INTERNATIONAL JOURNAL OF SCIENTIFIC INNOVATIONS

Research Article *Biology* ***International Journal of Scientific Innovations (IJSI)***

ISSN: xxxx-xxxx ***DOI:***

Hydro-geo-biological phenomena and climate change in Dobrogea, Romania - case study: Conacu-Negresti Valley

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Received Date: 03/01/2018
Accepted Date: 05/01/2018
Published Date: 28/02/2018

Citation: Axini M, Al-Azki F, (2018) Hydro-geo-biological phenomena and climate change in Dobrogea, Romania - case study: Conacu-Negresti Valley. Int J Sci Innovs. 1 (2): 67-74.

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Abstract

Conacu-Negresti Valley is located in the south-eastern part of Romania (southwest of Dobrogea), particularly in an area with excessive continental climate. The valley is characterized by a series of specific habitats, of which the most important are the dry steppe meadows, exposed limestone rocks and Conacu-Negresti Lake. This paper presents the data concerning the hydro-biological phenomena and climate change that have occurred in this geographical area. The data represent the results of the research activities developed within the framework of our scientific and educational program on the Conacu-Negresti Valley from 2002 until 2015.

Keywords: hydro-geo-biological phenomena, climate change, Conacu-Negresti Valley, Dobrogea Region, Romania

Introduction

Dobrogea is located on the northern Balkan Peninsula in southeastern Central Europe ($44^0$17`03,77``N, $28^0$21`53,27``E). It occupies an area of approximately 23,142 km^2, of which 15,570 km^2 are located in Romania (making up 6.52 % of the total area of Romania) and 7,572 km^2 in Bulgaria. Dobrogea Region is bordered by the lower Danube River to the southwest, west, northwest and north, the Danube Delta to the northeast, the Black Sea to the east and Ludogorie Plateau to the southeast and south (Figure 1. A; B). Conacu-Negresti Valley (Figure 1. C) is located in the extreme south-eastern part of Romania (south-eastern part of Europe), in the center of Cobadin Plateau, subunit of Negru-Vodă Plateau [1]; it falls within the following geographical coordinates: the parallel $43^0$58`48,93`` northern latitude and the meridian $28^0$10``05,12`` eastern longitude. Cobadin Plateau landscape consists of large and almost flat interfluves. There starts a series of short valleys discharging into the Danube River.

Here, it develops a temperate-continental climate with hot, dry summers and cold winters with strong blizzards because of the movement of cold continental air from north-eastern and eastern parts Europe or the Arctic air. The landscape formed predominantly on Cretaceous and Sarmatian limestones, on Precambrian basement lithology and covered by a thick blanket of 40 m of Quaternary loess. The Proterozoic foundation is composed of crystalline schists and sedimentary superstructure, which are distinguished by two types of Paleozoic-Mesozoic and Neozoic formations. Paleozoic Silurian formations are composed of clay schists with Devonian diaclases, consisting of thick marl clay, marl-limestone, etc. Mesozoic formations are composed of alternating calcareous and detritic deposits. Jurassic Period strata are composed of alternating limestone and diatomites. The Cretaceous period is represented by reef limestone and, marl-limestone, with sand, glaucenic sandstones, and micro-conglomerates in the

middle strata and marl clay at the base. Uppermost strata are dominated by debris facies with calcareous sandstones, micro-conglomerates, chalk, etc. [2-8]. The landscape of the valley consists of gorges with limestone walls, with limestones "up to day", Conacu-Negresti Lake being located within this area, canyons, ravines, xerophyte steppe grasslands, grassy hills and bushes.

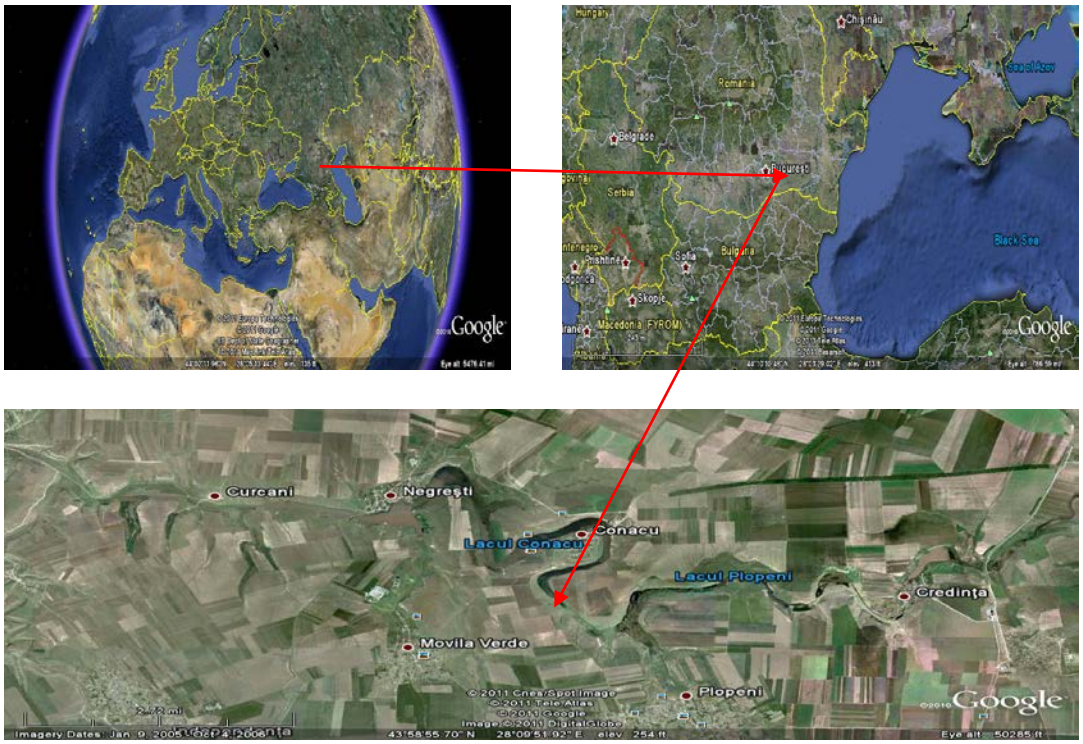

Figure 1. A) Map of Europe emphasizing the position of Dobrogea and Conacu-Negresti Valley in Europe; B) Geographical position of Conacu-Negresti Valley in Dobrogea Region; C) Conacu-Negresti Valley (processed by Google Earth, accessed March 12, 2017)

Material and Methods

By 2003, the valley was known only geographically. In 2003, we started a comprehensive long-term program of scientific research of the valley. Since then, we have carried on scientific research of the valley in geological, pale-ontological, paleo-biodiversity terms, and of conservation of its geo-biodiversity. During the scientific program carried out between 2002 and 2015, different stations were established for field observations, identification of species and sampling both from the lake and the valley. 10 stations were established at different points in the lake, taken differently depending on the nature of the substrate, lake depth and the existence of marsh, aquatic and floating vegetation. From these stations, samples were collected monthly. All samples were taken from the shore area of the lake, on the distance of two meters. For the land, 12 stations were established depending on the type of the existing habitats in the valley: limestone walls with "rocks to day", grassy hills, canyons, plateaus, ravines, debris walls, limestone walls with fossil mollusks.

For identification, it was widely used field observations and photographs taken monthly by the team, during the field trips. Subsequently, all samples (both geological, paleontological and biological) have been transported, stored and examined / studied in our laboratories. The nomenclature of taxa and data processing is according to data from literature as well as to national and international legislation.

Results and Discussions

Dobrogea is distinguished by its special features from the rest of the country. Geographical position near the Black Sea, soil structure, climate, land history of Dobrogea, made this region show a characteristic fauna and flora, one mixture of Southern, Ponto-Caspian, Black Sea, European, Eurasian elements, etc. [9]. In South Dobrogea, the Conacu-Negresti Valley is located on a north-west to south-east axis.

It is a “Canara”, a term specific to Dobrogea, meaning a valley generally short, narrow, with limestone slopes, high and steep walls with small caves, partly covered with Sub Mediterranean xerophyte meadows and scrub forest vegetation [10]. The Conacu-Negresti Valley is distinguished by spectacular landscape beauty and is characterized by rich and diverse assemblage, with many rare or endemic species specific to Dobrogea Province. Its significance also is derived from its geological, geomorphologic, and paleontological characteristics [11,12]. The geo-diversity of the valley is very interesting, characterized by rare geological structures and geomorphological phenomena, as a result of a unique geological and paleontological history, specific to Dobrogea province [13,14]. So far, in the valley, we have identified a number of 101 terrestrial and aquatic species of invertebrates, belonging of 17 orders and 57 families [15-19].

Through the large number of specimens per species, the 22 terrestrial and aquatic species of gastropods identified thus far, belonging to 9 families grouped in 3 orders [20-25], have a very important role in the demonstration of climate change in the area. Among them, in the basin of the lake water (43059`15.94``N, 28009`24.52``E), 3 species of gastropods have a great scientific importance: *Planorbarius corneus* Linnaeus 1758, *Esperiana esperi-Férussac* 1823, *Esperiana acicularis Férussac* 1829 [26]. It is known that gastropod populations occupy an important place in the lake biocoenoses structure, by the specific and numerical diversity and biomass [27]. They are the first organisms that are investigated when examining a stagnant water. Their presence in large numbers indicates the level of oxygen in water, and therefore the presence of life in aquatic ecosystems. The presence of the gastropod *P. corneus* (Fam. Planorbiidae), in large number of specimens (464), species that indicates the existence of high levels of calcium ions in lake water, demonstrated that the valley has a strong limestone geological structure formed by the withdrawal of the former Sarmatian Sea. Moreover, the presence of this last-geological time sea is demonstrated in large numbers, by fossil species of mollusks present in large numbers here (such as *Mactra sp.*), and the limestone "to day" that dominates the valley. These fossil mollusks species are present in the limestone rocks from the coastal zone of the lake, on the limestone walls of the valley, in the canyons and ravines, on the Sarmatian coasts with “limestone rocks to day” [28-31]. The valley is a former branch of the Danube, linking the river and the Black Sea. This is demonstrated by the geological structure of the valley, shape and position of the two canyons in the south-west of the valley (Figure 2. A; B), and the presence in large numbers of three species of mollusks - one terrestrial xerophilous species (regional endemism spread on the Black Sea coast of Romania and Bulgaria) - *Zebrina varnensis* L. Pfeiffer 1847 (Fam. *Enidae*), and two aquatic species - Danubian and Pontic species (Southeast European-Pontian relicts) – *E. acicularis* and E. *esperi* (Fam. Thiaridae).

Presently, Z. *varnensis* it found in numerous copies on the limestone walls with “rocks to day” (Figure 3. A), together with *Chondrula tridens* O. F. Müller 1774 and *Zebrina detrita* (syn. *Helix detrita*) Müller 1774, in the same family.

Z. varnensis is a xerophilous species, highly resistant to drought, found on sunny slopes covered with herbaceous vegetation, in sandy areas [32-39]. Also, the fact that the valley is a former branch of the Danube is demonstrated by the presence of larvae of *Paraponyx stratiotata* Linnaeus 1758 (Fam. Crambidae) from Lepidoptera, and *Hebrus pusillus* Fallen 1807 (Fam. Hebridae) from Heteroptera, species whose larvae have adaptations to aquatic life. These are rare species, known so far only from the Danube Delta [40-45]. In the north, the valley is dominated by the presence of the lake with the same name (Figure 3. B), of recent geological time, formed by natural damming. It was formed by water overflowing to another lake (Plopeni Lake) located south-west due to heavy amounts of rainfall. This natural phenomenon has led to frequent flooding of the downy oak forest that dominated the valley at the time [46,47].

Figure 2. A; B) Top views of some branches of the large canyon (original)

The lake has a sinusoidal form, shaped by the valley of the same name. During periods of heavy rainfall, the valley has a high level of water. And it can easily see ravines and small torrential bodies, which flows into this valley. Through the 60 years due to catastrophic flooding after heavy rains, water from Plopeni Lake located in the south and at an altitude higher than Conacu-Negresti Valley, poured over it, flooding it. Limestone structure of the valley, alluvium deposited after the flood, the ground water from groundwater sources in the valley, rainwater falling in the area led to the formation and maintenance of the lake today [48,49]. Along with the water was deposited an alluvial soil layer of about 1 cm, which reduced the infiltration of water into the soil, thus forming the Conacu-Negresti Lake. The limestone bed, which could not absorb water, the underground springs and intensive irrigation in the 1980s, favored the maintenance of this body of water.

The valley was previously dominated by a dense forest of pubescent oak (*Quercus pubescens* Wild. 1805), the remnants of which can be seen on the lake bottom. This forest was part of Cobadin Forest, part of the "Deliorman" Secular Forests (name from Cumana Language, which translated "Black Wood"). These forests, largely disappeared today, spanning in southern of two biogeographic regions, Dobrogea and Muntenia. Instead of these forests, dry steppe ecosystems emerged and developed [50-52]. This led to the disappearance of the wolf (*Canis lupus* Linnaeus 1758) from Southern Dobrogea. Although its presence is detected in the southern areas of South Dobrogea, the wolf disappeared completely from Conacu-Negresti Valley.

The existence of this forest is proved by the limestone walls tilt and the existing of herbaceous and shrub plant species in the canyons of the south-west of the valley or on the grassy hills and limestone walls, such as *Prunus spinosa* L. 1753, *Crataegus monogyna* Jacq. 1760, *Prunes'* (*Padus*) *mahaleb* L. 1753, etc. [53-71]. Also, the proof that the valley was dominated by an oak forest is the presence of invertebrate's species, such as gastropods Z. *detrita* and C. *tridens*, the insect *Cerambyx cerdo* Linnaeus 1758 (Fam. *Cerambycidae*), etc., which normally live together in an oak forest [72]. The presence of two species Z. detrita, large snail, and C. *tridens* (relatively common species in the foliage of oak forests) previously confirmed the existence of the pubescent oak forest (*Q. pubescent*); however, it is no longer found in Conacu-Negresti Valley today. These are xerophilous species belonging to the genera of West Asian origin.

Currently, the valley is dominated by the lake with the same name, and by limestone plateaus, and the two canyons located in the southwest of the valley, and rocky cliffs. Within these habitats, there have developed species of herbaceous plants and shrubs, and animals specific to dry and sandy steppe areas. Many of them are rare, endemic, specific to Dobrogea Province [73,74]. On the limestone slopes with "rocks to day", on plateaus, hills and canyons in the southwest of the valley, it is worth mentioning many individuals of the gastropods *Cepaea vindobonensis* A. Férsussac 1821 (common snail in the whole Dobrogea, widespread in our country) and *Helicella obvia dobroudschae* Clessin 1886 (xerophilous species, endemic to Dobrogea), both species from Family Helicidae.Compared with wolf, fox species Vulpes sp. Frisch 1775 is present in the sandy areas. They burrow in sandy canyon walls [75].

The valley is the "house" of three lizard species specific to Dobrogea. Of these, in crevices in stone walls, it can meet "the wall lizard" (*Lacerta (Podarcis) muralis ssp. maculiventris* Werner 1891). It was quoted only for wooded areas and with rocky walls in southern and northern Dobrogea. The presence of this lizard in the valley demonstrates, once again, the existence of downy oak forest [76-80]. The appearance of dry steppe ecosystems instead of mirkwood, leading to the appearance of the ground squirrel (*S* Linnaeus 1766) (Fam. Sciuridae), a species endemic to Europe, characteristic to steppe grasslands. Currently, it is strongly endangered due to strong human intervention in natural areas [81-84].

Figure 3. A) Grassy hill with "limestone to day"; B) The lake and geomorphological processes existing in the valley (original)

Conclusions

Until 2003, the valley was known only from the geographical field studies and research of Mrs. Dr. Sofia Iana, University of Bucharest, on the Negru Vodă Plateau, Dobrogea. In 2003, we developed a research project on the geo-bio-diversity of Conacu-Negresti Valley. The own effort became a permanent research program, undertaking new research and public education projects for environmental protection of this valley. Currently, there is no research on the palaeo bio-diversity, geological structures and hydro-geo-biological and climate change phenomena of this valley from Dobrogea Region. Our findings are unique. In the future, they will be upgraded with new data and research of laboratory and field.

Moreover, our research on the valley is singular. No literature data were found in this field on this region. The data presented in this work were compiled from field and laboratory studies conducted in 2003 - 2015. The valley is a former branch of the Danube River, formed on the former Sarmatian Sea. In the past, it was dominated by a dense forest of pubescent oak which, during recent geological time, disappeared due to the strong hydrological and climatic phenomena that occurred in the area. Currently, it is a dry valley. The fossil and actual species that have been discovered in this area gives us the possibility of reconstitution the palaeo-ecosystems in this region correlating them with current ecosystems, and also of it natural history.

At present, the valley does not have a designated conservation status. Human impacts on different aspects may contribute to future declines in Conacu-Negresti Valley. Due to its unique nature, which resulted from its geological and paleontological past, the valley hosts many actual and fossil species, and geological structures and geomorphological phenomena, important to science and human well-being, some of these aspects have not yet been described. Such efforts will be the focus of future work in this research program.

Acknowledgments

We kindly thank to our colleagues for field research undertaken in the framework of these projects: Assoc. Prof. Dr. Marius Skolka and Prof. Dr. Rodica Bercu, both from “Ovidius” University, Faculty of Natural Sciences and Agricultural Sciences, Constanța, Romania; Dr. Gavril Negrean from the Institute of Biology, the Romanian Academy, Bucharest, Romania; and Dr. Gabriel Bănică from the Ornithological Society, Constanța Branch, Romania.

Conflict of interest

There is no conflict of interest between the two authors of the work.

References

[1] Iana S (1970) South-Western Dobrogea (Oltina Plateau, Negru Voda). Physico-geographic study, with special reference to biogeography [thesis]. Multiplication Center, Bucharest University, 42 p. (in Romanian).

[2] Al-Azki F (2003) Geological Encyclopedia (from A to Z). (Vol. 1), Al-Hawaran Publisher, Damascus, 1050 p. (in Arabic).

[3] Al-Azki F (2006) Geological Encyclopedia (from A to Z). (Vol. 2), Al Hawaran Publisher, Damascus, 1050 p. (in Arabic).

[4] Al-Azki F (2008) Geomorphology, Syrian Arab Republic. Ministry of High Education. Tishreen University. Faculty of Science. Dep. of Geology, Lattakia, 300 p. (in Arabic).

[5] Al-Azki F (2010-2011a) Geological Survey <<Field Geology>>, Syrian Arab Republic. Ministry of High Education. Tishreen University. Faculty of Science. Dep. of Geology. Lattakia. 330 p. (in Arabic).

[6] Al-Azki F (2010-2011b) Geological Survey <<Field Geology>>, Syrian Arab Republic. Ministry of High Education. Tishreen University. Faculty of Science. Dep. of Geology, Lattakia, 240 pp. (in Arabic).

[7] Brezeanu DG (1997) The Monograph of Cobadin Village, Cobadin Town Hall, Constanţa County, Constanța. 200 p. (in Romanian).

[8] Coteț P (1969) Southern Dobrogea - Genesis and Evolution. Geography studies on Dobrogea. Works of the First Geography of Dobrogea Symposium), Universitaria Publisher, Constanța, pp. 51-55 (in Romanian).

[9] Axini M (2011a) Research and Conservation of Biodiversity in the Black Sea Romanian Coastal Zone. Book of Abstracts. International Symposium „Protection and Sustainable Management of the Black Sea Ecosystem”, Third Millenium Imperative. National Institute for Marine Research and Development, „Grigore Antipa”, Constanța, pp. 75-76.

[10] Iana S (1973) Canarales Fauna of Dobrogea (extract). Scientific Studies and Research (Biology Series), Bacau Pedagogical Institute, pp. 12-23 (in Romanian).

[11] Axini M (2012e) Rare and Endemic Species in Conacu - Negrești Valley, Dobrogea, Romania. In: Stevens L, editor. Global Advances in Biogeography, Intec Published House, California, pp. 219-254.

[12] Axini M (2012f) Rare and Endemic Species in Conacu - Negrești Valley, Dobrogea, Romania. Bulletin of the Agronomic Academy. National Printing House. Available: http://www.intechopen.com/books/global-advances-in-biogeography.

[13] Axini M, Skolka M, Negrean G (2010) The Conacu-Negrești Valley - Biodiversity, Threats, Protection Measures. Symposium dedicated to the International Year of Biodiversity. Volume with Abstracts, “Alexandru Ioan Cuza University” Publisher of Iași, pp. 2-82 (in Romanian).

[14] Axini M, Alexandrov L (2011a) Anthropogenic impact in Dobrudja – Case study: Conacu-Negresti Valley and Tașaul-Corbu Lake. In: Axini M, Plăvan G, Nicoară M, editors. International Scientific Session the Human Impact on Biodiversity in Black Sea Area. Volume. Program and Abstracts, Ex Ponto Publisher, Agigea-Constanța, pp. 26.

[15] Axini M (2006) The study in order to propose them for inclusion on the list of protected areas in Romania [thesis]. „Ovidius" University, Faculty of Natural Sciences and Agricultural Sciences, Constanța, 200 p. (in Roamanian).

[16] Axini M (2009) Conacu-Negresti Valley. The ecological reevaluation [dissertation]. „Ovidius" University, Faculty of Natural Sciences and Agricultural Sciences, Constanța, 75 p. (in Romanian).

[17] Axini M, Skolka M (2010a) Invertebrates Fauna in Conacu-Negrești Valley (SV Constanta County). Symposium dedicated to the International Year of Biodiversity. Volume with Abstracts, Iași, pp. 91.

[18] Axini M, Skolka M (2010b) Invertebrate diversity of Conacu-Negresti Valley (southwestern of Constanta County, Romania). Book of abstracts, The Anniversary Conference of the Institute of Biology. 50 Years of Academic Research in Biology, Ars Docendi Press, Bucharest. Available: http://www.ibiol.ro/sesiune/2010/The%20Annyversary%20Conference%20IBB50.pdf.

[19] Skolka M (2002) General Entomology, Ovidius University Press, Constanța. 239 p. (in Romanian).

[20] Axini M (2012a) Gastropods Diversity in Conacu-Negresti Valley. Oltenia. Studii şi comunicări. Ştiinţele Naturii. Muzeul Olteniei Craiova 28 (2): 187-193.

[21] Axini M (2012b) Gastropods Diversity in Conacu-Negresti Valley. Oltenia. Studii şi comunicări. Ştiinţele Naturii. Muzeul Olteniei Craiova 28 (2): 187-193. Available: http://www.olteniastudii.3x.ro/v28_2.html.

[22] Grossu AlV (1986) Gastropoda Romaniae. 1. Subclasa Prosobranchia şi Opistobranchia, Litera Publisher, București, 525 p. (in Romanian).

[23] Grossu AlV (1987) Gastropoda Romaniae. 2. Subclasa Pulmonata I. Ordo Basommatophora II. Ordo Stylommatophora, Litera Publisher, București, 445 p. (in Romanian).

[24] Müller GI (2002) Phylum Mollusca. Molluscs. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 2), Bucura Mond Publishing House, Bucharest, pp. 334-337 (in Romanian).

[25] Negrea A (2002) Class Gastropoda. Snails. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 2), Bucura Mond Publishing House, Bucharest, pp. 338-343 (in Romanian).

[26] Zoltán F, Majoros G, Varga A (2004) A scoring method for the assessment of rarity and conservation value of the Hungarian freshwater molluscs. Acta Oecologica. Heldia. Budapest 6: 1-14.

[27] Chiriac E, Udrescu M (1965) Naturalist's guide to the world of freshwater, Scientific Publishing House, București, 335 p. (in Romanian).

[28] Al-Azki F (2012a) Correlation between marine fossils and biological data from Mediterranean Sea. In: Axini M, editor. International Symposium Biodiversity Conservation "in situ" and "ex situ". First Edition. Volume. Program and abstracts. Ex Ponto Publisher. Constanta, pp. 38.

[29] Al-Azki F (2012b) Determination of paleo-biodiversity and fossils. In: Axini M, editor. International Symposium Biodiversity Conservation "in situ" and "ex situ". First Edition. Volume. Program and abstracts. Ex Ponto Publisher. Constanta, pp. 39.

[30] Axini M, Al-Azki F (2014) Comparative Data on Paleo-Biodiversity of Gastropods in Lattakia Region, Syria in Corelation with Their Living Environments. Oltenia. Studii şi comunicări. Ştiinţele Naturii. Muzeul Olteniei Craiova 30 (2): 222-229.

[31] Hubenov Z (2007) Fauna and zoogeography of marina, freshwater and terrestrial mollusks (Mollusca) in Bulgaria. In: Fet & Popov, editors. Biogeography and ecology in Bulgaria, Springer, Berlin, pp. 141-198. Available: http://www.springerlink.com/content/n36xj8q7g70v3842/.

[32] Axini M (2012c) Data on biogeography of gastropod species Chondrula tridens in Southern Dobrogea, Romania. Annual Zoological Congress of "Grigore Antipa" Museum. Book of Abstracts, Bucharest, pp. 131.

[33] Axini M (2012d) Data on biogeography of gastropod species Chondrula tridens in Southern Dobrogea, Romania. In: Murariu D, Adam C, Chișamera G, Iorgu E, Popa LO, Popa OP, editors. Annual Zoological Congress of "Grigore Antipa" Museum – Book of abstracts. Grigore Antipa National Museum of Natural History, Bucharest, pp. 131. Available: www.czga.ro/.../CZGA_2012_Book_of_Abstracts.pdf.

[34] Axini M, Al-Azki F (2012a) Biogeographycal data on mollusks species in Dobrogea, Romania. In: Popescu O, Enache M, Zamfir M, Ștefănuț S, editors. A New Approach of the Academic Research in Biology. Romanian Academy. Institute of Biology Bucharest, Ars Docendi Publisher, Bucharest, pp. 89-90.

[35] Axini M, Al-Azki F (2012b) Conacu-Negresti Valley, Dobrogea, Romania – Biodiversity, Threats, Protective Measures. In. Axini M, Al-Azki F, editors. Rom J Biodiv 1 (2): 1-14.

[36] Axini M, Al-Azki F (2016) Endemic, Relict and Endangered Species of Mollusks in Dobrogea, Romania-Case Study: Conacu-Negresti Valley. IJGSR 3 (5): 277-288. Available: www.ijgsr.com.

[37] Axini M, Al-Azki F (2017) Biodiversity and Anthropogenic Impact in Dobrogea - Case Study: Conacu – Negrești Valley. IJGSR 4 (1): 439-547. Available: www.ijgsr.com.

[38] Skolka M (2008) Invertebrate diversity in the western part of Black Sea coast: Cape Midia - Cape Kaliakra. In: Făgăraş M, editor. Volume of the Conference in Constanța, Mamaia. Comparative studies on the biodiversity of coastal habitats, human impact and possibilities for conservation and restoration of habitats of European importance berween Cape Midia (Romania) and Cape Kaliakra (Bulgaria), 2008 September 26-28, Ex Ponto Publishing House, Constanța, pp. 153-157.

[39] Skolka M, Făgăraș M, Paraschiv GM (2005) The Biodiversity of Dobrogea, Ovidius University Press, Constanța. 396 p. (in Romanian).

[40] Axini M (2011b) The diversity and importance of beetles (Coleoptera) from Conacu-Negresti Valley, South Dobrudja, Romania. In: Axini M, Plăvan G, Nicoară M, editors. International Scientific Session the Human Impact on Biodiversity in Black Sea Area. Program and Abstracts. Edit. Ex Ponto, Constanța,pp.42.Available:http://www.sites.google.com/site/agigeaconference2011/scientificpapers.

[41] Axini M (2011g) The diversity of beetles (Coleoptera) from Conacu-Negresti Valley, South Dobrogea, Romania. In: Murariu D, Adam C, Chișamera G, Iorgu E, Popa LO, Popa OP, editors. Annual Zoological Congress of" Grigore Antipa" Museum - Book of abstracts, Medialux Publisher,Bucharest,pp.71.Available:http://www.czga.ro/pozepagini/CZGA_2011_Book_of_abstract.pdf.

[42] Căpușe I (1968) Fauna of Romania-Lepidoptera Tineidae. (Vol. 10), Romanian Academy Publishing House, București, 345 p. (in Romanian).

[43] Cojocaru I, Popescu IE (2004) La diversitédes coléoptères aquatiques (Insecta, Coleoptera) du Marais de Văcărești (Bucarest). Scientific Annals of "Al. I. Cuza" Univ. from Iași, New Series, Section I, Animal Biology. University Press, Iași 50: 77-83 (in France).

[44] Nițu E, Decu V (2002) Ordo Coleoptera. Beetles. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 2), Bucura Mond Publishing House, Bucharest, pp. 554-571 (in Romanian).

[45] Ruști D (2002) Ordo Lepidoptera. Butterflies, moths. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 2), Bucura Mond Publishing House, Bucharest, pp. 572-575 (in Romanian).

[46] Axini M, Alexandrov L (2011b) Anthropogenic impact in Dobrudja – Case study: Conacu-Negrești Valley and Tașaul-Corbu Lake. În: Axini M, Plăvan G, Nicoară M, editors. International Scientific Session the Human Impact On Biodiversity in Black Sea Area. Volume. Program and Abstracts, Agigea, Romania. Ex Ponto Publisher, Constanța, Romania, pp. 26. Available: http://www.sites.google.com/site/agigeaconference2011/scientificpapers.

[47] Basarabeanu N (1969) The role of torrential waters on the modeling of the current relief in Dobrogea. Geography studies on Dobrogea. Works of the First Geography of Dobrogea Symposium), Universitaria Publisher, Constanța, pp. 65-70 (in Romanian).

[48] Gâștescu P, Breier A (1969) The Lakes of Dobrogea. Geography studies on Dobrogea. Works of the First Geography of Dobrogea Symposium), Universitaria Publisher, Constanta, pp. 97-103 (in Romanian).

[49] Godeanu S (2002) Continental waters. General presentation. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 1), Bucura Mond Publishing House, Bucharest, pp. 1-24 (in Romanian).

[50] Axini M (2011e) Research and conservation history of Dobrudja phyto-diversity, Romania. Scientific Symposium "Plants Diversity Conservation in Situ și Ex Situ", University Publisher, Iași, pp. 91-92.

[51] Axini M (2011f) History of research and phyto-diversity conservation in Dobrogea, Romania. "Plants Diversity Conservation in Situ și Ex Situ", "Al. I. Cuza University" Publishing House, Iași, pp. 90-91. Available: http://www.botanica.uaic.ro/docs/Brosura2011.pdf.

[52] Dihoru G, Doniță N (1970) The Flora and Vegetation of the Babadag Plateau, R. S. R. Academy Publishing House, 438 p. (in Romanian).

[53] Axini M (2011c) Rare, endemic and endangered plant species from Conacu-Negrești Valley (South Dobrudja, Romania). Scientific Symposium "Plants Diversity Conservation in Situ si Ex Situ". Universitaria Press. Iasi, pp. 80-81.

[54] Axini M (2011d) Rare, endemic and endangered plant species in the Conacu-Negresti Valley (Southern Dobrogea, Romania). Conservation of plant diversity in situ and ex situ: volume of abstracts: scientific symposium, Universitaria Press, Iasi, pp. 79-80. Available: http://www.botanica.uaic.ro/docs/Brosura2011.pdf (in Romanian).

[55] Ciocârlan V (1994) Flora of Danube Delta, Ceres Publishing House, București. 165 p. (in Romanian).

[56] Ciocârlan V (2000) The Illustrate Flora of Romania. Pteridophyta and Spermatophyta. (Vol. 2), Ceres Publishing House, Bucuresti, 1140 p. (in Romanian).

[57] Ciocârlan V (2001) Contributions to the knowledge of the flora of Romania. Bul Grăd Bot. Universitaria Press, Iasi, 10: 55-57. (in Romanian).

[58] Cristurean I, Lițescu S (2002) Phylum Magnoliophyta (Angiospermae). Flowering plants. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 1), Bucura Mond Publishing House, Bucharest, pp. 185-207 (in Romanian).

[59] Dihoru G, Negrean G (2009) The Red Book of the Vascular Plants in Romania, Romanian Academy Publishing House, București, 630 p. (in Romanian).

[60] Morariu I, Todor I (1972) Systematic Botany. (Vol. 2), Didactic and Pedagogical Publishing House, București, 436 p. (in Romanian).

[61] Prodan I (1935) The Summary of the Dobrogea Flora. (Vol. 1), National Printing House Publishing House, Cluj-Napoca, 170 p. (in Romanian).

[62] Prodan I (1936a) The Summary of the Dobrogea Flora. (Vol. 2), National Printing House Publishing House, Cluj-Napoca, 57 pp. (in Romanian).

[63] Prodan I (1936b) The Summary of the Dobrogea Flora. (Vol. 3), National Printing House Publishing House, Cluj-Napoca, 96 pp. (in Romanian).

[64] Prodan I (1935-1936) The Summary of the Dobrogea Flora (Vols. 5, 5). Bulletin of the Agronomic Academy. National Printing House, Cluj-Napoca, pp. 175-342, 206-259 (in Romanian).

[65] Prodan I (1939a) Flora for Determination and Description of Plants Growing in Romania. (1*, 2*, 3* edtns), Cartea Românească Publisher, Cluj-Napoca. 215 p. (in Romanian).

[66] Prodan I (1939b) The Summary of the Dobrogea Flora. (Vol. 7), Bulletin of the Agronomic Academy. National Printing House, Cluj-Napoca, pp. 213 (in Romanian).

[67] Prodan I, Buia A (1966) Small Illustrated Flora of Romania, Agro-Silver Publisher, Bucharest, 676 p. (in Romanian).

[68] Săvulescu T (ed.) (1952-1976) Flora of the Romanian People's Republic - Flora of the Socialist Republic of Romania, R. S. R. Academy Publishing House, 113 p. (in Romanian).

[69] Todor I (1968) Small Atlas of Plants from R. R. R. Flora, Didactic and Pedagogical Publishing House, Bucharest, 277 p. (in Romanian).

[70] Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine DH, et al. (eds.). 1964-1980. Flora Europaea. (Vol. 1-5), Cambridge University Press, Cambridge, 230 p.

[71] Tutin TG, Burges NA, Chater AO, Edmonson JR, Heywood VG, et al. 1996 (eds.) Flora Europaea. (Vol. 1), Cambridge University Press, Cambridge, pp. 110.

[72] Panin S, Săvulescu N (1957) Fauna of Romania. Coleoptera Cerambycidae, Academy Press, Bucharest. 105 p. (in Romanian).

[73] Dihoru G, Dihoru Al (1994) Rear, endangered and endemic plants of Romanian Flora – Red list, Bucharest. Acta Botanica Horti Bucurestiensis. Botanical Garden Papers, Bucharest, pp. 173-197.

[74] Negrean G, Axini M, Bercu R (2010) Flora and vegetation from Conacu-Negresti Valley (southwestern of Constanța County, Romania). Book of abstracts, The Anniversary Conference of the Institute of Biology. 50 Years of Academic Research in Biology, Ars Docendi Press, Bucharest, pp. 65-67.

[75] Botnariuc N, Tatole V (eds) (2005) The Red Book of Vertebrates in Romania, Romanian Academy Publishing House, București, 216 p. (in Romanian).

[76] Cuzic M (2004) Contributions to the study of mammals and reptiles in the Bugeac, Oltina, Dunăreni and Vederoasa fluvial areas. Studies and Research of Natural Sciences and Museology, Delta Publisher, Tulcea, pp. 25-34 (in Romanian).

[77] Cogălniceanu D, Samoilă C, Tudor M, Skolka M (2008) Amphibians and reptiles from the Black Sea coasta rea between Cape Midia and Cape Kaliakra. In: Făgăraș M, editor. Volume of the Conference in Constanța, Mamaia. Comparative studies on the biodiversity of coastal habitats, human impact and possibilities for conservation and restoration of habitats of European importance berween Cape Midia (Romania) and Cape Kaliakra (Bulgaria), 2008 September 26-28, Ex Ponto Publishing House, Constanța, pp. 71-89.

[78] Iftime Al (2005) Reptiles. In: Botnariuc, Tatole, editors. The Red Book of Vertebrates in Romania, Curtea Veche Trading S.R.L. Publishing House, Bucharest, pp. 173-194 (in Romanian).

[79] Iordache I (1996) Herpetological fauna of Romania. Practical Guide, S.R.L. Proema Publishing, Baia Mare, 65 p. (in Romanian).

[80] Meșter L (2002a) Class Reptilia. Turtles, snakes, lizards. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 2), Bucura Mond Publishing House, Bucharest, pp. 640-642 (in Romanian).

[81] Ionescu V (1968) The Vertebrates in Romania, R.S.R. Academy Publisher, Bucharest, 496 p. (in Romanian).

[82] Los W (ed.) (2011) Fauna Europaea. Available: http://www.faunaeur.org.

[83] Meșter L (2002b) Class Mammalia. Mammals. In: Godeanu SP, coordinator. Diversity of the Living World. The Illustrated Identification Manual of Romanian Flora and Fauna. Continental waters. (Vol. 2, Part 2), Bucura Mond Publishing House, Bucharest, pp. 665-669 (in Romanian).

[84] Murariu D (2005) Mamifere. In: Botnariuc, Tatole, editors. The Red Book of Vertebrates in Romania, Curtea Veche Trading S.R.L. Publishing House, Bucharest, pp. 11-80 (in Romanian).