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М 341

М 341 «Կովկասի ֆաունայի կենսաբազմազանությունը և պահպանության հիմնախնդիրները – 2» միջազգային գիտաժողովի նյութեր (23-26 սեպտեմբերի 2014 թ., Երևան, Հայաստան). - Եր.: «Սպիկա» ՓԲԸ, 2014 - 412.

Ժողովածուն ընդգրկում է «Կովկասի ֆաունայի կենսաբազմազանությունը և պահպանության հիմնախնդիրները – 2» միջազգային գիտաժողովում ներկայացված հոդվածներ և զեկույցների թեզիսներ: Տպագրված նյութերը ներառում են կենդանիների կարգաբանության, ֆաունիստիկայի, էկոլոգիայի, կենսաբազմազանության պահպանության, ինչպես նաև մարդու առողջության, մակաբուծաբանության, աղտոտման կենսաինդիկացիայի, վնասատուների և մոլախոտերի դեմ պայքարի և այլ հիմնախնդիրների շրջան:

Материалы Международной научной конференции «Биологическое разнообразие и проблемы охраны фауны Кавказа – 2» (23-26 сентября 2014 года, Ереван, Армения). - Ер.: ООО «Спика», 2014 - 412.

В сборник включены статьи и тезисы докладов, представленных на Международной научной конференции «Биологическое разнообразие и проблемы охраны фауны Кавказа-2». В публикуемых материалах охвачен широкий круг проблем систематики, фаунистики, экологии животных, сохранения биологического разнообразия, а также вопросы здоровья человека, паразитологии, биоиндикации загрязнений, борьбы с вредителями и сорняками и т. п.

Proceedings of the International conference «Biological diversity and conservation problems of the fauna of the Caucasus – 2» (September 23-26, 2014, Yerevan, Armenia). – Yerevan: LLC “Spika”, 2014 - 412.

The papers and articles presented on the International conference «Biological diversity and conservation problems of the fauna of the Caucasus-2» are included in the proceedings. In the materials published the wide range of problems of taxonomy, phylogenetics, ecology of animals, protection of biological diversity, as well as some issues of men’ health, parasitology, bioindication, pest control, etc., are presented.

Կոնֆերանսի կազմակերպական կոմիտե
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Կազմկոմիտեի անդամներ՝
ՌԳԱ ակադ. Յու.Յու. Դգեբուաձե (Մոսկվա, ՌԴ, ԷԷՊԻ), ՌԳԱ թղտակից անդամ Վ.Վ. Ռոժնով (Մոսկվա, ՌԴ, ԷԷՊԻ), ՌԳԱ թղտակից անդամ Բ.Ռ. Ստրիգանովա (Մոսկվա, ՌԴ, ԷԷՊԻ), Օ.Ն. Պուգաչև (Ս.-Պետերբուրգ, Կենդանաբանական ինստիտուտ ՌԴ), Մ.Ա. Կալինին (Հայաստանի Հանրապետությունում Ռոսսոտրուդնիչեստվոի ներկայացչություն), Հ.Գ. Խաչատրյան (ՀՀ ԳԱԱ ԿՀԷԳԿ), Է.Խ. Ղուկասյան (ՀՀ ԳԱԱ ԿՀԷԳԿ), †Գ.Հ. Բոյախչյան (ՀՀ ԳԱԱ ԿՀԷԳԿ), Մ.Յու. Քալաշյան (ՀՀ ԳԱԱ ԿՀԷԳԿ), Ա.Լ. Աղասյան (ՀՀ Բնապահպանության նախարարություն), Ֆ.Դ. Դանիելյան (Երևանի պետական համալսարան), Կ.Ս. Դանիելյան (Խ.Աբովյանի անվ. Հայկական պետական համալսարան), Վ.Վ. Աբրահամյան (Հայաստանի ազգային ագրարային համալսարան), Վ.Ա. Դավիդյանց (ՀՀ ԱՆ Առողջապահության ազգային ինստիտուտ), Կ.Ա. Մանվելյան (Բնության համաշխարհային հիմնադրամի հայկական բաժանմունք), Ա.Ա. Գևորգյան (Հարավային Կովկասի Սահմանամերձ Համատեղ Քարտուղարություն):

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Քարտուղարություն՝ Հ.Գ. Խաչատրյան (պատասխանատու քարտուղար), Գ.Հ. Կարագյան, Ա.Հ. Հայրապետյան, Հ.Շ. Գևորգյան, Ս.Ա. Աղայան, Լ.Ա. Աղասյան, Ա.Կ. Եղիազարյան

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субфоссильными куницами обнаруживается только в показателях наибольшего диаметра глазницы и наибольшей ширины костного неба (Таблица 3).

В заключение следует отметить, что временной промежуток, который охватывает наш материал, совершенно ничтожен для эволюции каменных куниц, и изменений в краниологии у них за это время практически не накапливается.

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KARYOLOGICAL STUDIES IN TERRESTRIAL MOLLUSKS (MOLLUSCA: GASTROPODA: PULMONATA) OF GEORGIA

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КАРИОЛОГИЧЕСКИЕ ИССЛЕДОВАНИЯ НАЗЕМНЫХ МОЛЛЮСКОВ (MOLLUSCA: GASTROPODA: PULMONATA) ГРУЗИИ

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Introduction

The terrestrial malacofauna of Georgia is distinguished with species diversity and include 254 species of snails and slugs, belonging to 114 genera (34 families). 56 species are Georgian and 161 are Caucasian endemics (Mumladze, 2013). In studies of the terrestrial mollusks of Georgia, the researchers pay attention primarily to the fauna, diversity, taxonomy, distribution, biogeography, ecology, phylogeny and conservation. From the karyological and karyosystematics point of view Georgian terrestrial mollusks are not investigated. It is well known however that karyological investigation in complex with conchological and anatomical studies provides relevant information for taxonomy, systematics and phylogeny of different groups of Mollusca (Dumrongrojwattana et al., 2005; Melnychenko et al., 2006; Kongim et al., 2010, 2013). This was the main reason why we started karyological study of the terrestrial malacofauna of Georgia. In this paper, first results of our investigations are presented.

Material and Methods

The materials were collected from Autonomous Republic of Adjara (South-West Georgia), Borjomi municipality (Samtskhe-Javakheti region, South Georgia) and Tbilisi city (East Georgia) in June and September 2013. The samples were transported to the laboratory and were maintained in plastic containers containing damp moss. The studied species, their distribution, localities, number of studied specimens and karyological data are given in table.

Chromosome preparations were made from gonadal tissue of animals. Slides were obtained on the basis of air-drying methods for molluscan species described by different authors (Melnychenko et al., 2000; Garbar, Garbar, 2007; Garbar, Chernyshova, 2011; Kongim et al., 2013), with certain modification. The animals were injected with 0, 05% colchicine for 20 to 23 h before dissection. Gonads were cut into small pieces and subjected to hypotonic treatment for 60 min in distilled water and then centrifuged at 1000 rpm for 10 min. The supernatant was replaced with fresh mixture of 96% ethanol and glacial acetic acid (3:1). This procedure was repeated three times. The cell suspension was dropped on clean, cold and damp glass slides. The slides were air-dried and finally, stained with a Romanovskii solution of azur-eosine (pH 6,8). Slides of small mollusks were made also according to the procedures described by R. Vitturi and E. Catalano (1990) and R. Vitturi et al. (2000, 2005). Specimens were immersed for 2 h in a 0.01% freshwater colchicine solution at room temperature. Gonads were extracted from specimens and transferred into a KCl 0.075 M hypotonic solution for 20 min. They were fixed in freshly prepared 60% acetic acid solution for 5 min and squashed between the glass slide and coverslip. Squash preparations were stained with a Romanovskii solution of azur-eosine (pH 6, 8).

The observations of slides were performed under a PH 100D microscope with 10X100 magnification. The well-spread chromosome plates were selected for analysis and subsequent photography (PHMIAS version 2.0).

Results and Discussion

Five species of snails and slugs belonging to three families: Helicidae Rafinesque, 1815, Hygromiidae Tryon, 1866 and Limacidae Lamarck, 1801 were studied for the first time. We must notice that in investigated species mainly meiotic chromosomes were observed. It seems that gonial cells are in mitosis for very short time periods (Boato, 1986). Only several mitotic plates were found in the some species.

Family Helicidae

Three species: Caucasotachea calligera (Dubois de Montpéreux, 1840), Helix buchii Dubois de Montpéreux, 1839 and H. lucorum Linnaeus, 1758 of the family Helicidae were examined. On the average 130 diplotene-diakinetic and metaphase I plates were analyzed for each species. n=23-28 bivalents were counted in meiotic plates of the C. calligera. According to our results the modal haploid number (the chromosome number numerically dominant in plates) amount to n=26 (Fig. 1a). n=22-28 bivalents were observed in meiotic spreads of H. buchii and H. lucorum. The modal haploid number n=27 were determined for both species (Fig. 1b, c).

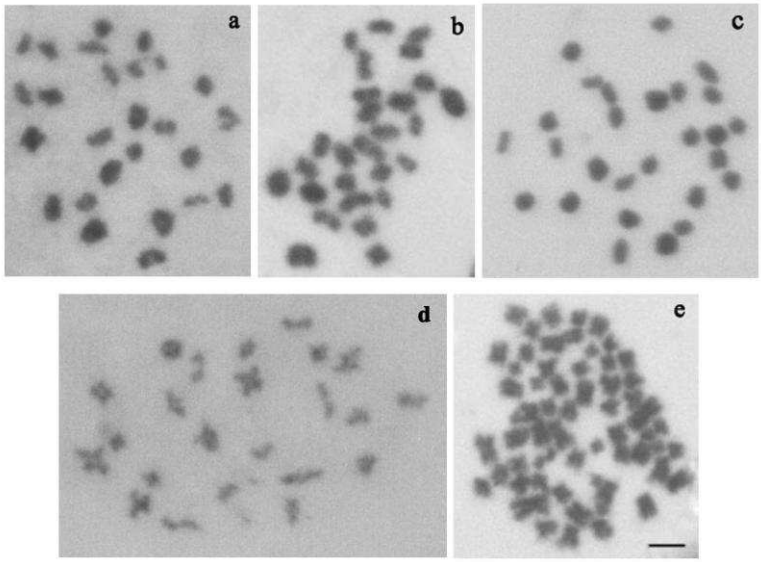

Fig.1. Meiotic and mitotic chromosome spreads of species studied: (a) Caucasotachea calligera (n=26); (b) Helix buchii (n=27); (c) H. lucorum (n=27); (d) Circassina frutis (n=23); (e) Gigantomilax lederi (2n=60-62). Scale bar indicates 5 μm.

Family Helicidae include about 500 species and subspecies (http://www.faunaeur.org/species list.php). According to available karyological data on the family more than 85 species are analyzed cytogenetically (Makino, 1951; Patterson&Burch, 1978; Vitturi et al., 1982, 2005; Barker, 1999, 2001; Thiriot-Quiévreux, 2003). In the helicid snails, the range of haploid chromosome numbers varies from n=21 to n=31 (Patterson&Burch, 1978; Barker, 1999; Thiriot-Quiévreux, 2003). Haploid numbers registered by us in C. calligera, H. buchii and H. lucorum are within this range. Our results show that C. calligera have the same chromosome number that the species of other genera Eobania Hesse, 1913 (Thiriot-Quiévreux, 2003) and Otala Schumacher, 1817 (Makino, 1951; Thiriot-Quiévreux, 2003), n=26. Karyological data of two Helix species (n=27) are in agreement with data presented in literature for other species of this genus, Helix cincta O.F. Muller 1774, H. melanostoma Draparnaud 1801 and H. pomatia Linnaeus, 1758 (Makino, 1951). The haploid chromosome number n=27 is also recorded in some species of the genera Cantareus Risso, 1826 and Cornu Burn, 1778 (Makino, 1951; Vitturi et al., 1982, 2005).

Table. The information about species studied.

NN	Species	Distribution	Localities	Number of specimens	Chromosome number	
					n	2n
1	Caucasotachea calligera	Caucasian endemic	Khelvachauri municip: vill. Maradidi; settl. Gonio-in Batumi (Adjara)	3	26	-
2	Helix buchii	Caucasian endemic	Khelvachauri municip: vill. Maradidi (Adjara)	4	27	-
3	Helix lucorum	Widespread	Settl. Gonio-in Batumi (Adjara); Borjomi municip: vill. Didi Tsemi (Samtskhe-Javakheti); Tbilisi city	11	27	-
4	Circassina frutis	Caucasian endemic	Keda municip: vill.Vaio, Kobuleti municip: Kintrishi State Reserve, vill. Chakhati, Kokhi, town Ochkhamuri (Adjara); Borjomi municip: pass Tskhratskaro (Samtskhe-Javakheti)	15	23	-
5	Gigantomilax lederi	Caucasian endemic	Khelvachauri municip:vill. kapandibi, Kobuleti municip: vill. Khala (Adjara)	2	-	60-62

Abbreviations: municip. - Municipality; settl. - Settlement; vill. - Village

Family Hygromiidae

One species, Circassina frutis (L. Pfeiffer, 1859) of the family was studied. 140 meiotic chromosome spreads were analyzed of this species. n=20-25 bivalents were found in meiotic plates. The modal haploid number n=23 was recorded in this species (Fig. 1d).

More than 550 species of Hygromiidae are known (http://www.faunaeur.org/species list.php), out of which approximately 25 species are investigated karyologically (Makino, 1951; Aparicio, 1981; Barker, 1999; Thiriot-Quiévreux, 2003; Hrabakova et al., 2006). In Hygromiidae the haploid chromosome numbers lies between 21 and 30 (Barker, 1999, 2001). The haploid number (n=23) of C. frutis is within this range. The same chromosome number is recorded in some species of two different genera, Monacha Fitzinger 1833 and Trochulus Chemnitz 1786. The presence of the haploid number n=23 has been demonstrated by M.T. Aparicio (1981) in M. cartusiana (O.F. Muller 1774) from Spain, also by M. Hrabakova et al. (2006) in T. hispidus (Linnaeus 1758) and T. plebeius (Draparnaud 1805) from Czech Republic.

Family Limacidae

One limacid slug, Gigantomilax lederi (O. Boettger, 1883) was examined. The results were obtained from several gonial mitotic metaphases, in which approximately 60-62 chromosome elements were observed (Fig. 1e). Chromosome number registered by us in G. lederi is close to number (2n=62) that occurs also in other representatives of Limacidae, Limacus species: L. flavus (Linnaeus, 1758) and type genus of this family Limax Linnaeus, 1758 (Makino, 1951; Barker, 1999; Garbar & Chernyshova, 2011; Garbar et al., 2011).

In conclusion, we will notice that this is the first attempt of karyological studies of terrestrial mollusks in Georgia and the first report on chromosome numbers of Georgian snails and slugs. The results give the basis for the subsequent researches. We assume that karyological investigations can give useful information on the taxonomy, phylogeny and biological diversity of this group in Georgia.

This work was supported by Ministry of Education and Science of Georgia. We want to thank N. Gabroshvili (Institute of Zoology, Ilia State University, Tbilisi) for help in the field works and V. Bakhtadze (Georgian Technical University, Archil Eliashvili Institute of Control Systems, Tbilisi) for help in preparation of an illustrative material.

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ЗИМНИЙ УЧЕТ ВОДНОБОЛОТНЫХ ПТИЦ В АРМЕНИИ (ЯНВАРЬ 2014-ГО ГОДА)

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MID-WINTER WATERBIRD COUNTS IN ARMENIA (JANUARY 2014)

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Abstract

The current paper introduces the results of the International Waterbird Counts (IWC) in Armenia which have taken place along the entire Central Asian Flyway. Like in the previous years, the counts were held in the Lake Sevan basin (capturing the entire water body), along the Metsamor River System and at Armash fish farming ponds. The total number of birds counted in all count sites comprised 31,325 birds belonging to 33 species. Of these, 94.6% of birds making up 28 species have been recorded at Lake Sevan. Birds counted along the Metsamor River System comprised 3.8% representing 16 species. The lowest total both in terms of