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ГОДИШНИК НА СОФИЙСКИЯ УНИВЕРСИТЕТ
БИОЛОГИЧЕСКИ ФАКУЛТЕТ
Том 62 Книга 1 — Зоология, физиология и биохимия на животните 1967/1968
1969. ANNUAIRE DE L'UNIVERSITÉ DE SOFIA
FACULTÉ DE BIOLOGIE
Vol. 62 Livre 1 — Zoologie, Physiologie et Biochimie des Animaux 1967/1968

p. 61-70, 20 figs.
ОТДЕЛЕН ОТПЕЧАТЪК

in English *RJ*
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IN THE RHODOPE MOUNTAINS

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ОТ ПЕЩЕРА В РОДОПИТЕ

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Invertebrate Zoology
(Crustacea)

НАУКА И ИЗКУСТВО
София — 1969

AGI

ELAPHOIDELLA ANGELOVI N. SP. FROM A CAVE IN RHODOPES MOUNTAINS

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Chair on Hydrobiology and Ichtiology
(Head of the Chair: doz. A. Angelov)

In June 1966, responding to the kind invitation of D. Raichev, president of the speleological club in the town of Chepelare, I participated in the sixth republican and international speleological expedition, organized in Bulgaria, in the Western Rhodope Mountains. Of special interest for me was the biospeleological material, gathered during the expedition from the „Gorna Karanska Dupka“ cave. Out of this material, I succeeded to single out several female and male specimen of the *Elaphoidella Chapuis* genus, which I identify as a new species, unknown for science.

The new species bears the name of doz. Angel M. Angelov.

The cave „Gorna Karanska Dupka“ is found 1.5 km from the village of Yagodina, along the road to Teshel. Its entrance is located at an altitude of 1065 m. It is supposed that the cave has an old erosion genesis (mid-Pliocene) and is formed as a water-draining eddy for a part of the waters of the Bujnovska River.

On many places inside the cave can be found small infiltration lakes and sintral pools, filled with water dropping from the ceiling. The intensity of the dropping water is about 60 drops per minute. Maximum air temperature at the entrance of the cave is 16.9° C, and minimum temperature measured inside the cave, is 8.8° C. The temperature of the water in the sintral lakes is 8.9°—9.5° C. The active reaction of the water (pH) is slightly alkaline (according to data from the complex geological, geomorphological and climatic investigations conducted during the expedition, and according to „Rhodopski Peshternjak“, No. 4 (28), (1966).

Elaphoidella angelovi n. sp.
from a cave in the Rhodope Mountain
(Figure 1—20)

Typi: holotypus (male) and paratypes (2 male and 2 female specimen) in the collection of the author, bearing the numbers 441/2 and 441/1, 434/2, 441/4, 434/1, resp.

Typus material is collected on June 26, 1966 from sintral lakes inside the cave. The lake beds are covered with silt mixed with detritus.

Female specimen. Length of the body, less furcal bristles: 0,42 and 0,50 mm. Back end of the corporal segments is indented. A row of short spurs, broken in the middle, is observed on the first abdominal segment, situated ventrally on the second and the third abdominal segments, is unbroken; the middle spurs of the second segment are poorly developed (fig. 1). The annal segment has three spurs situated ventrally over the base of the furcal members, besides the anal slot. The analoperculum is well outlined, semi-circular, with 18 dents on the outer rand. The genital area is characteristic for the genus. The furcal members are slightly parted from each other; in the distal part they are slightly crowded; their length is about 1.4 times bigger than their width; the inner rim is slightly convex and smooth; the outer rim has two short lateral bristles and several spurs (1—3); the dorsal side is with hitinic fin upon which the dorsal bristle is fastened; of the apical bristles, only the middle one is well developed the outer one being about $5\frac{1}{2}$ times shorter than the middle one, while, the inner one is very short (Fig. 2).

The body is depigmented. Eyes are lacking.

The first pair of antennae (A I) are made of eight members; the sensory cylinder emerges out of the fourth member and surpasses the end of the antenna with the length of the last member (Figure 3). The exopodite of the second pair of antennae has a single member, being slenderly elongated, and bearing 4 bristles.

Exopodites P_1 — P_4 and endopodite P_1 have three members each. Endopodites P_2 — P_4 have two members.

The first pair of pods (P_1) have a well developed threemember endopodite, which is longer than the exopodite with the length of its last member. The first member of the endopodite reaches up to the end of the second member of the exopodite; the first and the second members bear, at their distal parts, one inner-rim bristle each; the third member is with three appendices; the outer rim of the three members is with spurs. The armament of the exopodite is characteristic for the genus, with no peculiarities (Fig. 5).

Second pair of podes (P_2): the endopodite reaches up to the middle of the second member of the exopodite; the first member is well developed and bears one inner-rim bristle; the distal member is oval and bears two inner-rim bristles, two long, haired apical bristles, surpassing the

length of the exopodite and one sub-apical outer spur; the outer-rim bears spurs. The exopodite is characteristic for the genus, with no peculiarities (Fig. 6).

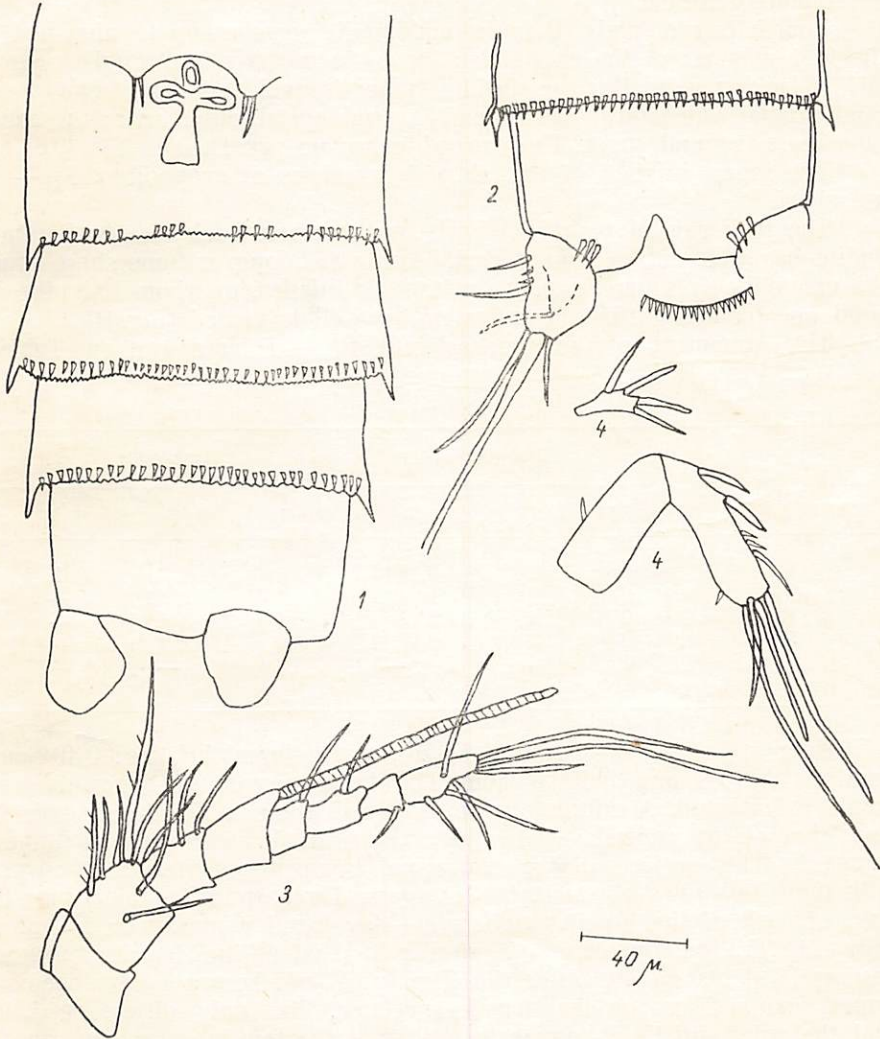


Fig. 1—4. *Elaphoidella angelovi* n. sp. ♀ (Paratypus)

1 — The abdominals segments, ventral; 2 — Fu, ventral; 3 — A I; 4 — A II and exopodit

Third pair of podes (P₃); the endopodite reaches up to the middle of the second member of the exopodite; its structure and armament re-

semble those of P_2 . The first and second members of the exopodite possess better developed outer spurs than those of the other pods (Fig. 7). On one of the specimen is observed a pathologically developed last member of the exopodite, bearing an additional outer spur (Fig. 8), while the other pod is normal.

Fourth pair of pods (P_4); the endopodite reaches up to the end of the first member of the exopodite; the basic member is strongly reduced and is lacking a bristle; the distal member is oval and bears two inner-rand bristles, one apical bristle and one sub-apical outer spur; the outer rim bears several spurs. The exopodite has no peculiarities (Fig. 9).

The inner bristles of the second members of exopodites $P_1 - P_4$ are short.

The fifth pair of pods (P_5) have two members each; the basic endopodite has well outlined inner part, bearing two long and one short spurs; the exopodite is square, supplied with four bristles, of whom only the second one (counting from the inner end) is well developed (Fig. 10).

The armament of the thoraxal pods $P_1 - P_5$ is shown on Table I.

Table I

Pods	Exopodite			Endopodite		
	1	2	3	1	2	3
P_1	0	1	0, 2, 2	1	1	1, 1, 1
P_2	0	1	1, 2, 2	1	2, 2, 1	—
P_3	0	1	2, 2, 2	1	2, 2, 1	—
P_4	0	1	2, 2, 2	0	2, 1, 1	—
P_5	4	—	—	3	—	—

Male. Holotypus — corporal length, minus furcal bristles: 0.49 mm; paratypi — 0.49 mm and 0.38 mm. The back rim of the corporal segments is indented. A continuous row of small spurs is developed over the back rim, at the ventral side of the second, third and fourth abdominal segments. The surface of the abdominal segments, ventrally, is covered with numerous rows of small, tender spurs. Three spurs located over the base of each of the furcal members, are developed ventrally on the annal segment. The analopereulum is similar to that of the female specimen, having 18 dents on the outer rim. The furcal members are developed and armed just as those of the female specimen, the only difference being that the apical bristle is longer than that of the female specimen and is $3\frac{1}{2}$ times shorter than the middle one (Figure 11).

Antennae I are modified and geniculating with a broader fourth member (Fig. 12). The exopodite of antenna II resembles that of the female

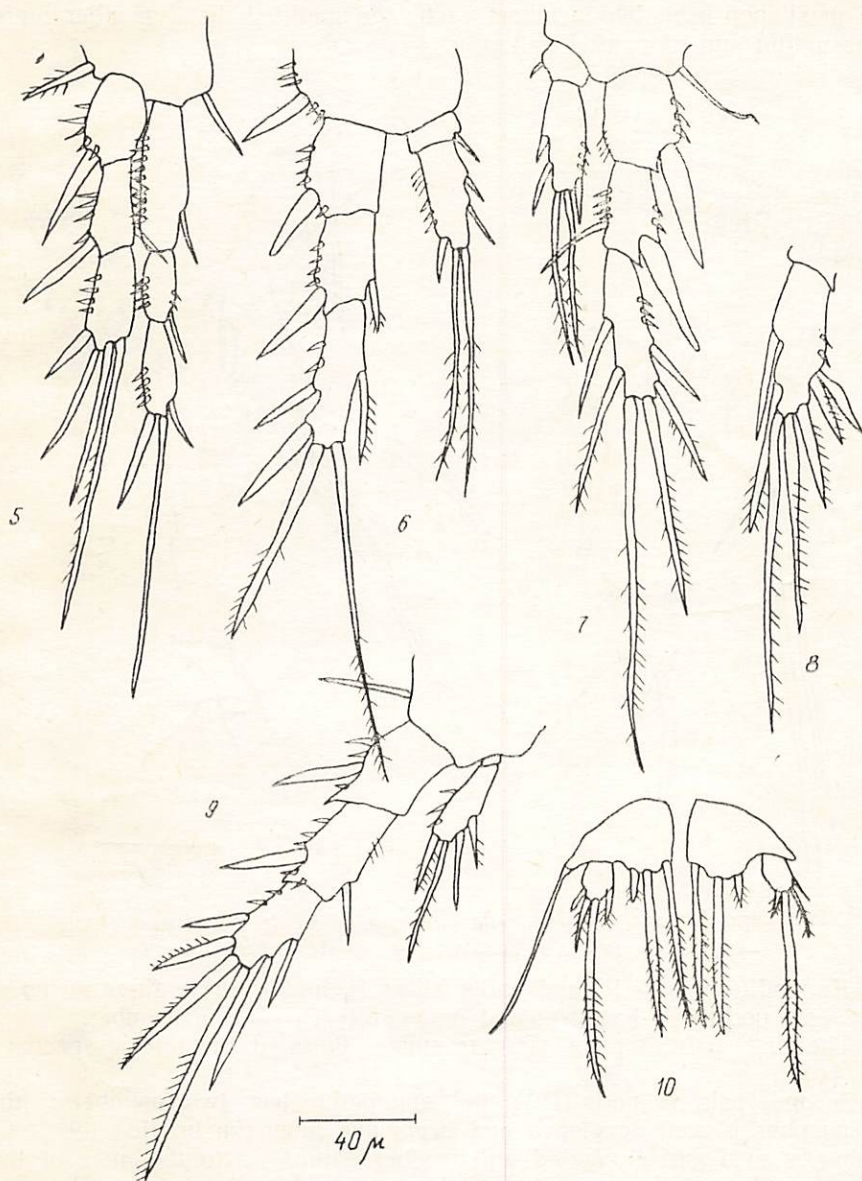


Fig 5—10. *Elaphoidella angelovi* n. sp. ♀ (Paratypus)
 5 — P₁; 6 — P₂; 7 — P₃; 8 — the third segment of exp. P₃; 9 — P₄; 10 — P₅

specimen (Fig. 13). The structure of the mandible is shown on figure 14. The maxilliped have two members each; the modified distal member represents a thin and elongated nail (Fig. 15).

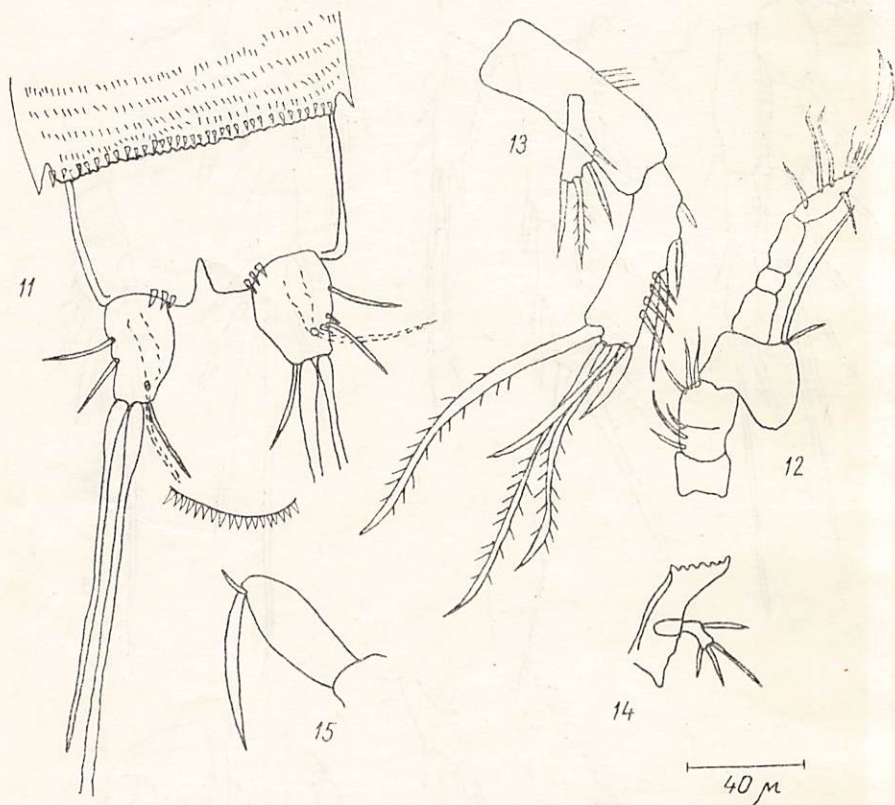


Fig. 11—15. *Elaphoidella angelovi* n. sp. ♂ (Holotypus)
11 — Fu, ventral; 12 — A I; 13 — A II; 14 — mandible; 15 — maxilliped

Exopodites P_1 — P_4 and endopodites P_1 and P_3 have three members each; endopodite P_2 has two, and endopodite P_4 — one member.

The first pair of pods (P_1) resemble those of the female specimen (Fig. 16).

Second pair of pods (P_2); the endopodite has two members; the first member is well developed and bears one inner-rim bristle; the distal member is oval and elongated and reaches almost up to the end of the second member of the exopodite; it bears two inner-rim bristles and two apical ones, of whom the inner one is longer and surpasses the exopodite; the inner rim has spurs. The exopodite resembles the female specimen in structure and armament (Fig. 17).

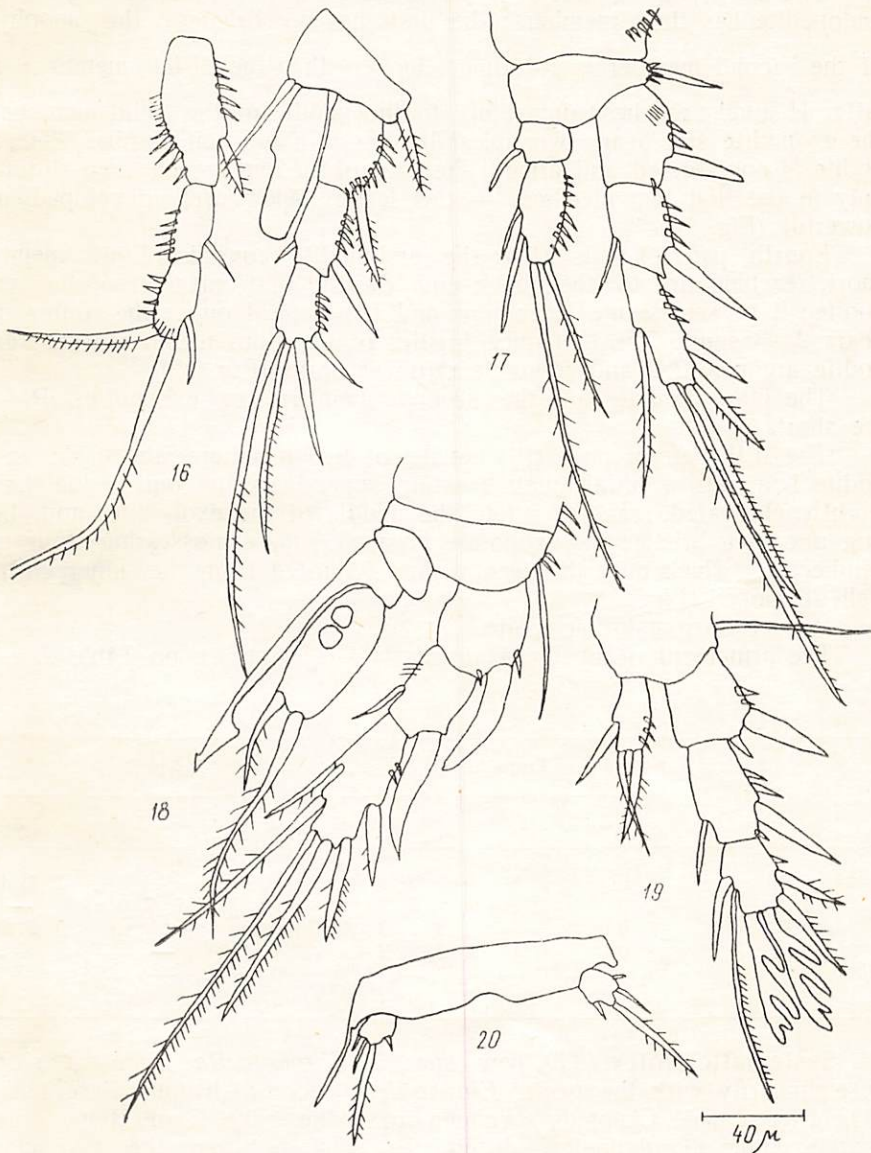


Fig. 16—20. *Elaphoidella angelovi* n. sp. ♂ (Holotypus)

16 — P₁; 17 — P₂; 18 — P₃; 19 — P₄; 20 — P₅

The third pair of pods (P_3) are modified in a copulative organ. The endopodite has three members; the first has no bristles; the apophysis of the second member is $1\frac{1}{2}$ times longer than the distal member; the latter is oval, reaches almost up to the middle of the third member of the exopodite and bears two apical bristles with unequal lengths. The exopodite is constructed and armed like that of the female specimen, differing only in the first two members — the latter being well developed and powerful (Fig. 18).

Fourth pair of pods (P_4): the endopodite consists of one member, short, reaching up to the back end of the first member of the exopodite; it possesses one inner spur and two apical ones; the outer rim bears 2—3 spurs. The two apical bristles of the third member of the exopodite are modified and resemble reindeer horns (Fig. 19).

The inner bristles of the second members of exopodites P_1 — P_4 are short.

The fifth pair of pods (P_5) consist of two members; the basic endopodite is a narrow hitinic plate lacking appendices, its outer side being slightly elongated, reaching up to the middle of the exopodite and bearing one long bristle; the exopodite is small, square, possessing four appendices, of which only the second one (counted from the inner end) is well developed (Fig. 20)

P_6 is a narrow hitinic plate.

The armament of the thoraxal pods P_1 — P_5 is shown on Table 2.

Table II

Pods	Exopodite			Endopodite		
	1	2	3	1	2	3
P_1	0	1	0, 2, 2	1	1	1, 1, 1
P_2	0	1	1, 2, 2	1	2, 2, 0	—
P_3	0	1	2, 2, 2	0	apophysis	0, 2, 0
P_4	0	1	2, 2, 2	1, 2, 0	—	—
P_5	4	—	—	0	—	—

Systematic Notes. The new species *Elaphoidella angelovi* shows close similarity with the species *Elaphoidella incerta* Chappuis, described in 1937 after a male Chappuis specimen from the cave Zrni Kamen near Skopije. Some morphological differences exist between the two close-relation male species: 1) With *E. incerta*, the row of spurs on the second and third abdominal segments, ventrally, over the back rim, is broken in the middle. With the new species *E. angelovi* such a row of spurs exists on the second, third and fourth abdominal segments and envelopes un-

broken the whole ventral side. 2) With *E. incerta*, over the base of the furcal members, ventrally, are situated two spurs on each member, while with *E. angelovi* they are three. 3) The analoperculum of *E. incerta* has eight blunt dents; *E. angelovi* analoperculum has eighteen. 4) With *E. incerta*, the first member of endopodite P_2 lacks a bristle, while the second member bears one inner-rim bristle and two short apical bristles, which are as long as the member. With *E. angelovi*, the first member bears one inner-rim bristle, the second member has two inner-rim bristles and two long, haired apical bristles, the inner one of which is three times longer than the member. 5. Endopodite P_4 of *E. incerta* has two members, while *E. angelovi* has one. 6. The outer part of the basic endopodite of *E. incerta* is strongly elongated and surpasses the exopodite; with *E. angelovi* the outer part of the basic endopodite is slightly elongated and reaches only to the middle of the square exopodite.

The author regrets for not having found and described a female specimen, which would have enabled her to carry out a fuller and more detailed comparison.

The indicated morphological differences between the male specimen of the two species, as well as the widely distant localities where they have been found does not favour the supposition that they belong to the same species. Most probably, they both originate from one initial form, which has evolved differently in the different mountainous regions, where they inhabit the underground waters. An additional study of *E. incerta* would lead to the final elucidation of this interesting, from zoogeographic point of view, problem.

Received on 20. XII. 1968

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ELAPHOIDELLA ANGELOVI N. SP. ОТ ПЕЩЕРА В РОДОПИТЕ

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Резюме

В статията се съобщава един нов вид от р. *Elaphoidella* Chapp. от пещерата „Горна Каранска дупка“, на 1,5 км от с. Ягодина — Западни Родопи, разположена на 1065 м н. в.

Elaphoidella angelovi n. sp. е описана по 3 ♂♂ и 2 ♀♀ екземпляра. Материалът е събран на 27. VI. 1966 г. от синтрови езерца във вътрешността на пещерата. Дъното на езерцата е покрито с тиня, примесена с детрит.

Elaphoidella angelovi показва близко сходство с *E. incerta* Chapp. 1937, описана по 1 ♂ от пещерата „Църни Камен“ край Скопие. Между мъжките на двата родствени вида съществуват известни морфологични различия във въоръжението на абдоминалните сегменти и аналоперкулума, в устройството и въоръжението на ендоподити P_2 и P_4 , както и в устройството на P_5 .

Авторът е на мнение, че двата вида произлизат от една обща изходна форма, която е различно еволюирала в различните планински местности, където те населяват подземните води.