in the MNS;

b) *Melanargia galathea vrenozina* (marble white butterfly)

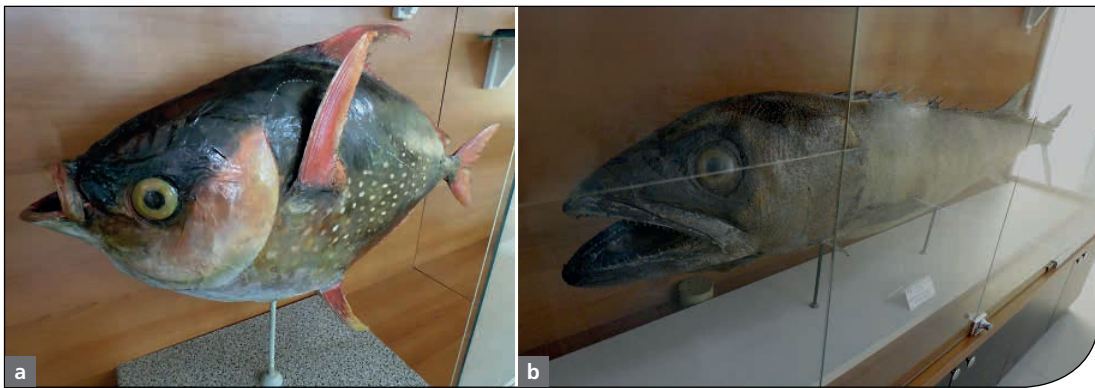


Fig. 2. Alien species exhibited in the MNS: a) king fish (*Lampris guttatus*); b) oil fish (*Ruvettus pretiosus*).

reanean and then the Ionian and Adriatic seas, have invaded Albanian marine and inland waters. Thus, specimens of two such species very recently caught in Vlora Bay, Albania are exhibited in our museum. The first is *Lampris guttatus* Brünnich, 1788 (Lampriformes; Lampridae), known as "king fish", which was caught in 2009 in Radhimë, Vlorë, Albania (Bego & Kashta, 2012), and the second is *Ruvettus pretiosus* Coco, 1833 (Perciformes; Gempylidae), known as "oil fish", which was the first record for the Albanian ichthyofauna (Arapi et al., 2017) and was caught in 2017 (fig. 2).

Amphibians and reptiles. Fifty-nine species of amphibians and reptiles are known from the country (16 amphibians and 43 reptiles) (Bruno, 1989; Haxhiu, 1994; Haxhiu, 1998; Jablonski, 2011; Mizsei et al., 2017; Szabolcs et al., 2017; Sacdanaku et al., 2017). Around 63% of all the amphibian and reptile species found throughout the country are exhibited in our museum. Both Albanian and foreign researchers have provided a valuable contribution to the museum's herpetological collection. It is worthwhile mentioning the special contribution of Prof. Idriz Haxhiu, who worked hard to enrich the amphibian and reptile collections over the years. The most attractive part of the amphibian and reptile section of our museum is the collection of marine turtles. Three species, leatherback turtle (*Dermochelys coriacea* Vandelli, 1761), loggerhead turtle (*Caretta caretta* Linnaeus, 1758) and green turtle (*Chelonia mydas* Linnaeus, 1758), are exhibited in our museum (fig. 3).

The leatherback turtle (*D. coriacea*) is very rare for our marine waters because it is an oceanic species. Only three specimens have been reported thus far for Albanian waters, one in 1963 (caught along the Shëngjin coast, northern Albania and the one exhibited in the museum) and two others caught in 2016 and 2017 (in Drini Bay and released into the sea). The loggerhead turtle (*C. caretta*) is the most common marine turtle species in Albania, while the green turtle (*Ch. mydas*) is quite rare compared with the loggerhead.

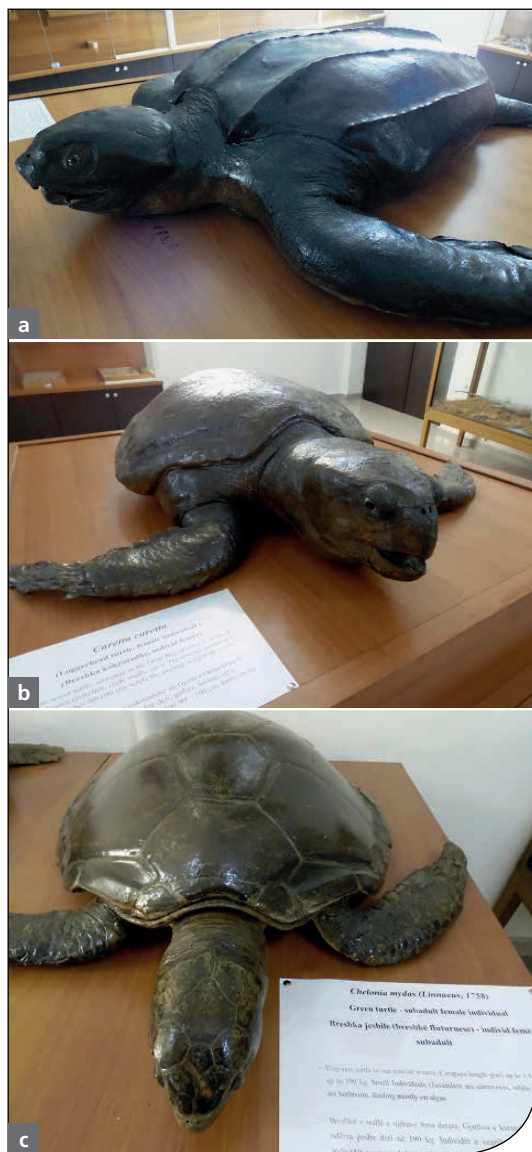


Fig. 3. Marine turtles exhibited in the MNS:

a) leatherback turtle (*D. coriacea*); b) loggerhead turtle (*C. caretta*); c) green turtle (*Ch. mydas*). All marine turtles have a special conservation interest, being considered endangered species according to the IUCN.



Fig. 4. Three species of birds of prey exhibited in the MNS: a) golden eagle (*Aquila chrysaetos*); b) Egyptian vulture (*Neophron percnopterus*); c) griffon vulture (*Gyps fulvus*).

Birds. This class is represented in our museum with the highest number of species (201) among all the vertebrates. This constitutes around 57% of all the Albania ornithofauna. This precious asset is due to the great work of our researchers, such as Lamani & Puzanov (1962), Zeko (1963) and Bino et al. (2006). Twenty-five species of birds of prey are exhibited in the museum, such as: eagles, represented by the symbol of our nation, the golden eagle (*Aquila chrysaetos*); vultures, represented by the Egyptian vulture (*Neophron percnopterus*), which is considered very rare globally but still breeds in Albania, even though its population has dramatically decreased during the last 25 years. The other species found in our museum, the griffon vulture (*Gyps fulvus*) no longer breeds in our country and can only be observed randomly in Albania (fig. 4).

Water birds are represented in the museum with 84 species, the most attractive being the Dalmatian pelican (*Pelecanus crispus*), the largest bird in Europe. The only place where it breeds in Albania is Divjaka-Karavasta National Park (fig. 5). Based on the latest data, the population consists of a colony of about 50 pairs, but this population in our country is Critically Endangered (CR), while at the global level it is Near Threatened (NT).

Mammals. They are represented in our museum by 44 species of which three are marine mammals: sperm whale (*Physeter macrocephalus*), short-beaked common dolphin (*Delphinus delphis*) and Mediterranean monk seal (*Monachus monachus*), which is considered an endangered species. The other species found in our museum belong to the large mammals (grey wolf, red fox, Balkan lynx, golden jackal, Balkan chamois, wild boar, brown bear, European roe deer, etc.), medium and small mammals, as well as some species of bats. A very important contribution, especially on small mammals of Albania, has been given by Prof. Ferdinand Bego with several publications over the years (Bego, 2001, 2003; Bego et al., 2008; Bego et al., 2018).

The most attractive mammalian specimen in our museum is the 8-m long skeleton of a sperm whale (*Physeter macrocephalus*), exhibited in the entrance hall (fig. 6). It was caught in 1958, together with 7 other individuals, along the Durrësi coast, where they were stuck in the shallow waters of the Adriatic Sea. This was considered to be a family of 8 members, following their prey or a fishing boat, which might have ended up in the shallows and did not have any chance to return to deep waters. Another hypothesis, which seems more scientifically plausible, is that the whales lost their way by following the currents and accidentally entered from the Atlantic through the Gibraltar Strait into the Mediterranean and then into the Adriatic Sea.



Fig. 5. Dalmatian pelican (*Pelecanus crispus*) in the MNS. In addition to many other species native to our country, around 42 species of exotic birds transferred from the Franciscan Museum of Shkodra in 1967 are exhibited in the Museum of Natural Sciences.



Fig. 6. Skeleton of a sperm whale (*Physeter macrocephalus*) exhibited in the MNS.

THE NATIONAL HERBARIUM OF ALBANIA

The national herbarium represents the richest and most exceptional collection of flora species in Albania. It contains more than 3000 species and 150,000 specimens of mostly vascular plants. The herbarium was established in 1947 and has been continuously enriched and maintained by several generations of passionate and gifted Albanian botanists such as Xh. Qosja, I. Mitrush, M. Demiri, K. Paparisto, J. Vangjeli, A. Mullaj, B. Ruci, L. Kashta, as well as other foreign botanists.

Nowadays, the herbarium is part of the National Research Center of Flora and Fauna of Albania. It remains open to the general public and provides an essential and unique service to researchers, students and others both for scientific work and curiosity.

The four published volumes of the "Flora of Albania" (I-1988, II-1992, III-1996, IV-2000) are the direct output of the scientists associated with the National Herbarium of Albania. This is the most important work on floral studies, with 3235 species and 689 subspecies belonging to 165 families and 300 genera.

CONCLUSIONS

The mission of the Center (RCFF) is to provide a contribution to scientific development in Albania and science education for the society in order to preserve the biodiversity of the Albanian flora and fauna for future generations. In this context, the Museum of Natural Sciences "Sabiha Kasimati" has an active role in preserving and promoting the rich biodiversity of Albanian flora and fauna by playing an active part in teaching in the University of Tirana and in media visibility for science education. In the future, the Museum must be able to care for its collections and make the associated information digital and as accessible as possible to the general public and other researchers.

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