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Ecological factors affecting the spread of class Chilopoda of the group Myriapoda

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Abstract. Recently, the problem of preserving biodiversity on the planet has become increasingly relevant. Therefore, research on the ecological characteristics of organisms that play an important role in the functioning of biogeocoenoses is especially relevant. Chilopoda millipedes are one of these groups. Currently, many questions on the ecology of Chilopods, especially in the territory of Albania, remain unresolved. This motivates researchers to seek answers to these issues. The primary research aim is to analyse the specific features of the ecology of the Chilopoda millipedes inhabiting Vlora. The material used for the study was the author's collections of centipedes. Manual collection and soil sampling methods were used in the research. Determination of the taxonomic affiliation of centipedes was performed by examining the morphological features of centipedes under a stereoscopic microscope and further determining specimens with the help of determination keys. In the field under investigation, the Chilopoda fauna is represented by 6 species from 4 orders, 6 genera, and 5 families. Temperature and humidity have been shown to have a significant influence on the geographical distribution of chilopods: thus, the occurrence of centipedes in litter and the upper soil layer decreases significantly with the onset of drought. The character of flora plays a secondary role in the distribution of centipedes. It was established that soils with high content of humus and nitrogen are a favourable habitat for centipedes. The paper presents, for the first time for the Vlora region, data on the vertical distribution of *S. coleoprata* along the soil profile. Scootigers preferred litter and did not migrate into the soil. Other representatives of Chilopoda were mainly found in the uppermost soil layer (0-10 cm), moreover Chilopoda were concentrated in the litter, and only a small part of them descended to a depth of 20 cm. The obtained results contribute to the knowledge of the ecological features of chilopods

Keywords: centipedes; soil profile; climatic conditions; biotope, Albania



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INTRODUCTION

In recent decades, the problem of preserving the planet's biodiversity was of substantial relevance. This is mainly caused by the detrimental human impact on natural communities: the destruction of habitats of living organisms, extreme exploitation of biological resources, and pollution of the environment. This problem is especially relevant in insufficiently studied regions subject to increasing anthropogenic impact, such as southern Albania. Therefore, studies of the ecological features of different living organism groups that play an important role in the functioning of biogeocoenoses are of particular importance.

One of these groups is the class Chilipoda or centipedes. This is one of the largest classes of terrestrial arthropods. The world fauna of chilopods includes more than 3,000 species, although Sombke & Harzsch (2015) and Vujić *et al.* (2022) suggest that only a fraction of the species has been currently described, while about 8,000 species may exist worldwide.

Chilopods live a hidden life, avoiding daylight and dry locations. Most often they can be found under rocks, in broken trees, and in other covers. Centipedes are typical polyphagous predators. They inhabit the topsoil layer and litter and play an important role in regulating populations of soil invertebrates. They feed on insects, including pests of important crops, their larvae, earthworms, spiders, and several other animals. E. Iorio *et al.* (2020) and Yahata *et al.* (2018) showed the importance of chilopodans as a reliable indicator for determining the level of anthropogenic pressure on the environment. Although representatives of the Chilipoda class are present in many landscape zones, except deserts, little attention has been paid to the study of the ecological factors influencing the distribution of centipedes in Albania.

Thus, P. Stoev (1996) published the first research on Chilipoda in Albania in 35 years. In this paper, the main attention is devoted to the Chilipoda fauna. The author highlighted 21 species of chilopods, six of which were mentioned in Albanian fauna for the first time. The second part of the research (Stoev, 2000) was published, in which the author demonstrated data on 27 species of Chilipoda collected in Albania, including a complete checklist (58 species and subspecies) and gave a brief zoogeographical description of the Albanian centipedes. H. Kicaj (2018) presented a zoogeographic analysis of the Chilipoda fauna in Vlora, southern Albania.

Researchers have not given much attention to the ecological features of chilopods in Albania. A study by H. Kicaj and M. Qirjo (2014) and Cassar & Zapparoli (2021) is devoted to the distribution of centipedes over the soil profile in Vlora. However, many issues on the ecology of the centipedes remain uncovered. Overall, the insufficient study of the centipede ecology in southern Albania is evident and requires further research.

The purpose of the study is to investigate the specific features of the centipede ecology of the Vlora,

southern Albania. To reach the purpose, the following objectives were set: to analyse the species composition of Chilipoda in Vlora, southern Albania; evaluate the influence of climatic factors on the geographical distribution of centipedes in the study area; characterise the features of the biotopic distribution of chilopods; analyse the specific features of the vertical distribution of chilopods along the soil profile.

MATERIALS AND METHODS

The material for the research was based on the author's collections of centipedes in Vlora, southern Albania. Manual collection and soil sampling methods were used in the research. The sample size was at least 25 m² (50 cm by 50 cm). Four experimental samples were established in each plot, from which material was selected randomly. Within the boundaries of the selected one, leaf litter was carefully moved on the polyethylene prepared in advance. Then, it was thoroughly hand-picked over, noting all detected chilopods.

To assess the influence of climatic factors on the geographical distribution of chilopods, specimens were collected in spring, summer, and autumn under rocks, tree leaves, and mosses, in tree hollows, or the upper soil layer. The study covered areas at different altitudes; in some cases, the soil sampling method was used. To determine the period of drought in the research region, an ombrothermic diagram was constructed, showing changes in such indicators as temperature and amount of precipitation within each month throughout the year. Such a diagram was first constructed by Kamińska *et al.* (2016) to determine drought periods in the Mediterranean environment.

To research the biotopic distribution of chilopods, two stationary collection points were selected from which material was collected during the spring, summer, and fall using the soil sampling method. Biotope 1 is located 10-50 m above sea level. In this biotope, the vegetation is represented by deciduous trees (lemon, plum), reed, and other plants, which play an important role in agriculture. Biotope 2 is a coniferous forest at 900-950 meters above sea level. A total of 18 samples were collected and analysed. Biotope monitoring continued during the winter months, but no centipedes were collected at this time.

The vertical distribution of centipedes over the soil profile was also analysed in one in Vlora. In this case, excavation and disassembly of samples were conducted separately in two layers, each 10 cm deep. The centipedes were collected and recorded separately from each sample and layer. A total of about 680 specimens of Chilipoda were collected. The detected specimens were placed in tubes with 80% ethyl alcohol with the addition of a few drops of ether to preserve the natural coloration of the specimens. Each sample was labelled conventionally with complete information.

Determination of the taxonomic affiliation of centipedes was performed by addressing such morphological characteristics as body size and shape, number of segments and pairs of legs, presence of gonopods, body coloration, placement of the tergal plates, etc. These characters were examined under a stereoscopic microscope EMZ13TR, Trinocular Zoom with a magnification of 10 to 70 times. Identification of specimens was also carried out using identification keys for class Chilipoda species developed by P. Stoev (1996; 2000).

RESULTS

The characteristic of the entire class Chilopoda. Like representatives of other groups of centipedes, Chilopoda is associated with the soil and leads mainly a hidden life, hiding most of the time under rocks, tree bark, on the forest floor, and in cracks of rocks and soil. As a rule, Chilopoda comes out to hunt at night.

The characteristic of the entire class Chilopoda is that the legs of the first body segment are converted to jawfoot, with venomous gland ducts opening at the ends of the claws, which are used by these centipedes to strike prey and defend themselves.

Within the class Chyloroda, there are 5 currently living types (Zapparoli, 2016). These groups represent separate branches of evolution with traces of one or another specialisation:

Geophilomorphs (Geophilomorpha): The body is worm-shaped, with 27-191 pairs of legs, usually coloured in yellow and brown tones. The size of centipedes in this group does not exceed 22 cm. They can migrate into the soil to a depth of 70 cm. Most often, centipedes of this group settle under tree roots, in

ants' nests, and sometimes they occupy mouse burrows (Shear & Krejca, 2019). More than 1,000 species from 246 types have been described.

Scolopendromorpha: The body of the scolopendra is broad and dense, dorsoventrally flattened, with 21-23 pairs of legs, coloured yellow or brown. The body is subdivided into the head and torso. The size of centipedes in this group varies from 1.2 cm to 27 cm. The head bears a pair of well-defined antennae, a pair of mandibles, and two pairs of maxillae. Around 100 species from 132 types have been described.

Scutigermorpha: The body is short, consisting of 15 segments and the same number of legs. Hind legs are twice as big as walking legs. Segments of the body are covered by 8 tergal plates. Currently, more than 540 species of 132 types are known to science.

Common British centipede (Lithobiomorpha): The common British centipede body is divided into head and body and consists of 19 segments with 15 pairs of walking legs. The body length can reach up to 5 cm. At the front, on the sides of the head, there are 13-100 membered antennae and simple eyes in varying numbers, which may be absent in some species. More than 130 species of 30 types have been described.

Craterostigmomorpha: The body consists of 21 tergites. This group is also characterised by 15 pairs of walking legs. The body length varies from 3.7 cm to 5 cm. There are 17-18 membered antennae on the sides of the head in front. Science knows 2 species of the same type.

The chilopod species composition in Vlora. Under our observations, 6 species of centipedes from 4 orders, 6 types, and 5 families were found in the region under study.

Table 1. Class Chilipoda

Order	Family	Genus	Discoverer
Geophilomorpha	Dignathodontidae	<i>Dignathodon</i>	Meinert, 1870
		<i>Dignathodon microcephalus</i>	Lucas, 1860
		<i>Henia</i>	Koch, 1847
	Geophilidae	<i>Heniallyrica</i>	Meinert, 1870
		<i>Clinopodes</i>	Latreille, 1817
		<i>Clinopodesflavidus</i>	Koch, 1847
Scolopendromorpha	Scolopendridae	<i>Scolopendra</i>	Linnaeus, 1758
		<i>Scolopendracingulata</i>	Latreille, 1892
Schutigermorpha	Schutigeridae	<i>Schutigera</i>	Lamarck, 1801
		<i>Schutigeracoleoprata</i>	Linnaeus, 1758
Lithobiomorpha	Lithobiidae	<i>Lithobius</i>	Leach, 1814
		<i>Lithobiuslapidicola</i>	Meinert, 1872

Source: compiled by the author

Influence of climatic factors on the geographical distribution of centipedes. Southern Albania has a mild Mediterranean climate. The region can be divided into several climatic subzones. The average January temperature varies from -3°C to 10°C, while the average July temperature ranges from 17°C to 26°C. The average

daily temperature does not fall below 10°C for 156 days a year. The average precipitation is 1,480 mm per year. (Ivask *et al.*, 2019). Table 2 shows data for each month on the precipitation and air temperature collected over several years in Vlora (Rost-Roszkowska *et al.*, 2020), according to which the average rainfall is about 953.8 mm.

Table 2. Average air temperature and precipitation in Vlora

	Month											
	January	February	March	April	May	June	July	August	September	October	November	December
Temperature, °C	9.2	10	11.4	14.4	18.3	22	24.1	24.2	21.6	17.9	14.1	10.8
Precipitation, mm	126	99.5	83.5	69.6	53.5	22.8	16.7	29	57.9	111.5	148.4	136.3

Source: Rost-Roszkowska *et al.* (2020)

However, in southern Albania, the geographical distribution of precipitation is uneven: the western areas, facing the bringing cyclones, are more humid than the leeward eastern ones. This situation causes dry summers and often in other seasons as well as rainy winters. Nevertheless, Table 2 shows that the

driest month in Vlora is July. Currently, the average air temperature is 24.2°C, and the amount of precipitation decreases to 16.7 mm. These results are confirmed by the data in the ombrothermic diagram (Fig. 1), showing the change of such indicators as temperature and precipitation within each month throughout the year.

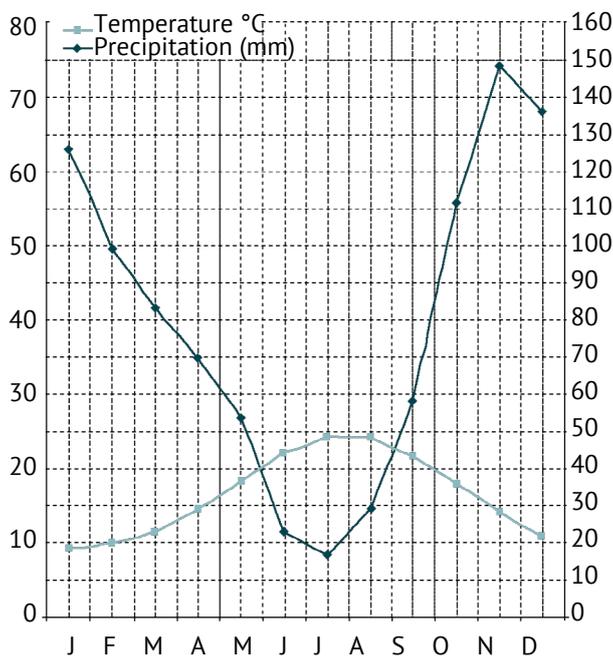


Figure 1. Ombrothermic diagram for Vlora

Source: H. Kicaj (2012)

The issue of the influence of climatic factors on the geographical distribution of centipedes is insufficiently covered. The results of the studies are presented in Table 3. According to the data obtained, only a representative of the Scolopendra species, *S. cingulata*, was observed in summer. This group of centipedes

was also registered in other seasons of the year. As seen from Table 3, members of the Geophilomorpha species were found in spring and fall, while centipedes of the Schutigermorpha species were noted only in spring, and a representative of the *L. lapidicola* – only in autumn.

Table 3. Seasonal changes in the occurrence of centipedes in Vlora

	Spring	Summer	Autumn
Geophilomorpha	+		+
Scolopendromorpha	+	+	+
Schutigeromorpha	+		
Lithobiomorpha			+

Source: completed by the author based on author's researchers' data

Seasonal changes in the occurrence of centipedes in Vlora Peculiarities of the topic distribution of chilopods. The study of their biotopical variability is necessary to comprehend the influence of ecological factors on centipedes. When assessing the biotopic distribution of the Chilipoda class members in Vlora, only specimens collected by soil sampling were considered. Biotope 1 was 10-50 m above sea level. Vegetation was represented by trees such as plums, lemons, etc., and reeds. In addition, grass vegetation was completely absent in this biotope (ASH, 1975; 1989; 1991).

Soil chemical composition: humus – 56%; nitrogen – 92 mg/100g soil; phosphorus – 66 mg/100g soil.

Biotope 2 was a coniferous forest located 900-950 m above sea level. This biotope is dominated by conifers *Pinus heldreichii*, *Pinus nigra*, *Abies borisii-regis*. Soil is low in humus and nitrogen. In Biotope 1, where deciduous trees predominated, inhabited by representatives of all 4 species of the class Chilipoda, while in biotope 2, where coniferous trees mainly grew, representatives of the order Schutigeromorpha were absent.

Table 4 shows that *S. cingulata* was the most frequent species among all centipedes in both biotopes studied: the occurrence of this species was 48% and 58% for deciduous trees and coniferous forests, respectively. Density and occurrence rates for another genus of centipedes, Geophilomorpha, were about the same in both cases. All found specimens were found at a depth of more than 30 cm. It is also interesting to note the fact that during the collection of soil samples, specimens of *Henia illyrica* and *Clinopodes flavidus* were found in both biotopes. Table 4 shows that the total population density of centipedes is higher in the biotope dominated by deciduous trees than in the coniferous forest. However, the occurrence of chilopods is influenced more by temperature and moisture, soil chemical composition, than by the species composition of litter. First of all, this is because Diplopoda are predators, so, on the one hand, their occurrence is not associated with vegetation, but, on the other hand, the species composition of plants affects the chemical composition of the landscape soil.

Table 4. Seasonal changes in the appearance of centipedes in Vlora

	Geophilomorpha	Scolopendromorpha	Schutigeromorpha	Lithobiomorpha
Biotop 1				
Occurrence, %	35	48	5	12
Density, species/m ²	2.3	3.2	0.3	0.8
Overall density, species/m ²	6.6			
Biotop 2				
Occurrence, %	34	58	-	8
Density, species/m ²	1.8	2.7	-	0.5
Overall density, species/m ²	6			

Source: compiled by the author based on the own research data

Peculiarities of the vertical distribution of Chilipoda along the soil profile in Vlora. In the region under study, most specimens of chilopods were found at a depth of 0-10 cm (Fig. 2). No centipedes were found at depths greater than 30 cm. The vertical distribution of centipedes is influenced by a complex of biotic and

abiotic factors. As can be seen in Figure 2, *S. coleoprata*, a representative of the order Schutigeromorpha, everywhere prefers litter, whereas *S. cingulata* (Scolopendromorphaspecies) is widely distributed not only in a litter but also in the upper soil horizon, and also these millipedes migrate to soil depth in small numbers.

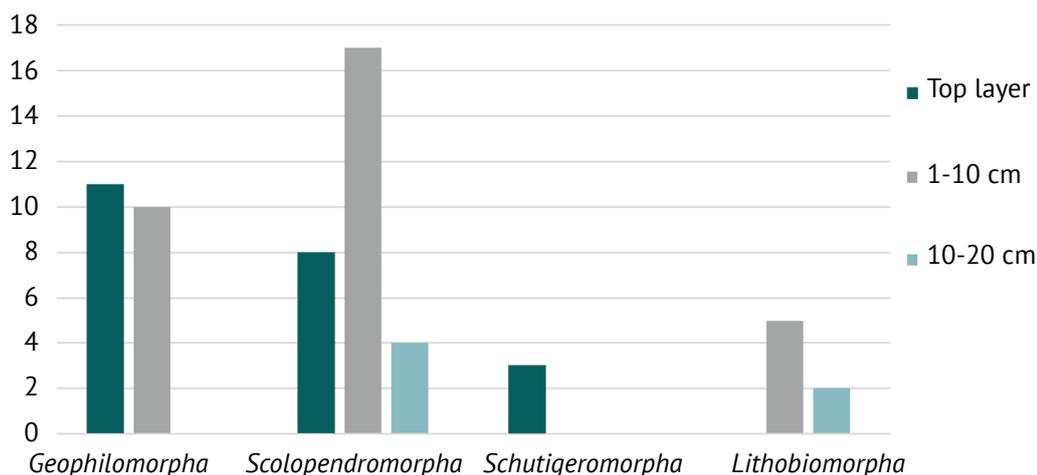


Figure 2. Distribution of Chilipoda along the soil profile in Vlora

Following the obtained results, *L. lapidicola* descended into the soil 10 cm and lower and was not found in the litter. Since members of Lithobiomorpha prefer dark habitats with high humidity, therefore, they are not often found in open areas. Geophilomorpha species were almost equally distributed between the litter and the top soil layer up to 10 cm and were absent in deeper soil layers. The centipedes of this group are widespread in places characterised by high humidity.

DISCUSSION

The research area is inhabited by centipedes from 4 species of the class Chilipoda. The most numerous are representatives of Geophila and Scolopendra. The obtained results coincide with the data presented in the literature. It is worth noting that two Geophilomorpha species: *Henia illyrica* and *Clinopodes flavidus* have been recorded in the Vlora fauna relatively recently (Kicaj, 2018). During the study, members of these two species were observed both in coniferous forests and in deciduous tree stands, which may indicate a wider distribution of *H. illyrica* and *C. flavidus* recently in southern Albania. Climatic factors play a significant role in the geographical distribution of centipedes.

There has been insufficient attention devoted to this issue, especially within the territory under study. In this connection, the study by H. Kicaj (2012; 2018) should be highlighted, which analysed the effect of temperature and humidity on the distribution of representatives of the family Glomeridae belonging to the class Diplopoda. Glomeridae belongs to another class of centipedes – Diplopoda. The researcher noted that the smallest number of diplopods was found in July-August since this period of the year is the driest (Kicaj, 2012).

For members of the class Chilipoda, such data are absent, which determines the need for this study. The obtained data fully coincides with the observations of H. Kicaj (2012; 2018): the smallest number of chilopods was observed in summer. Only *S. cingulata*, a representative of the Scolopendra species, was found (Table 3). This

may indicate a wide ecological tolerance of this species. The centipedes burrowed into deeper soil layers with the onset of drought. The period of drought in southern Albania occurs in July and August when high air temperatures and the least amount of precipitation become characteristic of the climate in Vlora. There are known cases when during drought, centipedes migrated to a depth of 1.5 meters, where they were nourished by worms that migrated deeper into the soil due to high air temperatures and lack of precipitation (Poloczek *et al.*, 2016).

Members of the *Lithobiomorpha* species were observed only in the fall. Since lapidomorphs can be active and mobile at lower temperatures, they can remain for longer periods in the upper soil layers, unlike other centipedes. The species *L. lapidicola* found in the research area can easily deal, for example, with leafminer caterpillars that were inaccessible to it in the warm season (Poloczek *et al.*, 2016). Thus, during drought, the occurrence of centipedes significantly decreases in the region, and such climatic factors as temperature and humidity influence the geographical distribution of chilopods.

Recent researches show that, in addition to climatic factors, the distribution of centipedes is influenced by vegetation and hydrothermal soil composition (de Oliveira *et al.*, 2019; Bouzan *et al.*, 2022; de Almeida *et al.*, 2022). However, similar data for chilopods in Albania are practically absent. Observations show that in Biotope 1, where deciduous trees dominated and herbaceous vegetation was absent, representatives of all 4 species of the Chilipoda class were present, whereas, in Biotope 2, where coniferous trees were growing, centipedes from the type *Schutigeromorpha* were absent.

It can be assumed that this is conditioned by the chemical composition of the soil, especially the lower content of humus and nitrogen in the pine plantations. Whereas in the soil of Biotope 1, which was characterised by a higher content of humus and nitrogen, Scutigera was found. In addition, *S. coleoprata* leads a synanthropic lifestyle (Shear & Edgecombe, 2010; Mitić *et al.*, 2022), so its presence in a human-altered landscape is quite reasonable.

S. cingulate, a representative of the *Scolopendromorpha* type, was found most often among the chilopods. This may indicate the resistance of this species to the chemical composition of soils. The occurrence and density of *Geophilomorpha* were approximately the same in both habitats, although the density of Geophiles in the coniferous forest was slightly lower compared to this indicator in Biotope 1 (Table 4). This can be explained by the fact that the soil in pine forests is dense and it is difficult for centipedes to move in it.

In turn, the occurrence and density of knucklegrass were higher in Biotope 1. It can be assumed that the presence of leaf litter is a favourable factor for *Lithobiomorpha*. In Biotope 1, where vegetation is represented by trees such as plum, lemon, etc., and reed, the total density of centipedes was 1.3 times higher than in the coniferous forest (Table 4). Thus, soil with high content of humus and nitrogen acts as a more favourable habitat for chilopods. However, the data obtained indicate that vegetation and soil chemistry has little influence on this group of centipedes.

In studying the ecological characteristics of centipedes, their vertical distribution in the soil profile is an important parameter. Most centipedes migrate between different soil layers. They migrate to survive under unfavourable environmental factors. For example, representatives of the type *Geophilomorpha* during the tropical rainy season are most often found in the upper soil layer up to 7 m, and with the onset of drought, they migrate to a depth of up to 14 cm (Cabanillas and Robla, 2022; Anselmo and Selvaggi, 2022). Regarding the region under study, H. Kicaj and M. Qirjo (2014) made a comparative study of the vertical distribution of centipedes from the Diplopoda and Chilipoda *Geophilomorpha* classes in Vlora. In their study, the authors noted that chilopods burrow deeper than centipedes. They attributed this feature to the faster movement of centipedes at the time of collection.

However, *Diplopoda* is saprophagous, actively destroying leaf litter, so they are more often found in forest litter and on the soil surface. In comparison with *Diplopoda* centipedes, they are more tolerant to low humidity. Moreover, for the Vlora region, the researchers found representatives of 3 groups of centipedes: *Geophilomorpha*, *Scolopendromorpha* and *Lithobiomorpha*, and analysed the features of their distribution in the soil profile. Most of the centipedes lived in the litter and at a depth of 0-10 cm, while only 18% of the chilopods and diplopods migrated to a depth of 10-20 cm. (Kicaj and Qirjo, 2014).

The results of this research coincide with the data obtained by H. Kicaj and M. Qirjo (2014). In addition, the vertical distribution of *S. coleoptrata* in the soil profile of southern Albania was shown for the first time in this work. *S. coleoptrata*, a representative of the *Schutigermorpha* type, universally prefer litter and does not occur in soil (Fig. 2). On the contrary, *L. lapidicola* migrated mainly to a depth of up to 10 cm.

As indicated by many authors studying the ecology of the common British centipede, most of these insects prefer dark and moist habitats, most often found in litter and upper soil layers (Tuf, 2015; Netto *et al.*, 2021), also representatives of this group of centipedes in small numbers were found in deeper soil layers up to 20 cm (Fig. 2). Geophytes inhabited mainly litter and the top 0-10 cm soil layer, and they did not descend to a depth of more than 10 cm at all. Most often, the depth at which the centipedes descended depended on the hydrothermal conditions of the soil.

Thus, the greatest number of Chilipoda was found in the uppermost soil layer (0-10 cm), the centipedes were also concentrated in the litter, and only a small part of them migrated to the depth. However, the maximum depth of Chilipoda migration did not exceed 20 cm.

CONCLUSIONS

The results reveal that there are four groups of centipedes in the Vlora fauna. The most numerous are representatives of the *Geophilomorpha* and *Scolopendromorpha* types. Air temperature and humidity have a paramount influence on the geographical distribution of chilopods. Only one species of centipedes, *S. cingulata*, was recorded during the aridest period, which may indicate a wide ecological tolerance of this species. This statement is supported by the fact that it was found more often than other chilopods in two different biotopes, which may also testify to the loyalty of ringed scolopendra to the chemical composition of the soil. Vegetation plays an insignificant role in the distribution of centipedes. But the soil with high humus and nitrogen content is a favourable factor for the habitat of these invertebrates.

During the research, specimens of *H. illyrica* and *C. flavidus*, relatively recently described for the Vlora fauna, were noted both in the coniferous forest and among deciduous trees, which may indicate a wider recent distribution of these in southern Albania. The study of the vertical distribution of Chilipoda along the soil profile showed that the greatest number of centipedes was found in the uppermost layer of soil (0-10 cm), also Chilipoda were concentrated in the litter, and only a small part of them migrated to a depth of 20 cm. It is worth noting the following features of the vertical distribution of *S. coleoptrata*: the centipedes preferred litter and did not migrate into the soil. These data were obtained for the first time in southern Albania.

The problem of the ecological peculiarities of centipedes in Albania is a complex and multifaceted one. The present research forms prerequisites for a more comprehensive study of this issue. The main prospects for further studies are related to the analysis of the sex and age structure of chilopods in Albania and the investigation of their locomotor activity. Thus, the ecological features of centipedes of the class Chilipoda in Vlora, southern Albania, were studied.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Екологічні фактори, що впливають на поширення класу Chilopoda групи Myriapoda

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Анотація. Останнім часом проблема збереження біорізноманіття на планеті набуває все більшої актуальності. Тому дослідження екологічних особливостей організмів, які відіграють важливу роль у функціонуванні біогеоценозів, є особливо актуальними. Багатоніжки Chilopoda є однією з таких груп. Наразі багато питань з екології хілопод, особливо на території Албанії, залишаються невирішеними. Це спонукає дослідників шукати відповіді на ці питання. Основна мета дослідження – проаналізувати особливості екології багатоніжок Chilopoda, що мешкають на території Влори. Матеріалом дослідження слугували власні колекції багатоніжок. У дослідженнях використовували методи ручного збору та відбору проб ґрунту. Визначення таксономічної належності багатоніжок проводили шляхом вивчення морфологічних ознак багатоніжок під стереоскопічним мікроскопом та подальшого визначення екземплярів за допомогою визначників. На досліджуваній території фауна Chilopoda представлена 6 видами з 4 рядів, 6 родів і 5 родин. Показано, що температура і вологість мають значний вплив на географічний розподіл губок: так, з настанням посухи значно зменшується кількість стоніг у підстилці та верхньому шарі ґрунту. Характер флори відіграє другорядну роль у розподілі стоніг. Встановлено, що ґрунти з високим вмістом гумусу та азоту є сприятливим середовищем існування для багатоніжок. У роботі вперше для регіону Влора наведено дані про вертикальний розподіл *S. coleoptrata* по ґрунтовому профілю. Скусни надавали перевагу підстилці і не мігрували в ґрунт. Інші представники Chilopoda були виявлені переважно у верхньому шарі ґрунту (0-10 см), також скутери концентрувалися в підстилці, і лише незначна їх частина спускалася на глибину до 20 см. Отримані результати є внеском у пізнання екологічних особливостей губчастих багатоніжок

Ключові слова: багатоніжки; ґрунтовий профіль; кліматичні умови; біотоп, Албанія