

The area-analytical zoogeographic classification of the Hydrobiidae of Southern and Eastern Europe
by
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Abstract: The present paper discusses the results of the area-analytical zoogeographic classification of the members of the family Hydrobiidae inhabiting the region of Southern and Eastern Europe. The studied areas involve those of the Caspian Sea, the Black Sea, Romania, Bulgaria, Turkey, Greece, Albania, Macedonia, Montenegro, Serbia, Bosnia-Herzegovina, Croatia, and Slovenia. Plus the border regions of Slovenia in case of identical taxa (Austria, Italy). The area classification was following the methods and approaches of Dévai 1976 for aquatic animals, and those of De Lattin 1967, and Varga 1971, 1975. Besides the freshwater forms, the littoral, brackish-water species are also considered in the study.

Keywords: Mollusk, Gastropoda: Prosobranchia; Hydrobiidae, area-analytical zoogeographic classification, Southern and Eastern Europe.

Material and methods

The area-analytical zoogeographic classification of the family Hydrobiidae is based on the refugial area classification system of Dévai 1976 worked out for aquatic invertebrates from the results of DeLattin 1976 (Fig. 1). The kind assistance of dr. Sándor Bagdi in the preparation of the maps is highly appreciated. Distribution data of the individual species are taken from the literature.

The classification of the individual species

Caspian Sea: Ponto-Caspian Elements: *Lithoglyphus exiguus* (Eidwald 1828) distributed in the littoral parts of the sea. Kabat-Herschler 1993. *Turricaspia andrusovi* (Dybowski et Grodmalicki 1917). The central and southern parts of the sea between the depths of 25-80 m. Radoman 1985 (Fig. 2; 1:2).

Ponto-Mediterranean and Ponto-Caspian Elements: *Hydrobia ventrosa* (Radoman 1973) dwelling in the littoral parts of the Black Sea and Adriatic Sea (Grossu 1986, Radoman 1973) (Fig. 2:3). *Hydrobia arenarium* (Bourguignat 1876) inhabiting the littoral zone of the Azovian Sea is a

Ponto-Caspian Element (Grossu 1986) (Fig. 2:4), similarly to *Hydrobia aciculina* (Bourguignat 1876) appearing in the littoral zone of the Azovian Sea, plus at Mamaia, and Mangalia at the Black Sea (Grossu 1986) (Fig. 2:5).

Ponto-Mediterranean Elements: *Hydrobia acuta* (Draparnaud 1801) dwelling in the littoral zone of the Black Sea in Romania and the branches of the Danube delta (Grossu 1986) (Fig. 2:6). *Ventrosia pontieuxini* (Radoman

Bába Károly

Európa keleti és déli részén élő Hydrobiidae fajok areaanalitikus állatföldrajzi beosztása

Kivonat: A Hydrobiidae areanalitikus állatföldrajzi beosztása Dévai 1976 vízi élőhelyekre vonatkozó area beosztása alapján készült, melyet De Lattin 1967 és Varga 1971, 1975 alapozott meg. Az areaanalitikus beosztás kiterjed a Kaspi-tenger, Fekete-tenger, Románia, Bulgária, Törökország, Görögország, Albánia, Macedonia, Montenegro, Szerbia, Bosznia-Hercegovina, Horvátország és Szlovénia Hydrobiidae fajaira is. Továbbá a Szlovéniával határos területekre, azonos fajok esetében (Ausztria, Olaszország). A felosztás kiterjed az édesvízeken kívül a littoralis brakkvízi szervezetekre is.

Kulcsszavak: Mollusca, Gastropoda, Hydrobiidae, állatföldrajzi beosztás.

Alkalmazott módszerek

A Hydrobiidae család fajainak beosztása De Lattin 1967 szelemeiben Dévai 1967 édesvízi szervezetekre alkalmazott faunakör felosztása alapján készült figyelembe véve Varga 1971, 1975 munkáit (1. ábra). A fajtérképek megrajzolásában Bagdi Sándor természetföldrajzos kollega volt segítségérem, melyért köszönömmondok. Az egyes fajok elterjedését a felsorolt irodalomjegyzék adatai alapján ábrázoltam, a leíró feltüntetésével.

A fajok osztályzása területenként

Kaspi-tó: Ponto-Caspian Elements: *Lithoglyphus exiguus* (Eidwald 1828) Elterjedése a tó partmenti régiója. Kabat-Herschler 1993. *Turricaspia andrusovi* (Dybowski et Grodmalicki 1917). A tó középső és déli része 25-80 m-ig pontközelben. Radoman 1985 (2. ábra; 1:2).

Ponto-mediterrán és Ponto Kaspi Elem a *Hydrobia ventrosa* (Radoman 1973) a Fekete-tenger és az Adria littoralis zónájában él (Grossu 1986, Radoman 1973) (2. ábra:3).

Ponto-Caspi Elem a *Hydrobia arenarium* (Bourguignat 1876) az Azovi tenger littoralis zónájában él (Grossu 1986) (2. ábra:4), továbbá a *Hydrobia aciculina* (Bourguignat 1876) előfordul littoralis elemként az Azovi tengerben és Mamaia, Mangalia-nál a Fekete-tengerben (Grossu 1986) (2. ábra:5).

Ponto-mediterrán elemek: *Hydrobia acuta* (Draparnaud 1801) A Fekete-tenger romániai littoralis zónájában és a Duna delta ágaiban él (Grossu 1986) (2. ábra:6). *Ventrosia pontieuxini* (Radoman 1973) Mangalia

System of freshwater refugial areas (fauna circles) and faunal elements
in the Arboreal of Palearctic region
(DE LATTIN 1967, Z. VARGA 1971, 1975) from Gy. DÉVAI 1976

West-Palearctic Elements

1. South-mediterranean Elements
(Canarian, Mauretanian,
Tyrrhenian, Cyprean, Cyprian
Refugial areas)
1. Holomediterranean Elements
 - 1.a Atlantomediterranean
 - 1.b Adriatomediterranean Refugial areas
 - 1.c Pontomediterranean
 - 1.d South Italian
 - 1.e euxin
2. Ponto-Caspian Elements
Ponto-Caspian Refugial areas
3. West-Asian Elements
 - a.) Pre-Asian Elements
4. Iranian
5. Afghan Refugial areas
6. Turkestanian

East-Palearctic Elements

9. Mongolian Elements
Dzungarian Refugial areas
Mongolian-Altaic-Hangayn Refugial areas
areas
10. Sibrian Elements
 - a.) West Sibrian Elements
West Sibrian Refugial areas
 - b.) Central Sibrian Elements
Angaran Refugial areas
 - c) East Sibrian Elements
Stanovoy-Bureyan
Okhostkian Refugial areas
Kamchatkan
 - d.) Manchurian Elements
Amurean
Sakhalin-Kurilian
Hokaidon Refugial areas
Manchu-Ussurian

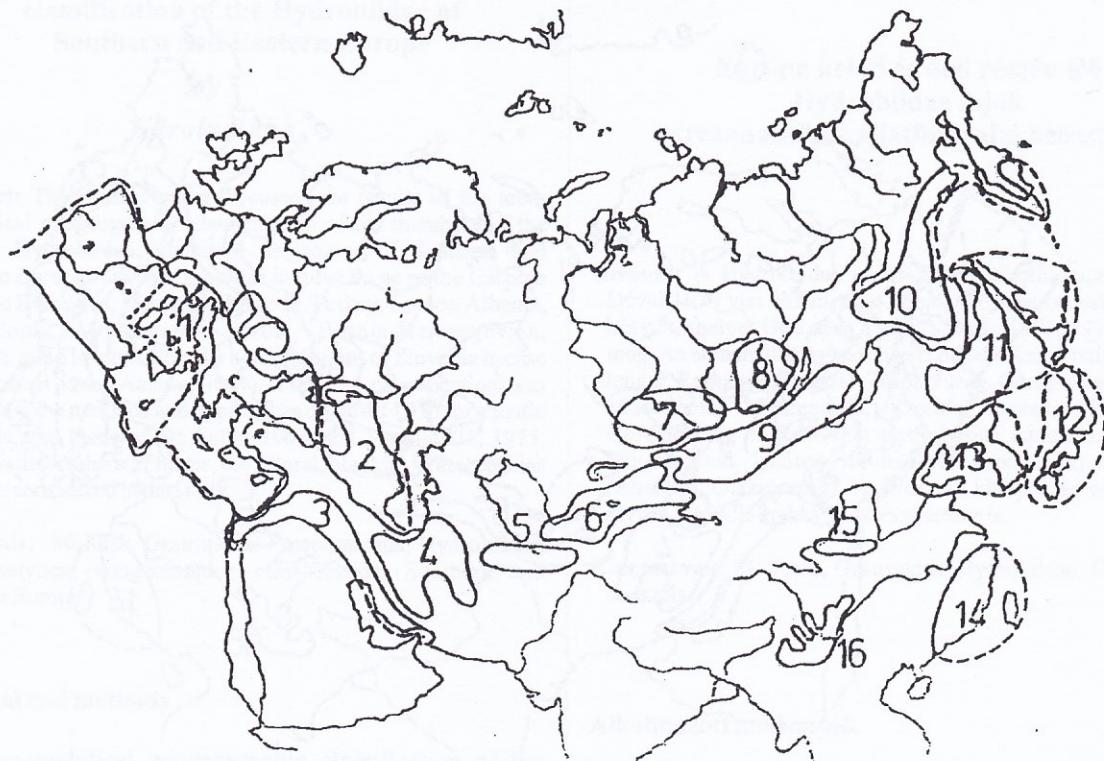
Pacific-Palearctic Elements

12. Japanese
13. Korean
14. Sino-Pacific Refugial areas
(Sino-Tibethian)
15. Yunnan
16. Note: The Korean Refugial area belongs to Manchurian elements by DE LATTIN 1967.

Note: The Korean Refugial area belongs to Manchurian elements by DE LATTIN 1967.

Fig. 1.

**Az édesvízi refugium területek (fauna körök) és a vizsgált fauna elemek rendszere a
Palearktisz arboreális részén
(DE LATTIN 1967; VARGA, Z. 1971, 1975) DÉVAI (1976) után**



Nyugat-Palearktikus Elemek

1. **Dél-mediterrán elemek**
(kanári, mauretániai, tirrén, ciprusi, refugium területek)
1. **Holomediterrán elemek**
 - 1a. Atlantomediterrán refugium terület
 - 1b. Adriato-mediterrán refugium terület
 - 1c. Ponto-mediterrán refugium terület
 - 1d. Dél-itáliai refugium terület
 - 1e. Euxin refugium terület
2. **Pontusi-Kaszpi Elemek**
Pontusi-Kaszpi refugium terület

Nyugat-Ázsiai Elemek

a.) **Pre-Ázsiai Elemek**

3. Szíriai refugium terület
4. Iráni
- b.) **Közép-Ázsiai Elemek**
5. Afgán refugium terület
6. Turkesztáni refugium terület

Kelet Palearktikus Elemek

9. **Mongol Elemek**
Dzsungáriai refugium terület
Mongol-alkáji-hangaji refugium
Dauri refugium terület

Szibériai Elemek

- a.) **Nyugat-Szibériai Elemek**
7. Nyugat-szibériai refugium terület
- b.) **Közép-Szibériai Elemek**
8. Angarai refugium terület
10. c.) **Kelet-Szibériai Elemek**
Stanojov-burján refugium terület
Okotszki refugium terület
Kamcsatkai refugium terület
11. d.) **Mandzsúriai Elemek**
Amúri refugium terület
Szakhali-kuril refugium terület
Hokkaidói refugium terület
Mandzsuszúri refugium terület

Pacifikus- Palearktikus Elemek

12. Japán refugium
13. Koreai refugium
14. Kínai-pacifikus
15. Kínai-tibeti
16. Yunnani

Jegyzet: A Koreai refugium terület a Mandzsúriai Elemek közé sorolandó DE LATTIN (1967) szerint

1. ábra

1973) Mangalia, Black Sea (Grossu 1986) (Fig. 2:7). *Pseudamnicola penchinati* Bourguignat 1870. Danube delta, till the city of Braila (Grossu 1986) (Fig. 2:8). *Preudamnicola razelmiana* Grossu 1986 (Grossu 1986) Danube delta, Caraorman (Fig. 3:1). *Pseudamnicola dobrogica* Grossu 1986 (Grossu 1986). Sulina Danube branch (Fig. 3:2) *Pseudamnicola leontina* Grossu 1986. Razelm, Danube delta (Grossu 1986) (Fig. 3:3). *Pseudamnicola bacescui* Grossu 1986. Techirgiol (Grossu 1986) (Fig. 3:4). *Grossuana codreanui* (Grossu 1946) Techirgiol, Constanca Romania, Bunar, Balic Bulgaria (Grossu 1986) (Fig. 3:5).

European Element: *Ventrosia stagnorum* (Gnelli 1790). Scattered distributions int he littoral parts of the Black Sea at Mangalia, in Gibraltar and the littoral parts of Norway (Grossu 1986) (Fig. 3:6).

Ponto-Mediterranean Element: *Lithoglyphus pygmaeus* Frauenfeld 1863. Romania: Giurgica by the Danube (Grossu 1986) (Fig. 3:7).

Ponto-Mediterranean: Carpathian Elements: *Paladélhiopsis leruthi* (Beottger 1940) Romania: Varnica Cave, by Kalota and Rézbánya (Bihor county) Klobesti and Kuglis Caves (Soós 1943, Grossu 1986). (Fig. 3:8). *Bythinella molcsányi* (H.Wagner 1941) Romania: Gutin Mts.: spring at Rozsály on the Izvara Highland (Soós 1943) (Fig. 4:1). *Paladilhia transsylvania* (Rotarides 1943) (Fig. 4:2). *Paladilhia carpathica* (Soós 1940). Romania: Haverla at 2061 m in the Northern Carpathians, Maramures Mts. and the spring area of the White Tisza, Blaj: Muntele Padura Craiului (Soós 1943) (Fig. 4:3).

Holo-Mediterranean Carpathian-Alpian Elements: *Bithynella austriaca* Frauenfeld 1862. wide distribution area in the mountains: Romania: several springs of the Gutin Mts., Baia Herculanea, Northern Carpathians up to the ranges of Visoke Tatry and Munkacevo to the east, Eastern Alps, Sudetas, southern Czech Republic Morva, Sudeta Mts. in Poland by Krackow and Oicow. It appears to the line of the Inn and as far as the Caravancas in the Alps, plus the Graz Mts. In Hungary it appears in the Mátra, Börzsöny and Pilis Mts., plus the springs along the Danube near Dunakeszi and Gid (Grossu 1986). In Germany it is known from Eastern Bavaria to Munich. In Bulgaria it is mentioned from the Vitosha and Rila Mts. from Petrok. Soós 1943, Lisicky 1991, Lozek 1956, Glöer 2002, Angelov 2000. (Fig. 4:4).

Ponto-Mediterranean Elements: Bulgaria (Angelov 2000), *Lithoglyphus pyramidalis* O. F. Müller 1774. In the river Danube near Lone. (Fig. 4:5). *Insignia macrostorna* (Angelov 1972) *Belgrandiella nitida* (Angelov 1972) Polaten creek Felevan county (Angelov 2000) (Fig. 4:6). *Belgrandia hessei* (Wagner 1927) Stara Planina: Femata Dupka Cave, Latakna (Angelov 2000) (Fig. 4:7). *Grossuana serbica* Radoman 1973, *Grossuana serbica serbica* Radoman 1973. Raska creek at Sopocanin, creek close to the village of Osaonica, near Novi Pazar at the road to Sjenico (Radoman 1983) (Fig. 4:8). *Horatia lucidulus* (Angelov 1976) Southern Dobrudza Black Sea coast (Fig. 5:1) *Sadleriana virescens bulgarica* (Wagner 1927). Tekiri creek at Plovdiv close to the monastery of Bachevo, creek close to Malko Tarnovo (Angelov 2000) (Fig. 5:2). *Psudamnicola consociella euxina* (Wagner 1927) creek

Fekete-tenger pontján él (Grossu 1986) (2. ábra: 7). *Pseudamnicola penchinati* Bourguignat 1870. A Duna deltában Brailaig elterjedt (Grossu 1986) (2. ábra: 8). *Preudamnicola razelmiana* Grossu 1986 (Grossu 1986) Duna-delta Caraorman részén él (3. ábra: 1). *Pseudamnicola dobrogica* Grossu 1986 (Grossu 1986). A Sulina nevű Duna deltaágban él (3. ábra: 2) *Pseudamnicola leontina* Grossu 1986. Előfordulása Razelm Duna-delta (Grossu 1986) (3. ábra: 3). *Pseudamnicola bacescui* Grossu 1986. Elterjedése: Techirgiol (Grossu 1986) (3. ábra: 4). *Grossuana codreanui* (Grossu 1946) Techirgiol, Constanca România, Bunar, Balic Bulgária (Grossu 1986) (3. ábra: 5).

Európai elem: *Ventrosia stagnorum* (Gmelin 1790). Elterjedése széttagolt, Fekete-tenger littoralis zónája Mangalia, Gibraltar és Norvégia littoralis zónái (Grossu 1986) (3. ábra: 6).

Ponto-mediterrán elem: *Lithoglyphus pygmaeus* Frauenfeld 1863. România: Giurgica, Duna mellett (Grossu 1986) (3. ábra: 7).

Ponto-mediterrán: kárpáti elem: *Paladélhiopsis leruthi* (Beottger 1940) România: Rézbánya mellett Varnicai-barlang, Kalota mellett (Bihar megye) Klobesti és Kuglis-barlang előfordulási helye (Soós 1943, Grossu 1986). (3. ábra: 8). *Bythinella molcsányi* (H.Wagner 1941) România: Gutin-hegység: Rozsály az Izvara-fennsíkon forrás (Soós 1943) (4. ábra: 1). *Paladilhia transsylvania* (Rotarides 1943) (4. ábra: 2). *Paladilhia carpathica* (Soós 1940). România: Haverla, Északi-Kárpátok 2061 m-en, Máramarosi-havasok a Fehér-Tisza forrásvidéke, Blaj: Muntele Padura Craiului (Soós 1943) (4. ábra: 3).

Holo-mediterrán Kárpáti alpi elem: *Bithynella austriaca* Frauenfeld 1862. Tág elterjedési területe van a hegymélyekben: Româniában: a Gutin-hegység sok forrásában, a Herkules-fürdőben, az Északi-Kárpátokban a magas Tátráig keletre Munkácsig, Keleti-Alpok, Szudétákban, Csehországban délen Morvaországig, Szudétákban Lengyelországban Krakkó és Oicow mellett ismert. Az Alapokban Innig, délre Karavankáig elterjedt, a Gráci-hegymélyen is elterjedt. Délen a Mátra-, Börzsöny- és Pilis-hegységen, továbbá Dunakeszi, Gid mellett a Duna-parti forrásokból ismert (Grossu 1986). Németországban Kelet-Bayerntől Münchenig ismert. Bulgáriában a Vitosa- és Rila-hegységen Petrokban él. Soós 1943, Lisicky 1991, Lozek 1956, Glöer 2002, Angelov 2000. (4. ábra: 4).

Ponto-mediterrán Elemek: Bulgária (Angelov 2000), *Lithoglyphus pyramidalis* O. F. Müller 1774. A Dunában Lone-hoz közel. (4. ábra: 5). *Insignia macrostorna* (Angelov 1972) *Belgrandiella nitida* (Angelov 1972) Polaten-patak, Felevan körzet (Angelov 2000) (4. ábra: 6). *Belgrandia hessei* (Wagner 1927) Stara Planina-hegység: Femata Dupka Cave, Latakna (Angelov 2000) (4. ábra: 7). *Grossuana serbica* Radoman 1973, *Grossuana serbica serbica* Radoman 1973. Raska-patak Sopocaninál Osaonica faluhoz közeli patak Novi Pazarhoz nem messze a Sjenicoi útnál (Radoman 1983) (4. ábra: 8). *Horatia lucidulus* (Angelov 1976) Dél-Dobrudza Fekete-tengerpart (5. ábra: 1) *Sadleriana virescens bulgarica* (Wagner 1927). A Tekiri-patak Plovdivnál közel a Bachevo

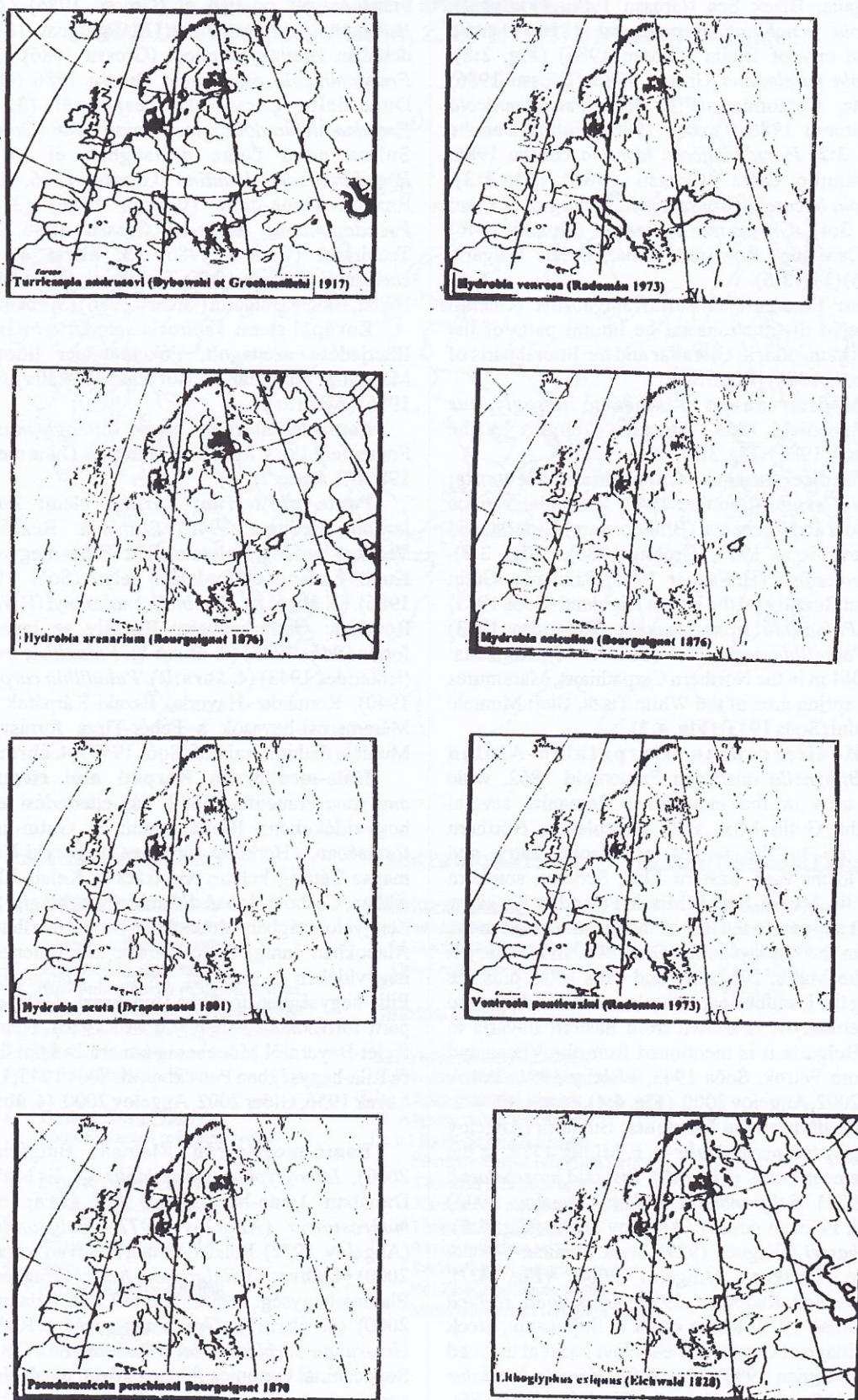


Fig. 2.
2. ábra

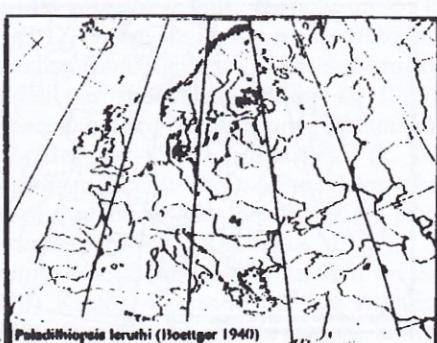
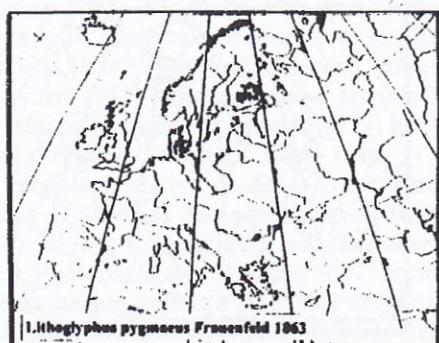
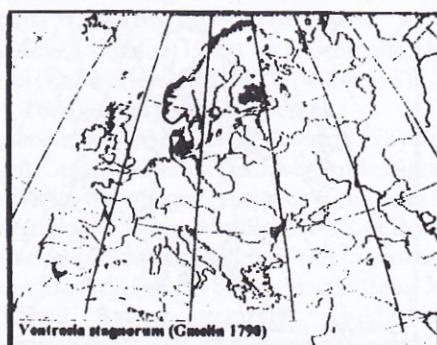
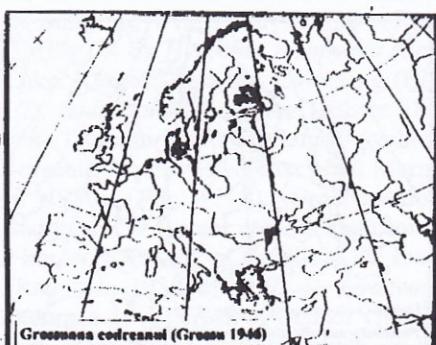
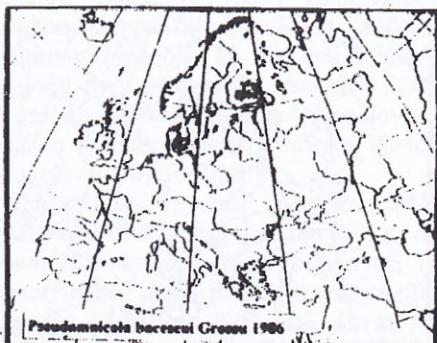
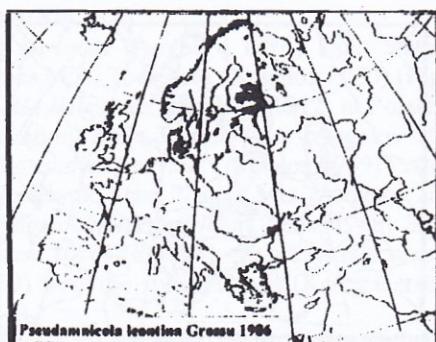
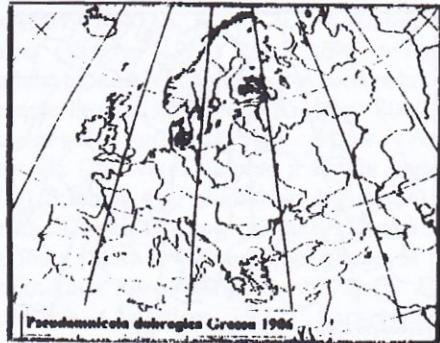
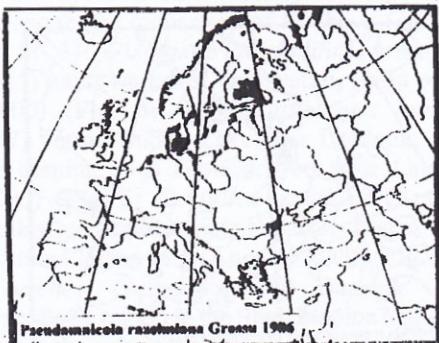


Fig. 3.
3. ábra

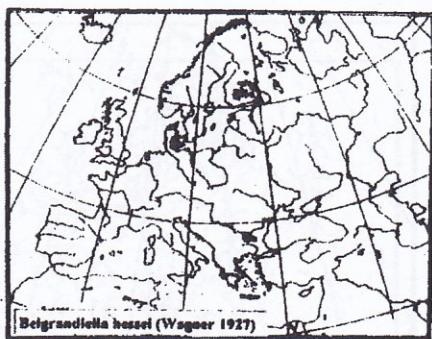
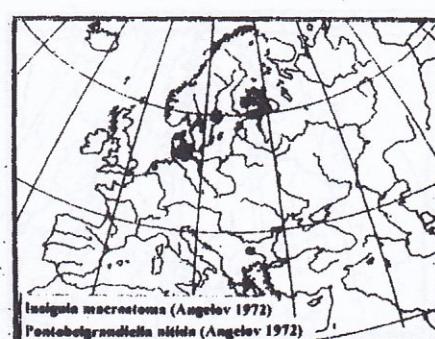
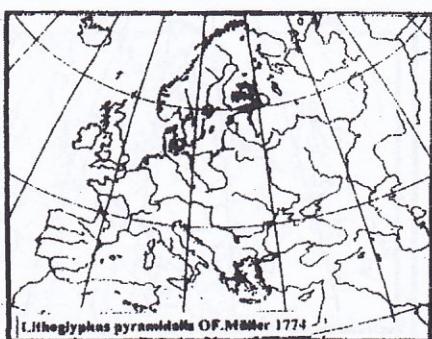
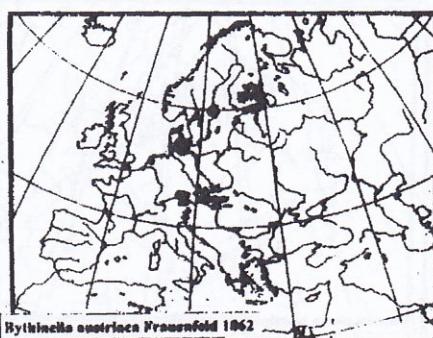
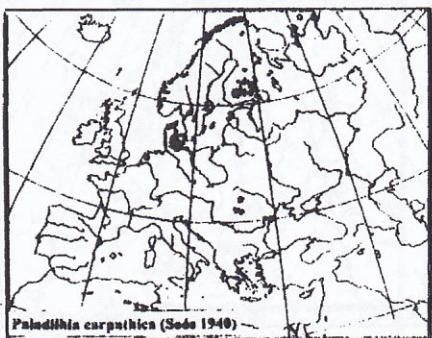
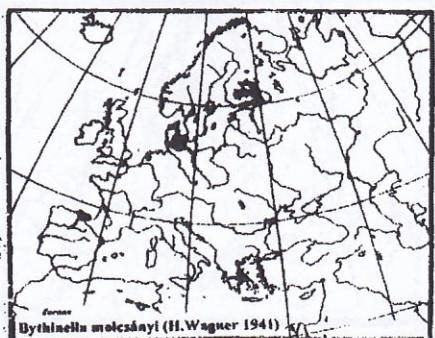


Fig. 4.
4. ábra

close to river Devnya near the monastery of Aladzha, plus karst creek close to the monastery of Bochova (Angelov 2000) (Fig. 5: 3). *Plagigeyeria gladilini procerulus* (Angelov 1965) karst waters at Opitsvetnil, Sofia region (Angelov 2000) (Fig. 5: 4). *Paladilhiopsis bureschii* (Wagner 1927) Terma Dupka Cave near Latakni, Sofia region, Stara Planina, plus Petreska river near Latakni (Angelov 2000) (Fig. 5: 5). *Iglica accularis* (Angelov 1927) Dusnik Cave karst waters. Iskrets village, Sofia region in the Stara Planina Mts. (Angelov 2000) (Fig. 5: 6). *Cavernista zaschevi* (Angelov 1959) Dushnik Cave, Iskerets village, Sofia region in the Stara Planina Mts., plus at Tserovo also in the same area (Angelov 2000) (Fig. 5: 7). *Pontobelgrandiella nitida* (Angelov 1972) karst water at Polaten, Teteven region at the right banks of the river Vit (Angelov 2000) (Fig. 5: 8).

Belgrandiella bareschi (Angelov 1976) karst water at Bankyana Vitosha Mts., Tran Area (Angelov 2000) (Fig. 6: 1). *Belgrandiella bulgarica* (Angelov 1972) at Polaten in the Teteven Region, Stara Planina Mts (Angelov 2000) (Fig. 6: 2). *Belgrandiella pussila* (Angelov 1959) Petreska river close to Latakni, Stara Planina Mts. (Angelov 2000) (Fig. 6: 3). *Belgrandiella angelovi* (Pintér 1968) Shipka village (Angelov 2000) (Fig. 6: 4). *Belgrandiella zoskevi* (Angelov 1959) near the river Iskresh (Kabat-Herschler 1993) (Fig. 6: 5).

Turkey: Euxin Elements:

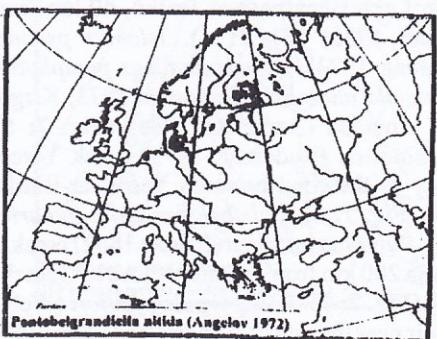
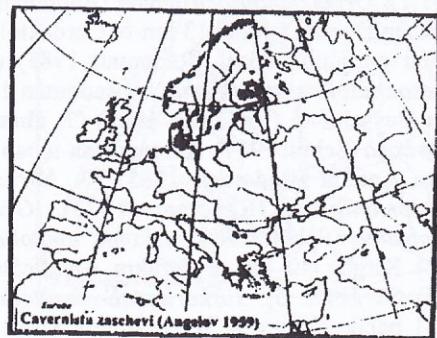
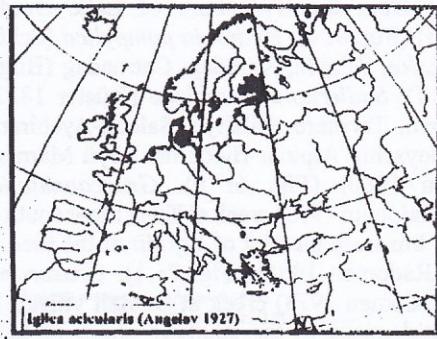
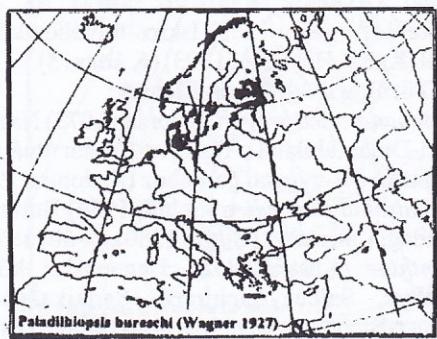
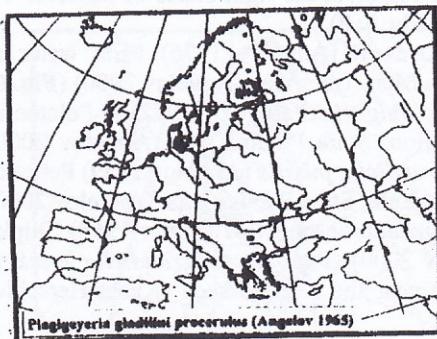
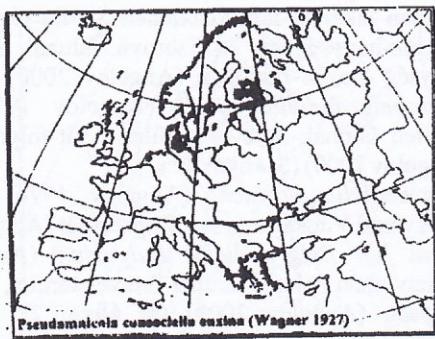
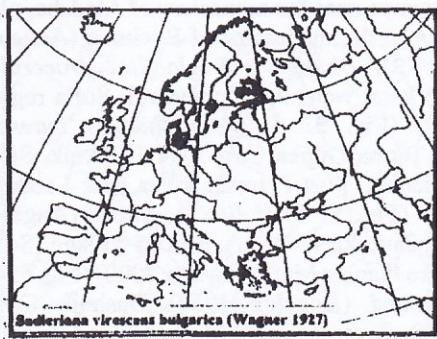
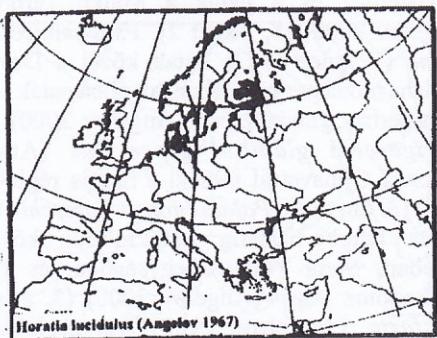
Graecoanatolica brevis (Radoman 1973) creek at the villages of Pinar-Güzi-Dular near the road of Yesilova-Burdur not far from the SW shore of Lake Burdur (Radoman 1985) (Fig. 6: 6). *Hydrobia pampylifica* (Schütt 1964) Burdur Lake, Kérgöz, Karadag, Catnadar (Bilgin 1980) (Fig. 6: 7). *Sadleriana bizantina* (Küster 1852). Dagonoslan köyü, Trvsante Külahya, Salcuk-Aychiraras Sankikaagac, Beysehir, Alpinar-Bicopinar köyü Marnisa-Targulu (Bilgin 1980) (Fig. 6: 8). *Graecoanatolica kocapinarica* (Radoman 1973) creek at Koca Pinar south of Jukari Götz, 25 km from the city of Egridir at the road of Lake Kavada (Radoman 1985) (Fig. 7: 1). *Graecoanatolica tenuis* (Radoman 1973) creek at Denizli village 13 km from Cordakl, close to the southern shore of Lake AciGülü (Radoman 1985) (Fig. 7: 2). *Graecoanatolica lacustristurca* (Radoman 1973) Lake Egridir and Lake Beysehir (Radoman 1985) (Fig. 7: 3). *Islamia bunarbasa* (Schütt 1964). In Lake Bunarbasa at Jenikö, 40 km from Antalia (Radoman 1985) (Fig. 7: 4). *Islamia pseudorientalica* (Radoman 1973), *Graecoanatolica pamphylica* (Schütt 1964), *Islamia anatolica* (Radoman 1973) Kirgöz 40 km north of Antalia (Radoman 1985) (Fig. 7: 5). *Turkorientalia anatolica* (Radoman 1973) creek Yercey near Lake Yercey at the road between Yerilovar-Burdur (Radoman 1985) (Fig. 7: 6). *Falsibelgrandiella bunarica* (Radoman 1973), *Paludina natolica* (Küster 1852) creek at Pinár Basa-Vedelia 200 km from Istanbul close to Gemelik (Radoman 1985) (Fig. 7: 7). *Falsipyrgula pfeifferi* (Weber 1927) Lake Egridir near the city of Egridir (Radoman 1985) (Fig. 7: 8). *Falsipyrgula beysehirana* (Schütt 1965) Beysehir Gülü Lake (Radoman 1985) (Fig. 8: 1). *Graecoanatolica conica* (Radoman 1973) creek at Koca Pinar, Yukari Gökdere 25 km south of Egridir at the road to Lake Kavadai (Radoman 1985) (Fig. 8: 2). *Bythinella turca*

monasterhez és a patak a Malko Tarnovohoz közel (Angelov 2000) (5. ábra: 2). *Psudamnicola consociella euxina* (Wagner 1927) Patak közel a Devnya-folyóhoz Aladzha monaster közelében, továbbá patak közel Bochova monasterhez karsztvízben (Angelov 2000) (5. ábra: 3). *Plagigeyeria gladilini procerulus* (Angelov 1965) karsztvíz Opitsvetnil falunál a Szófia régióban (Angelov 2000) (5. ábra: 4). *Paladilhiopsis bureschii* (Wagner 1927) Terma Dupka-barlang Lataknihoz közel a Szófia régióban, Stara Planina-hegységen, és Petreska-folyó Lataknihoz közel (Angelov 2000) (5. ábra: 5). *Iglica accularis* (Angelov 1927) karsztvízben Dusnik-barlangban. Iskrets falunál Szófia régióban a Stara Planina-hegységen (Angelov 2000) (5. ábra: 6). *Cavernista zaschevi* (Angelov 1959) karsztvízben Dushnik-barlangban Iskerets falu közelében Szófia régióban a Stara Planina-hegységen és Tserovo falunál Stara Planina-hegység Szófia régióban (Angelov 2000) (5. ábra: 7). *Pontobelgrandiella nitida* (Angelov 1972) karsztvíz Polaten falunál, Teteven terület a Vit-folyó jobb partján (Angelov 2000) (5. ábra: 8).

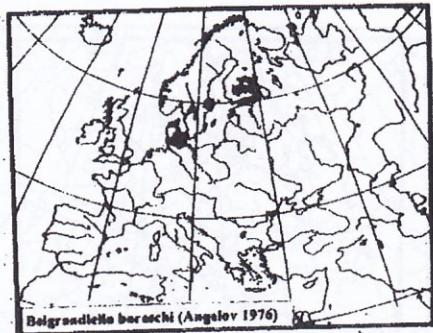
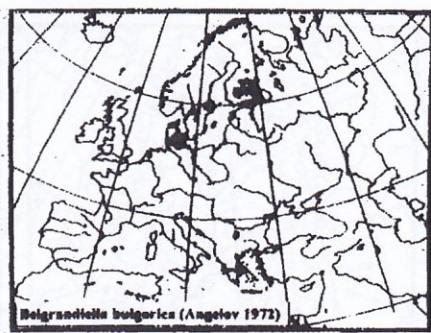
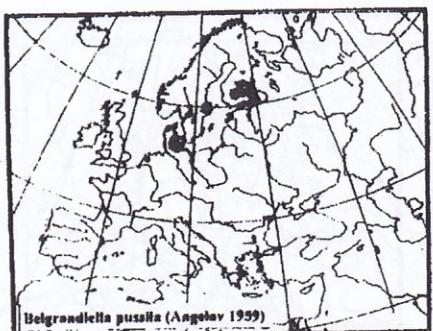
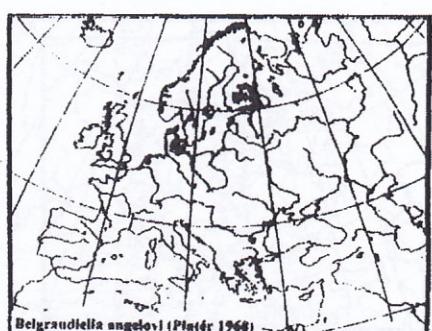
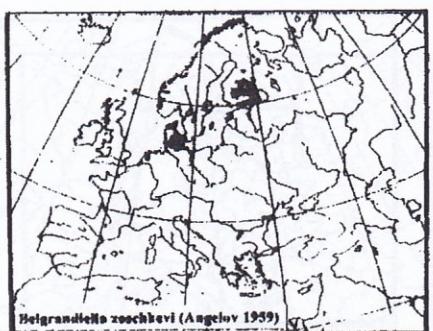
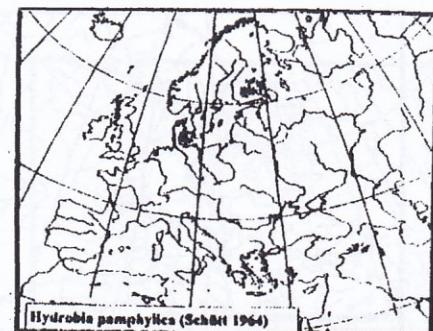
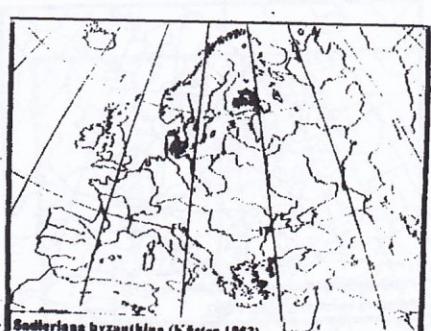
Belgrandiella bareschi (Angelov 1976) karsztvízban Bankyanál Vitosha-hegység Tran terület (Angelov 2000) (6. ábra: 1). *Belgrandiella bulgarica* (Angelov 1972) karsztvízben Polaten falunál Teteven terület, Stara Planina-hegység (Angelov 2000) (6. ábra: 2). *Belgrandiella pussila* (Angelov 1959) Petreska-folyó Lataknihoz közel Star Planina-hegység (Angelov 2000) (6. ábra: 3). *Belgran-diella angelovi* (Pintér 1968) karsztvízben Shipka falunál (Angelov 2000) (6. ábra: 4). *Belgrandiella zoskevi* (Angelov 1959) Iskres-folyóhoz közel Iskrechez közel (Kabat-Herschler 1993) (6. ábra: 5).

Törökország: Euxin Elemek:

Graecoanatolica brevis (Radoman 1973) Nagypatak Pinar-Güzi-Dulár falunknál a Yesilova-Burdur útnál nem messze a Burdur-tó dél-nyugati partjához (Radoman 1985) (6. ábra: 6). *Hydrobia pampylifica* (Schütt 1964) Burdur-tó, Kérgöz, Karadag, Catnadar (Bilgin 1980) (6. ábra: 7). *Sadleriana bizantina* (Küster 1852). Dagonoslan köyü, Trvsante Külahya, Salcuk-Aychiraras Sankikaagac, Beysehir, Alpinar-Bicopinar köyü Marnisa-Targulu (Bilgin 1980) (6. ábra: 8). *Graecoanatolica kocapinarica* (Radoman 1973) Koca Pinar-nál nagy patak Jukari Götz-től délré 25 kmre Egridir várostól a Lake Kavada útnál (Radoman 1985) (Fig 7:1). *Graecoanatolica tenuis* (Radoman 1973) Nagy patakban Denizli falunál 13 km-re Cordaktól, az AciGülü-tó déli partjához közel (Radoman 1985) (7. ábra: 2). *Graecoanatolica lacustristurca* (Radoman 1973) Egridir-tó és Beysehir-tó (Radoman 1985) (7. ábra: 3). *Islamia bunarbasa* (Schütt 1964). A Bunarbasa-tóban Jenikónél, 40 km-re Antalia (Radoman 1985) (7. ábra: 4). *Islamia pseudorientalica* (Radoman 1973), *Graecoanatolica pamphylica* (Schütt 1964), *Islamia anatolica* (Radoman 1973) Kirgöz 40 km-re északra Antalicától (Radoman 1985) (7. ábra: 5). *Turkorientalia anatolica* (Radoman 1973) patak Yercey a Yercey-tóhoz közel a Yerilovar-Burdur útnál (Radoman 1985) (7. ábra: 6). *Falsibelgrandiella bunarica* (Radoman 1973), *Paludina natolica* (Küster 1852) Nagy patak Pinár Basa-Vedelia falunál 200 km-re Istambultól Gemelikhez közel (Radoman 1985) (7. ábra: 7). *Falsipyrgula pfeifferi* (Weber 1927) Egridir-tó



**Fig. 5.
5. ábra**

*Belgrandiella baroschi* (Angelov 1976)*Belgrandiella bulgarica* (Angelov 1972)*Belgrandiella pussilla* (Angelov 1959)*Belgrandiella angelovi* (Platér 1966)*Belgrandiella zoschkevi* (Angelov 1959)*Gracossatolica brevis* (Radouan 1973)*Hydrobia pamphylica* (Schütt 1964)*Bodriana byzantina* (Käster 1853)

**Fig. 6.
6. ábra**

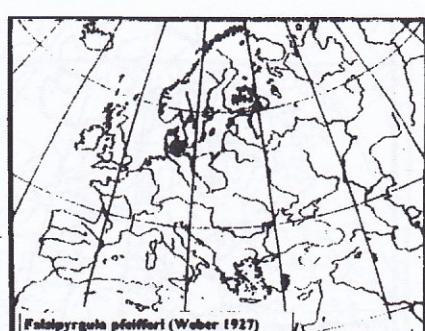
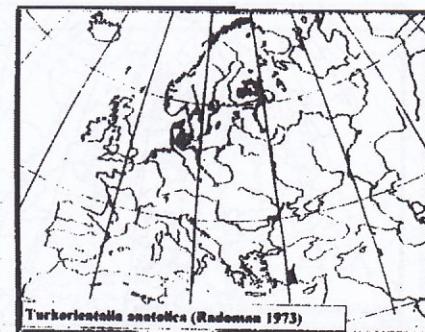
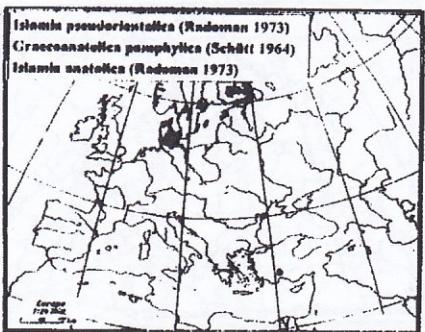
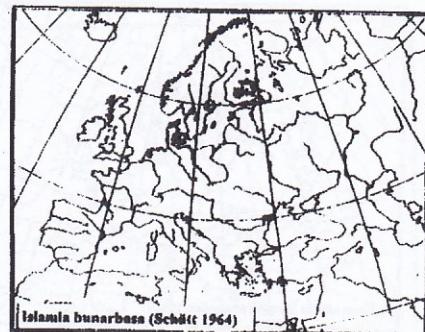
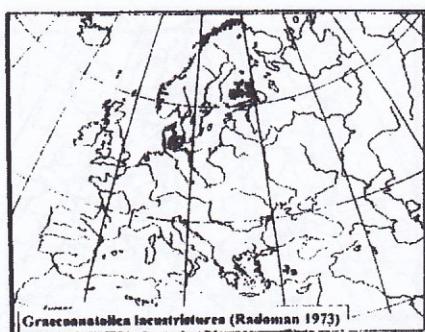
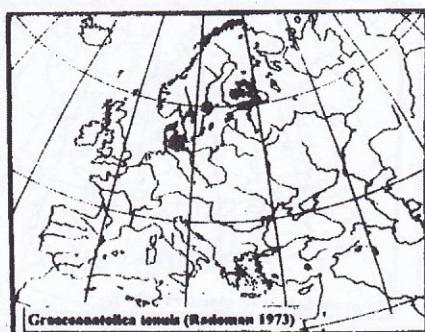
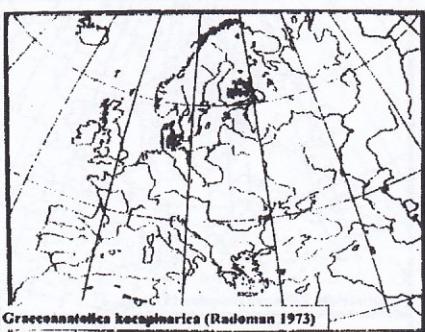


Fig. 7.
7. ábra

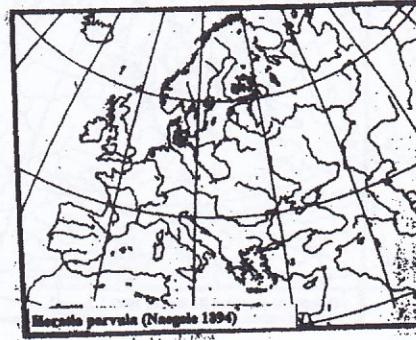
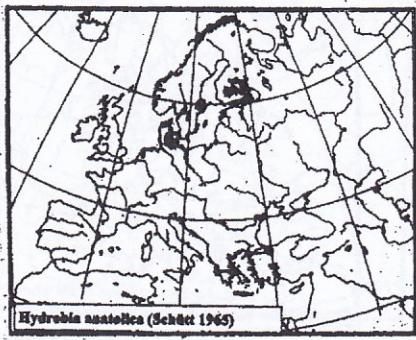
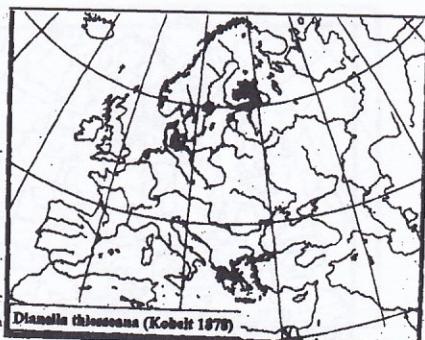
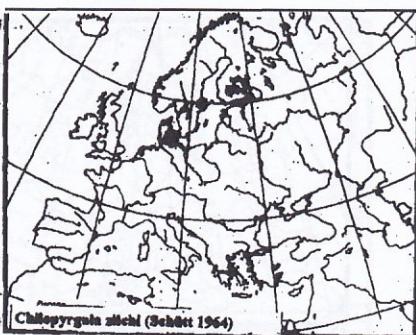


Fig. 8.
8. ábra



**Fig. 9.
9. ábra**

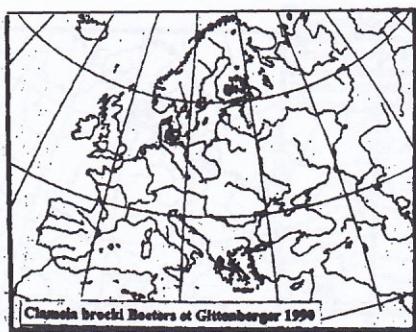
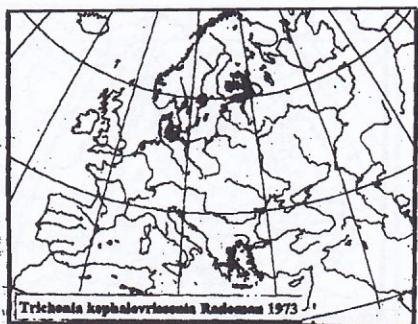


Fig. 10.
10. ábra

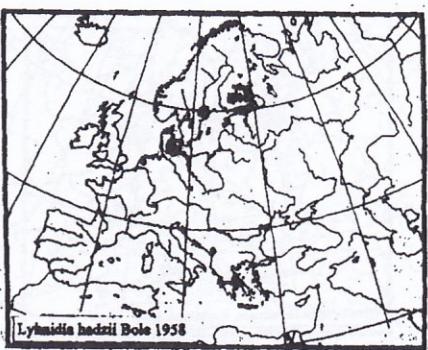
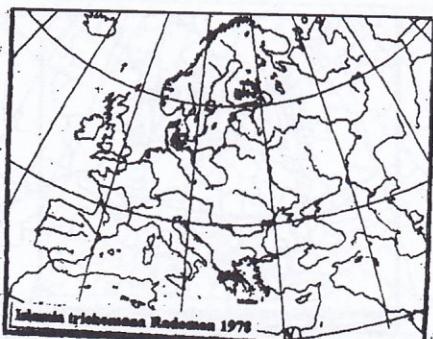
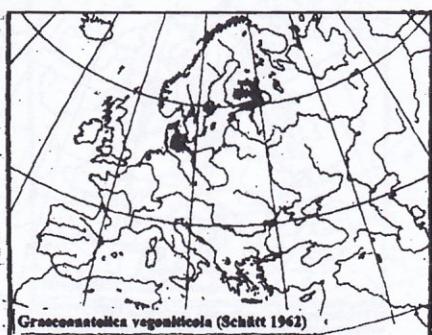
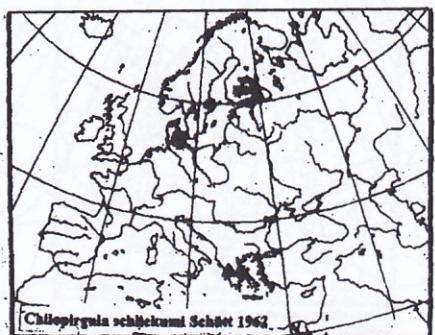


Fig. 11.
11. ábra

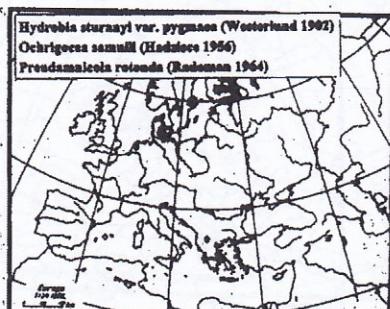
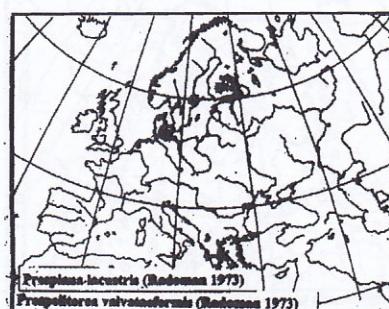
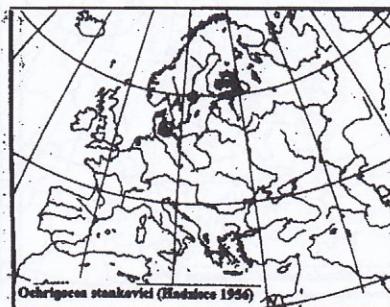
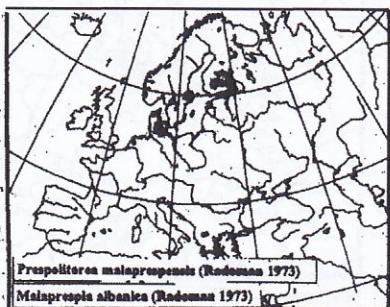


Fig. 12.
12. ábra

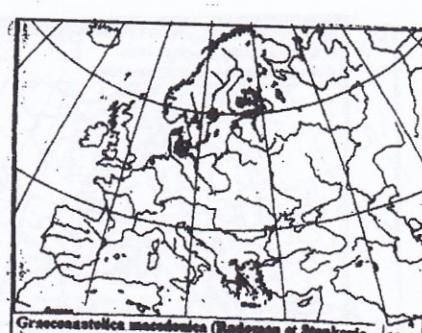
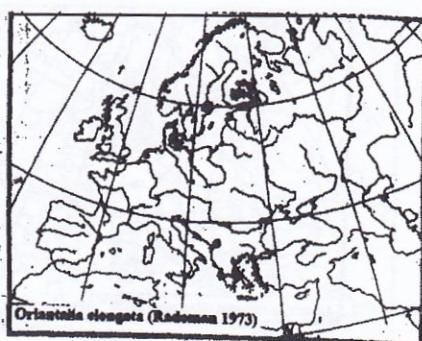
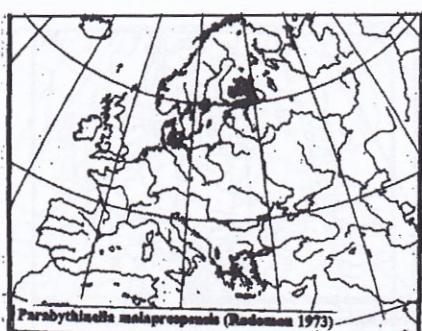
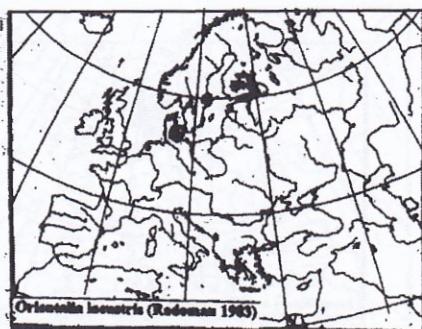


Fig. 13.
13. ábra

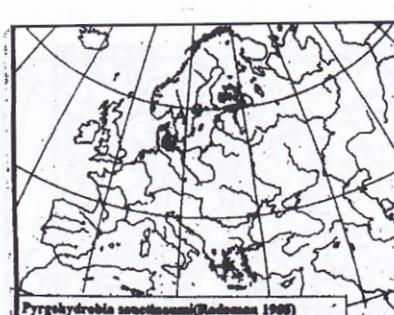
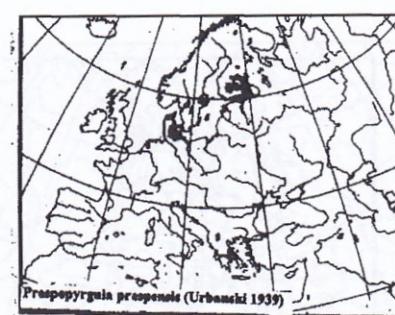
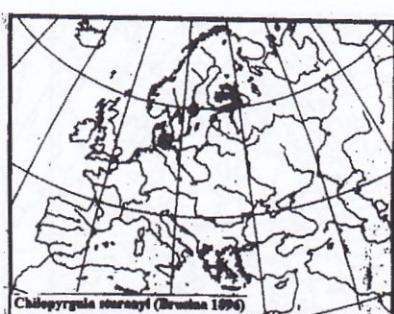
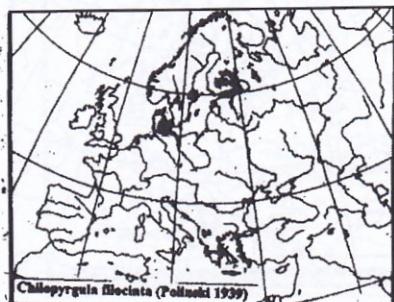
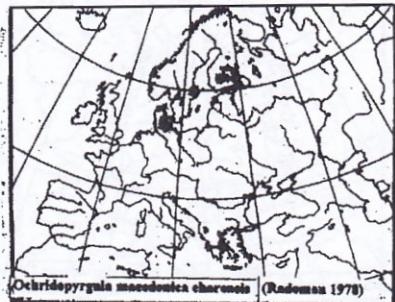


Fig. 14.
14. ábra

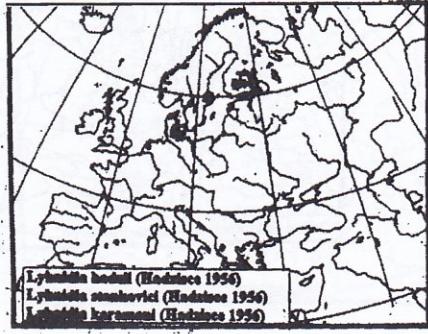
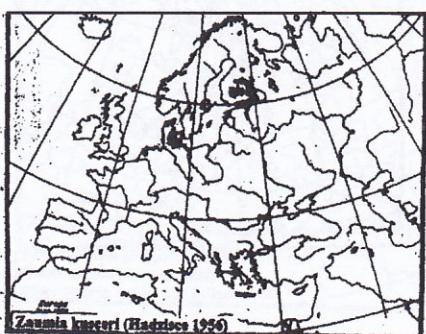
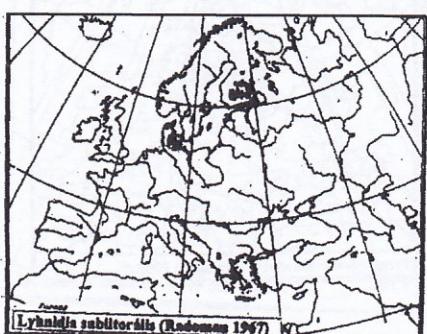
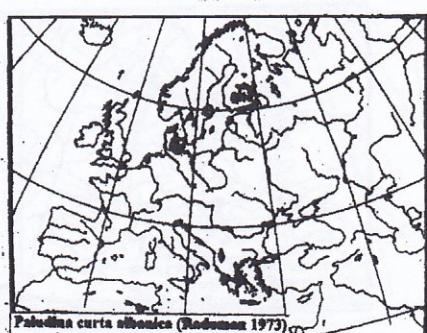
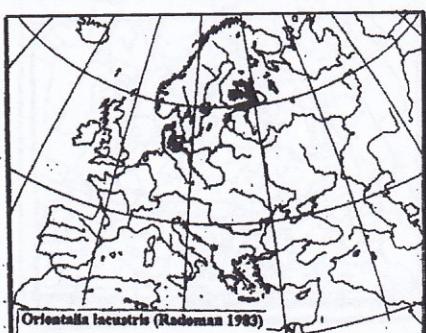
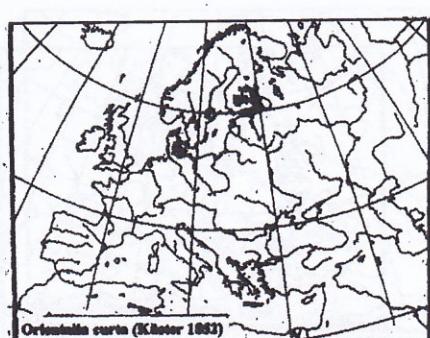
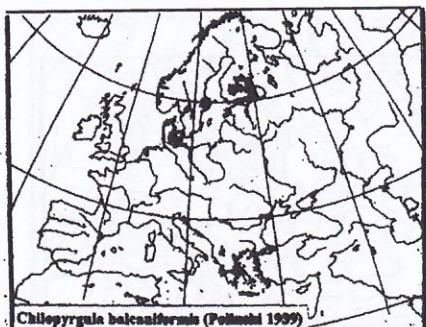
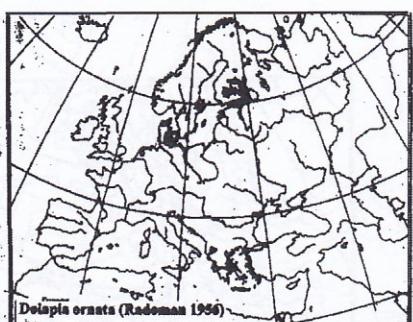
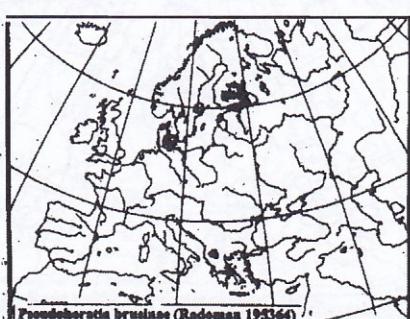
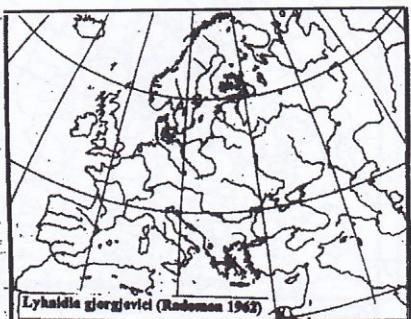


Fig. 15.
15. ábra



**Fig. 16.
16. ábra**

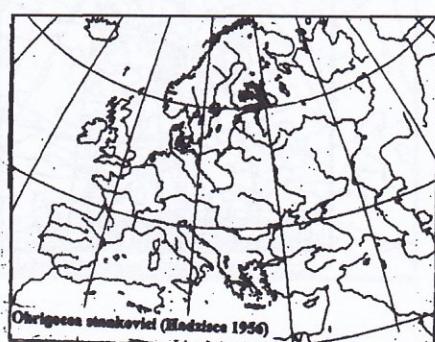
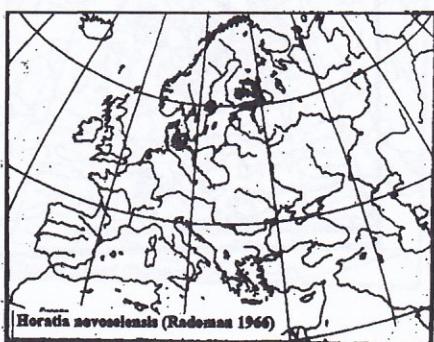
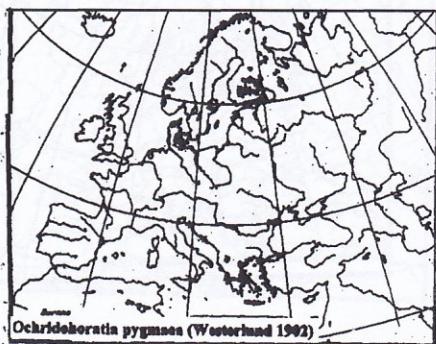
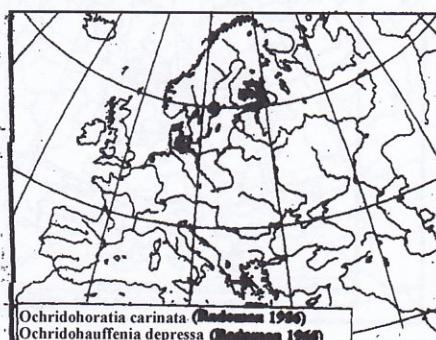
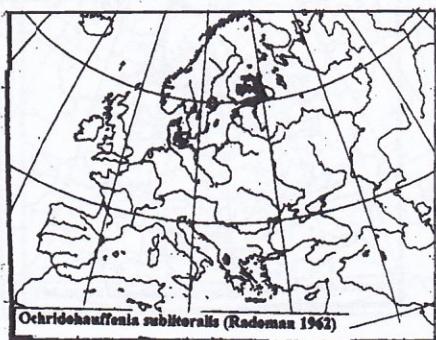
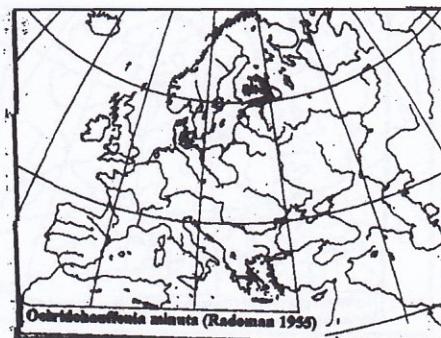


Fig. 17.
17. ábra

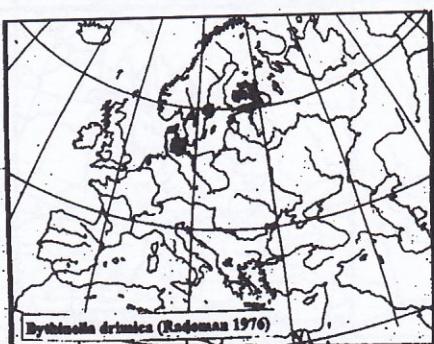
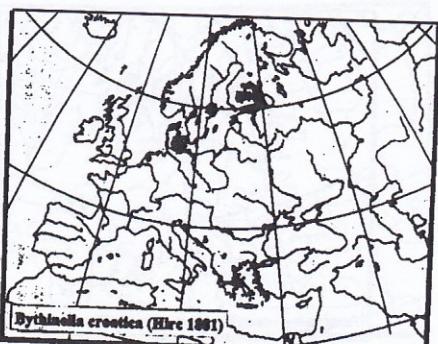
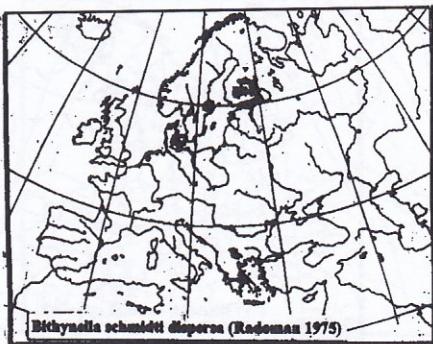
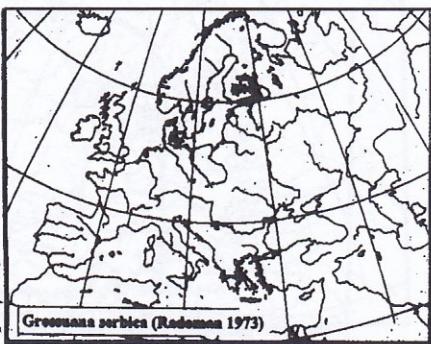
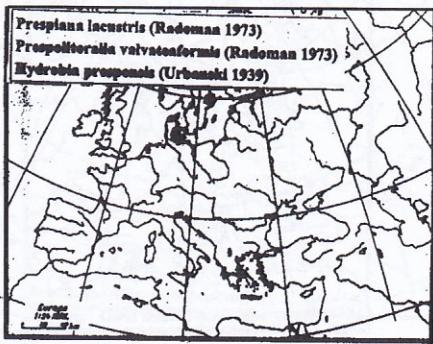
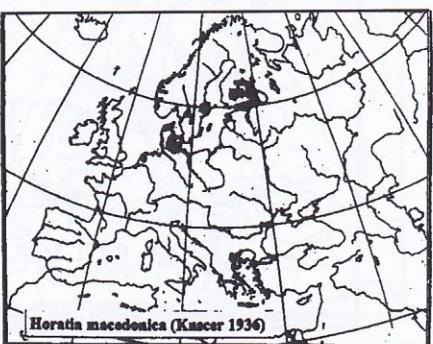


Fig. 18.
18. ábra

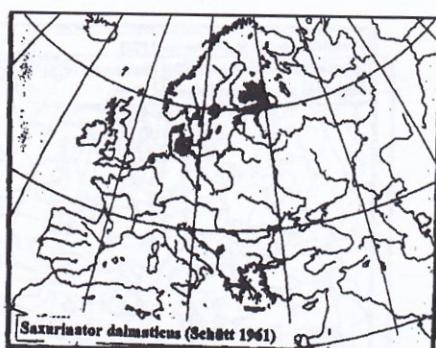
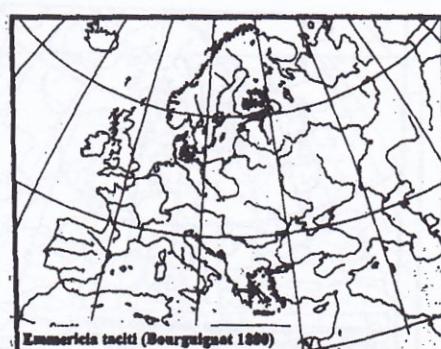
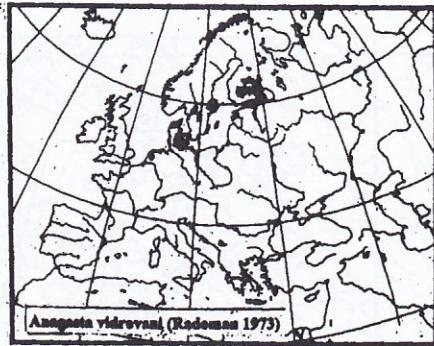
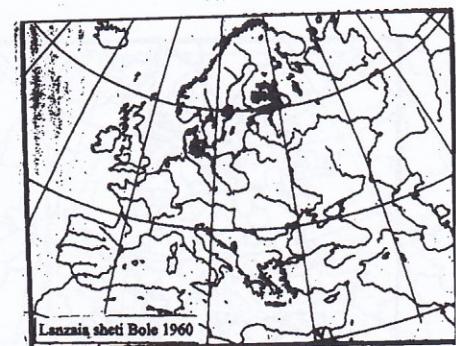
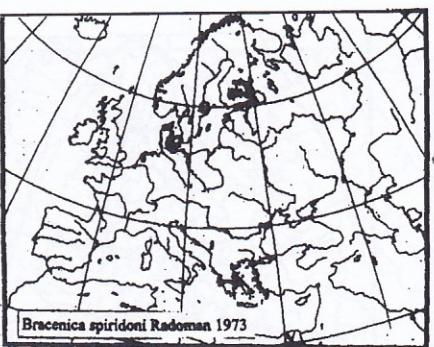
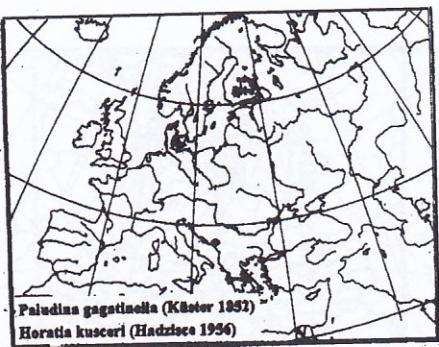
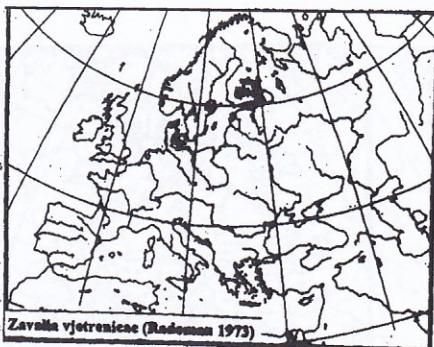
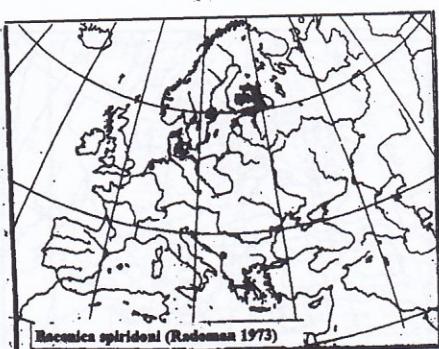
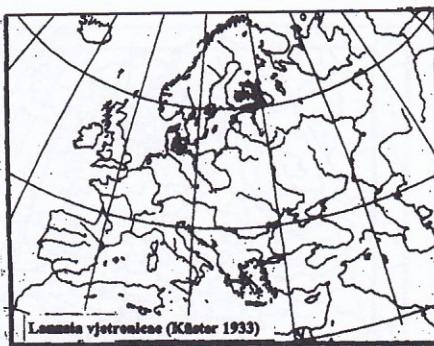
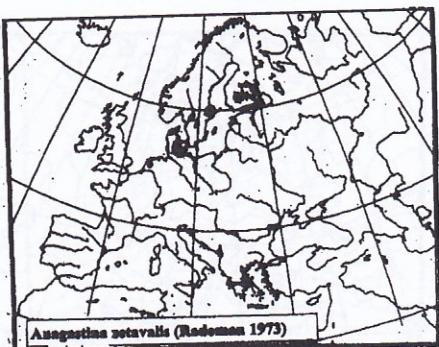


Fig. 19.
19. ábra



**Fig. 20.
20. ábra**

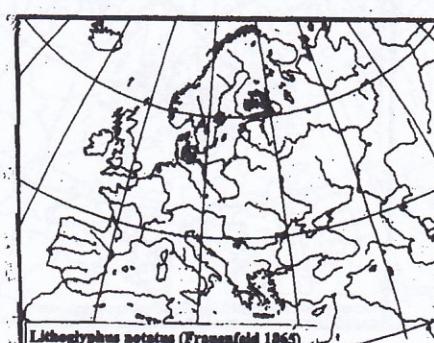
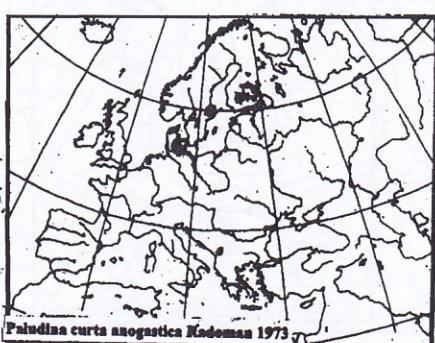
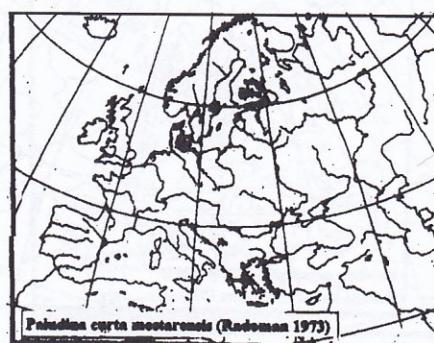
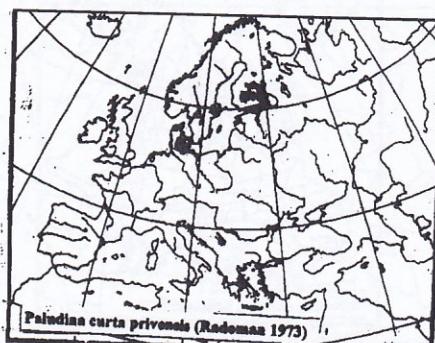
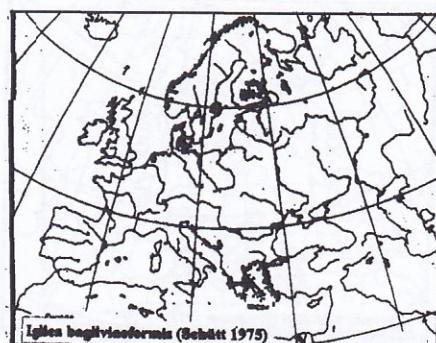
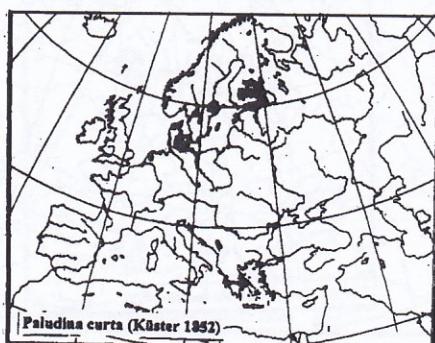
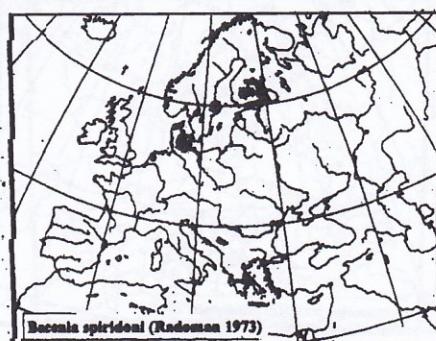


Fig. 21.
21. ábra

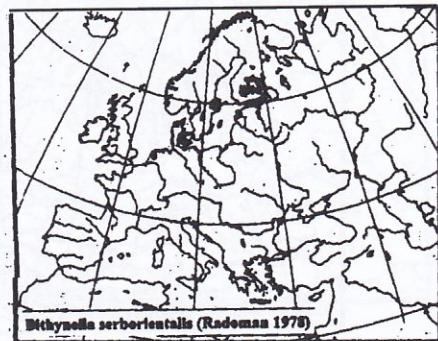
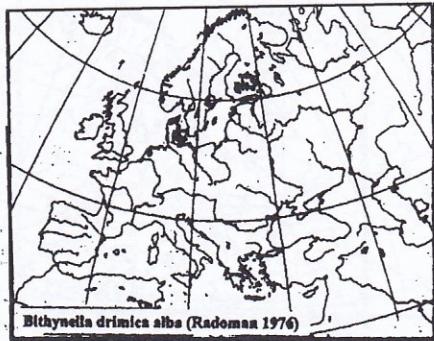
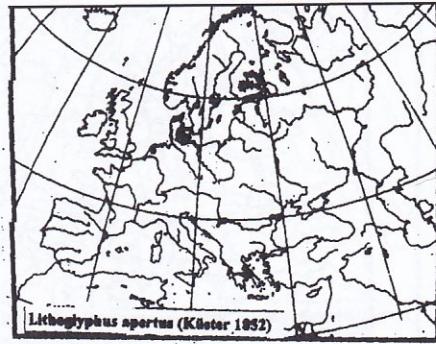
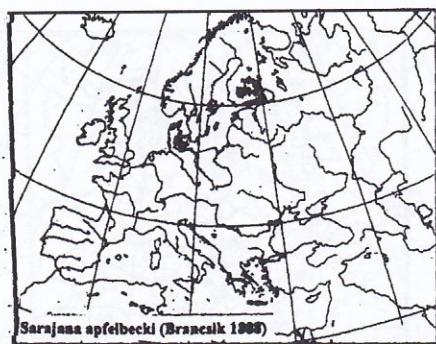
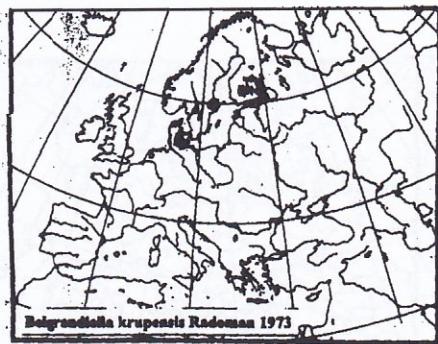
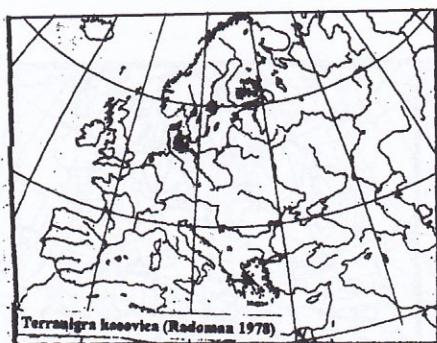


Fig. 22.
22. ábra

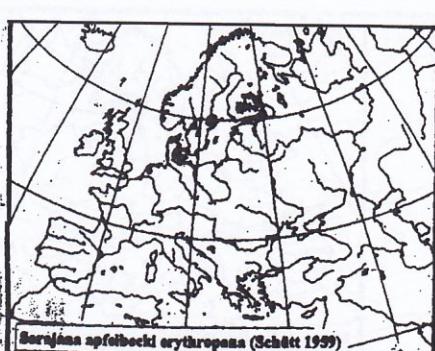
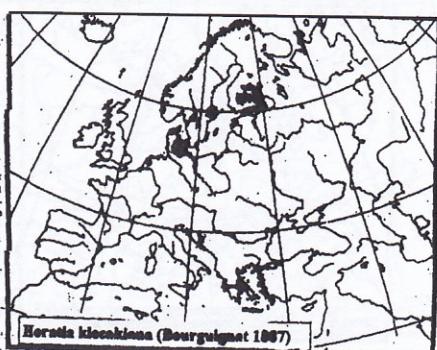
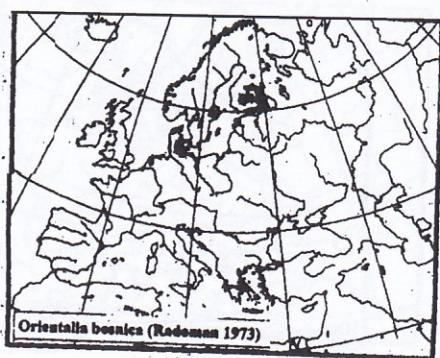
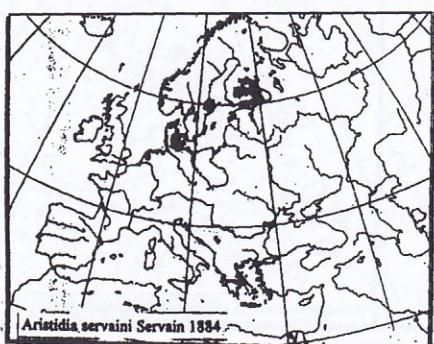
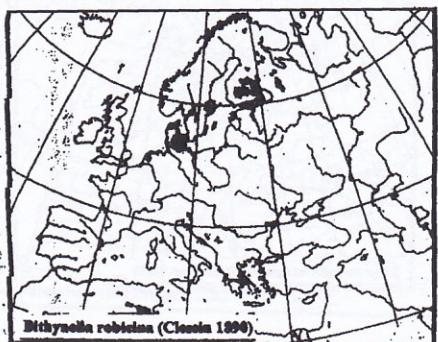


Fig. 23.
23. ábra

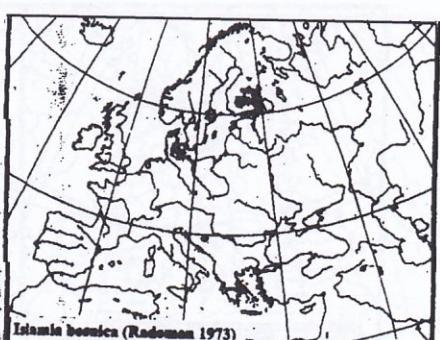
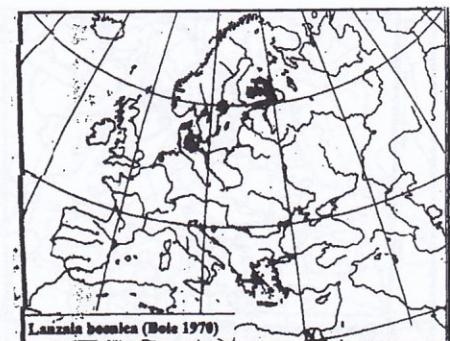
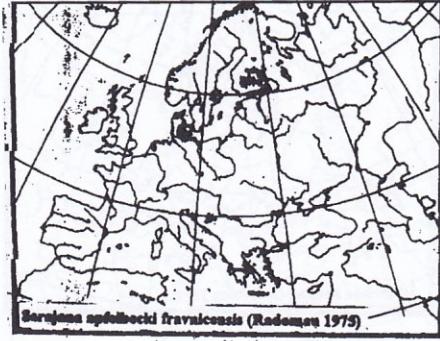
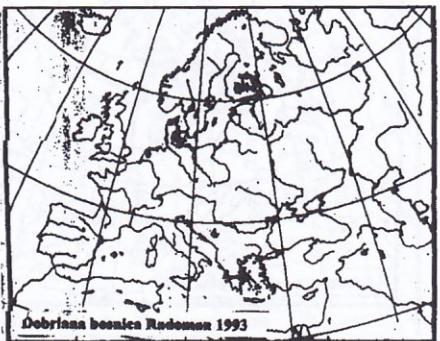


Fig. 24.
24. ábra

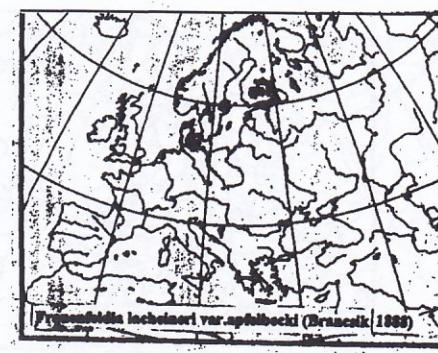
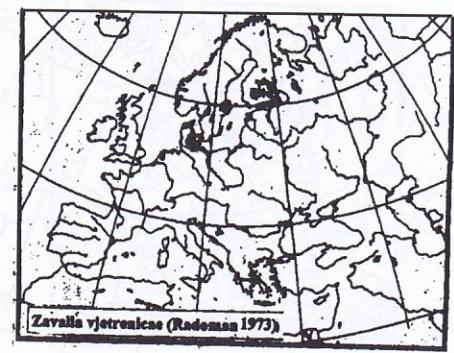
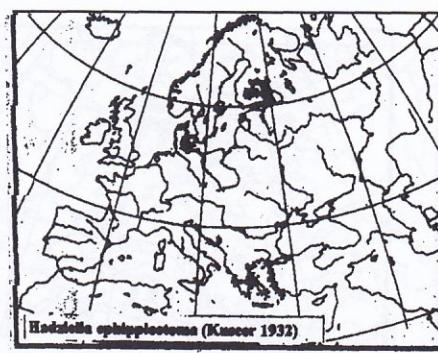
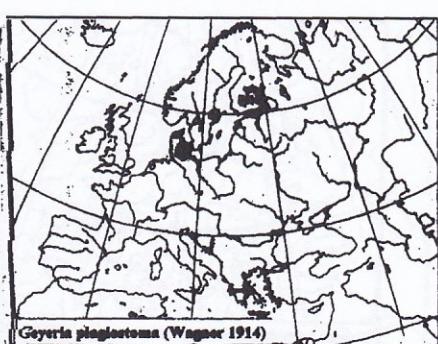
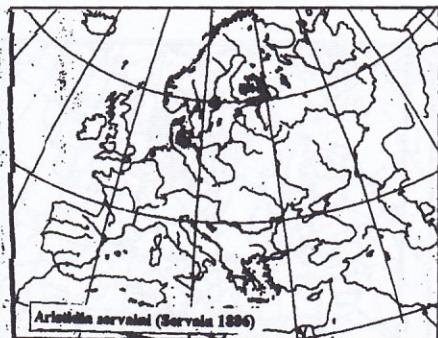
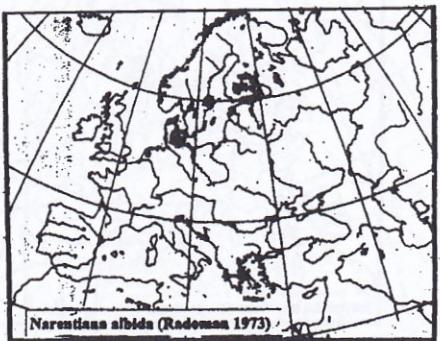
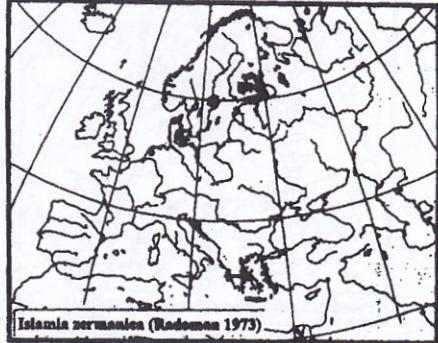
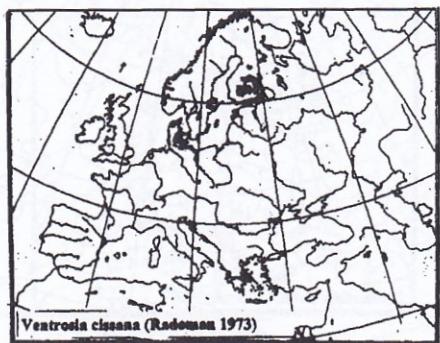
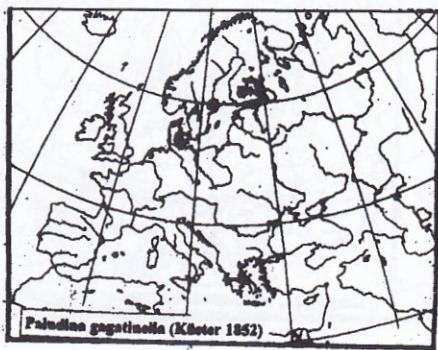
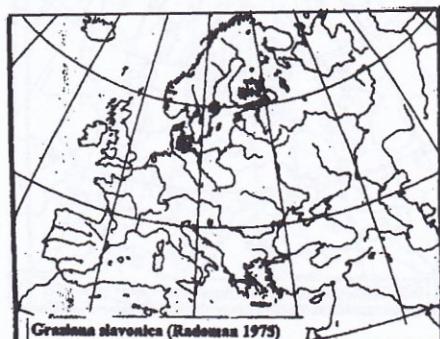
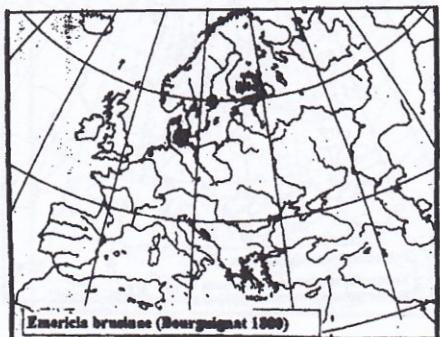


Fig. 25.
25. ábra



**Fig. 26.
26. ábra**

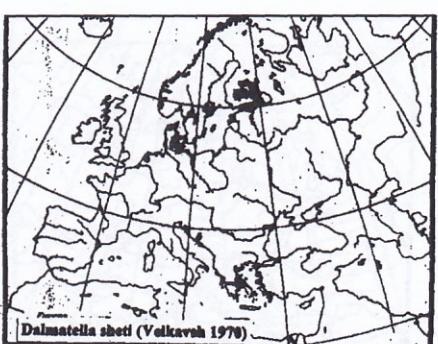
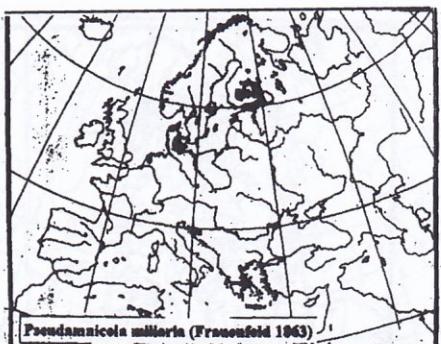
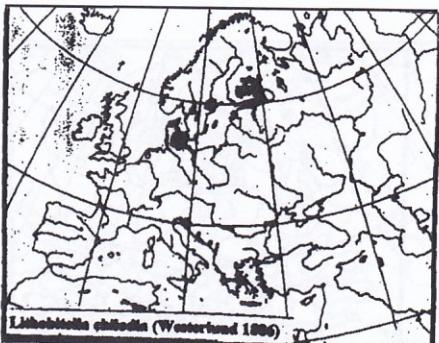
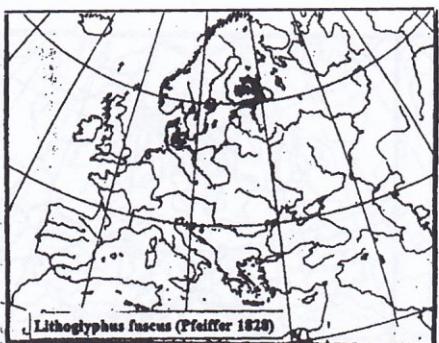
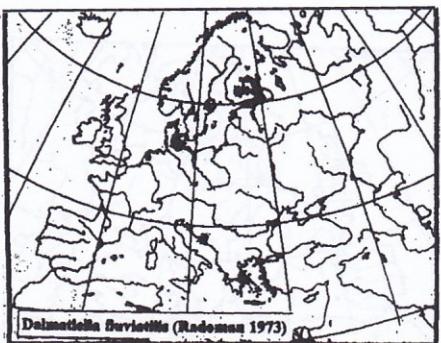


Fig. 27.
27. ábra

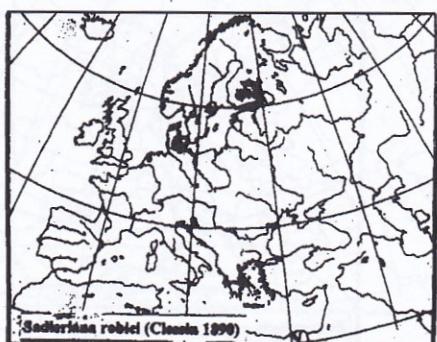
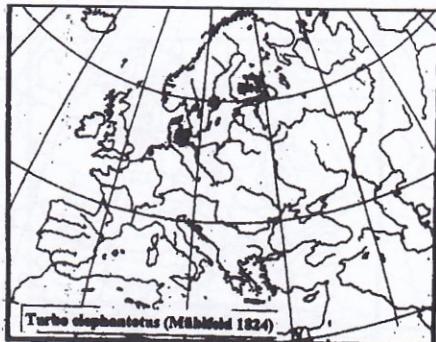
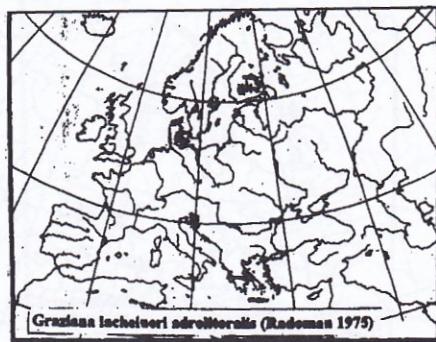


Fig. 28.
28. ábra

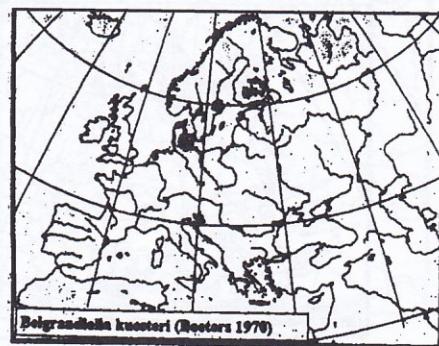
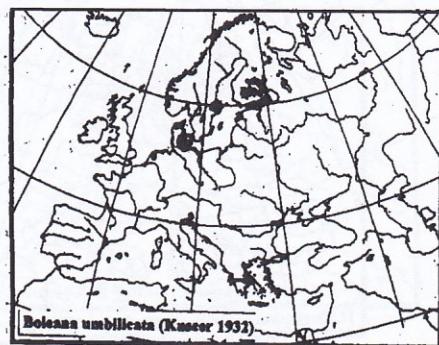
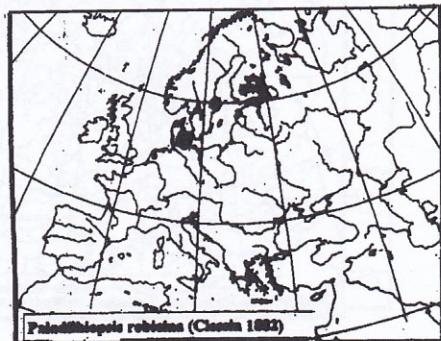
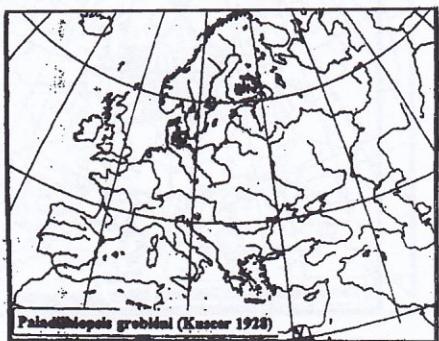
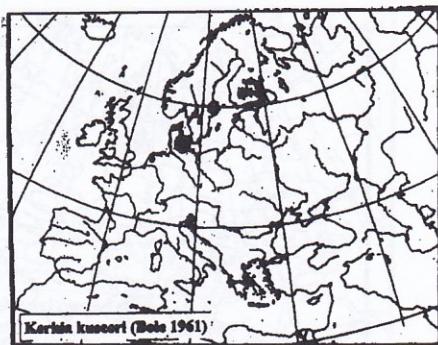
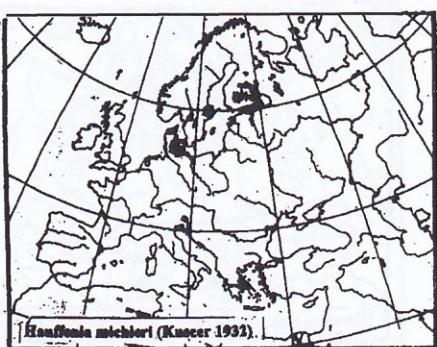
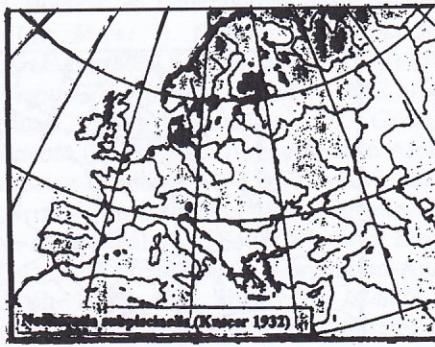
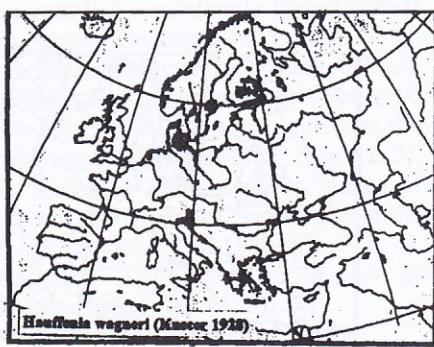
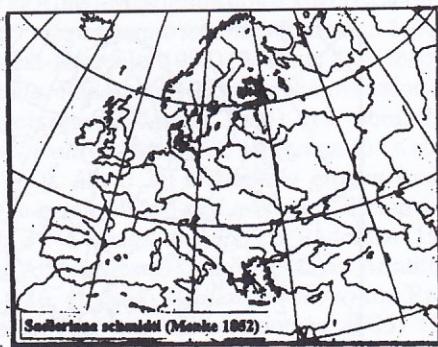
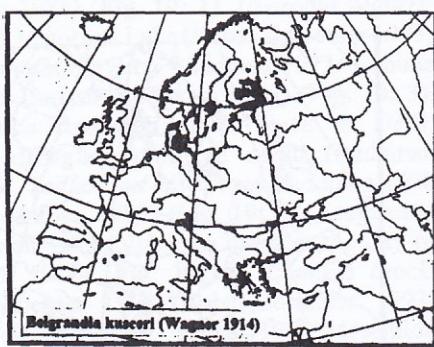
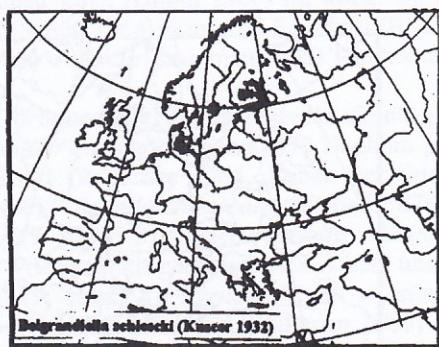
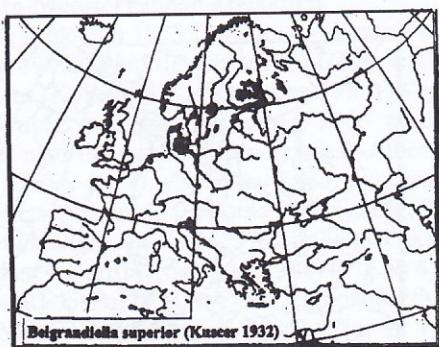
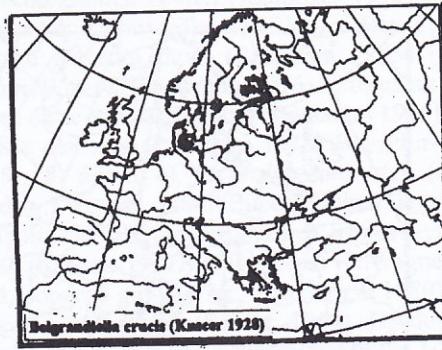
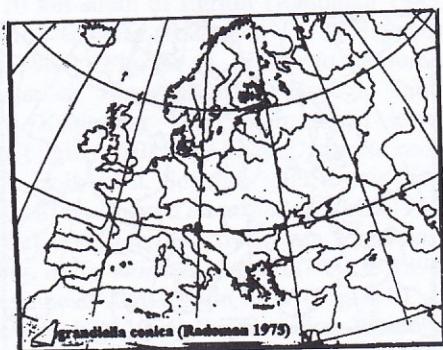


Fig. 29.
29. ábra



**Fig. 30.
30. ábra**

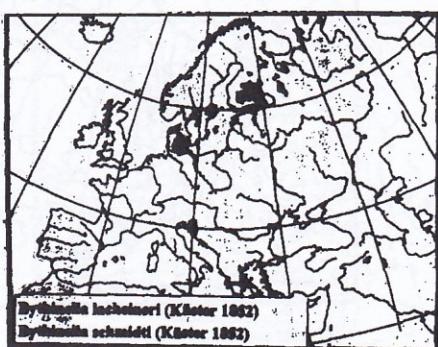
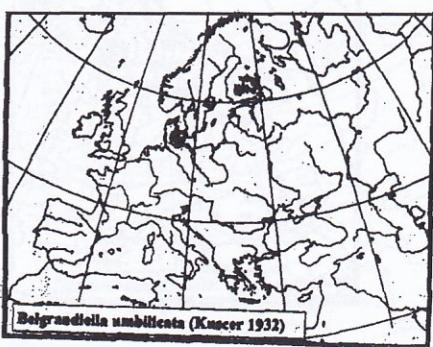
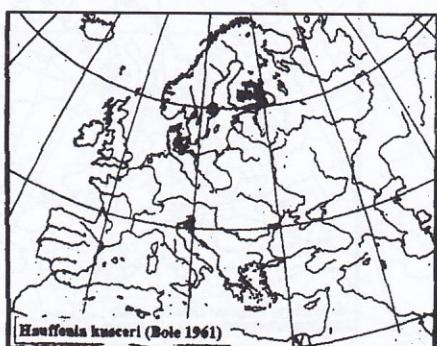
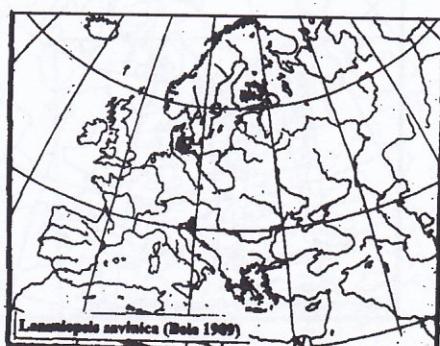
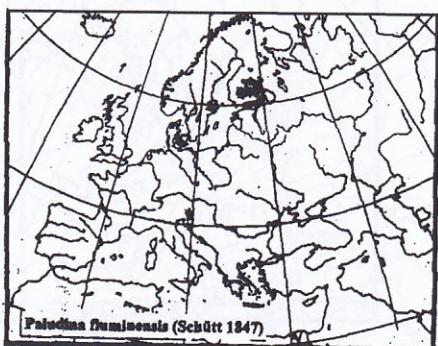
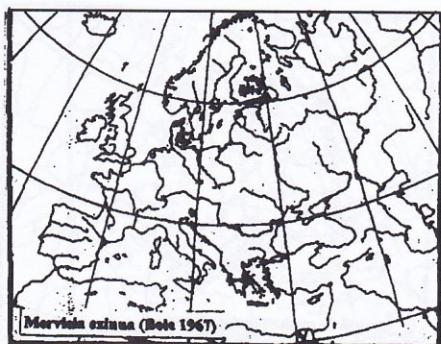


Fig. 31.
31. ábra

creek (Balkari) 10 km south of Egridir (Radoman 1985) (Fig. 8: 3). *Kirelia carinata* (Radoman 1973) Beyzehir Lake (Radoman 1985) (Fig. 8: 4). *Hydrobia anatolica* (Schütt 1965) Cardak Dinarcsı, Isikli Bucegi, Dinar legvrik, Burderr, Köskpinar köyü Gümüssuyu köyü, Sarıkavaya köyü (bilgin 1980) (Fig. 8: 5). *Dydrobia soósi* (H.Wagner 1928) Iznik gülü, Sopanca gülü, Izmir Sifru (Bilgin 1980) (Fig. 8: 6). *Horatia punarbasa* (Schütt 1964) Burdur Lake, Antalya Kirgöz, Jeniköy Civari, *Punarbasa* (Bilgin 1980) (Fig. 8: 7). *Horatia parvula* (Negele 1894) Isparta, Torbali Aymuciar köyü (Bilgin 1980) (Fig. 8: 8). *Chilopygula zilchi* (Schütt 1964) Burdur Lake Pinarbasi (Bilgin 1980) and Kirgöz Lake Antakia (Radoman 1985) Turkey (Fig. 9: 1).

Greece: Ponto-Mediterranean Elements:

Daphniola graeca Radoman 1973 Daphora creek north of Larissa (Radoman 1985, Kabat Herschler 1993) (Fig. 9: 2). *Dianella thlesseana* (Kobelt 1878) (Radoman 1985) (Fig. 9: 3). *Graecorientalia vrissiana* Radoman 1966 small brook at Vrissiana near the road between Larissa-Athens (Radoman 1985) (Fig. 9: 4). *Pseudamnicola vrissiana* Radoman 1966 Vrissiana, creek (Radoman 1985) (Fig. 9: 5). *Pseudislamia balcanica* Radoman 1978 Trichonic Lake, rocky substrate close to Mírtia (Radoman 1985) (Fig. 9: 6). *Orintalia delphica* Radoman 1973 creek at Delphoi near the road of Athens-Mesoglion (Radoman 1985) (Fig. 9: 7). *Trichonia trichonica* Radoman 1973. Trichonic Lake (Kabat-Herschler 1993) (Fig. 9: 8). *Trichonia kephalovrissonia* Radoman 1973. Kephalovission creek, Northern Greece (Radoman 1985) (Fig. 10: 1). *Hydrobia vegeriticola* Schütt 1962. Vegeritna Lake (Kabat-Herschler 1993) (Fig. 10: 2). *Daphniola graeca* Radoman 1973. Daphne creek 30 km from Larissa (Radoman 1985) (Fig. 10: 3). *Orientalia delphica* Radoman 1973; creek at Delfi; between Athens-Mesaglion north of Arlati (Radoman 1985) (Fig. 10: 4). *Sadleriana cavernosa* Radoman 1978 Tonjaica Tunj (Radoman 1985) (Fig. 10: 5). *Anagastina vidrovani* (Radoman 1973) Vidrovan creek at the city of Nikgél (Radoman 1985) (Fig. 10: 6). *Clameia brocki* Boeters et Gittenberger 1990 (Kabat-Herschler 1993) (Fig. 10: 7). *Pyrgula thlesseana* Jaeckel 1967 Mesaglion (Jaeckel, Klemm, Meise 1975) (Fig. 10: 8). *Chilpyrgula schlickumi* Schütt 1962 Amvrakia Lake (Radoman 1985) (Fig. 11: 1). *Graecoanatolica vegonitcola* (Schütt 1962) Vegeritida Lake near Arnissa (Radoman 1985) (Fig. 11: 2). *Grossuana serbica vuriliiana* Radoman 1966 Kamena Vurla creek at the road between Larissa-Athens, Ayia Satira 50 km from Karpension near the village of Frangista at the road of Karpention-Agrinion (Radoman 1985) (Fig. 11: 3). *Islamia trichomana* Radoman 1978 southern slopes of Panetolica Mts. northern shore of Lake Trichonik near the cities of Mirtia and Agrinia (Radoman 1985) (Fig. 11: 4). *Islamia graeca* Radoman 1973. Western shores of Amyrakia Lake (Radoman 1985) (Fig. 11: 5).

Albania: Ponto-Mediterranean Elements:

Lynnidia hadzii Bole 1958. Eastern part of Lake Ohrid near Veli Dab (Radoman 1985) (Fig. 11: 6). *Orientalia curta* (Küster 1852) Prespa Lake near Lake Ohrid (Volrath-Weise 1996) (Fig. 11: 7). *Hydrobia ventrosa* (Montagu 1803). South of Lake Skodra (Volrath Wiese 1996) (Fig. 11: 8). *Prespoliturea malaprespensis* (Radoman 1973),

Graecoanatolica conica (Radoman 1973) Koca Pinarnál nagy patak, Yukarı Gökdere 25 km-re délre Egridir várostól a Lake Kavadai útnál (Radoman 1985) (8. ábra: 2). *Bythinell turca* (Radoman 1976) Cire-patak (Balkari) 10 km-re délre Egridir várostól (Radoman 1985) (8. ábra: 3). *Kirelia carinata* (Radoman 1973) Beyzehir-tó (Radoman 1985) (8. ábra: 4). *Hydrobia anatolica* (Schütt 1965) Cardak Dinarcsı, Isikli Bucegi, Dinar legvrik, Burderr, Köskpinar köyü Gümüssuyu köyü, Sarıkavaya köyü (bilgin 1980) (8. ábra: 5). *Dydrobia soósi* (H.Wagner 1928) Iznik gülü, Sopanca gülü, Izmir Sifru (Bilgin 1980) (8. ábra: 6). *Horatia punarbasa* (Schütt 1964) Burdur-tó, Antalya Kirgöz, Jeniköy Civari, *Punarbasa* (Bilgin 1980) (8. ábra: 7). *Horatia parvula* (Negele 1894) Isparta, Torbali Aymuciar köyü (Bilgin 1980) (8. ábra: 8). *Chilopygula zilchi* (Schütt 1964) Burdur-tó Pinarbasi (Bilgin 1980) és a Kirgöztó Antakia (Radoman 1985) Törökország (9. ábra: 1).

Görögország: Ponto mediterán elemek:

Daphniola graeca Radoman 1973 Daphora-patak északra Larissától (Radoman 1985, Kabat Herschler 1993) (9. ábra: 2). *Dianella thlesseana* (Kobelt 1878) (Radoman 1985) (9. ábra: 3). *Graecorientalia vrissiana* Radoman 1966 Vrissianál kis patak a Larisa-Athéni útnál (Radoman 1985) (9. ábra: 4). *Pseudamnicola vrissiana* Radoman 1966 Vrissianál patakban (Radoman 1985) (9. ábra: 5). *Pseudislamia balcanica* Radoman 1978 Trichonic-tó, Mírtához közel az északi sziklás ponton (Radoman 1985) (9. ábra: 6). *Orintalia delphica* Radoman 1973 Delfinél patak az Athén-Mesoglion úthoz közel (Radoman 1985) (9. ábra: 7). *Trichonia trichonica* Radoman 1973. Trichonic-tó (Kabat-Herschler 1993) (9. ábra: 8). *Trichonia kephalovrissonia* Radoman 1973. Kephalovission-patak észak Görögország (Radoman 1985) (10. ábra: 1). *Hydrobia vegeriticola* Schütt 1962. Vegeritna-tó (Kabat-Herschler 1993) (10. ábra: 2). *Daphniola graeca* Radoman 1973. Daphne-patak 30 km-re Larissától (Radoman 1985) (10. ábra: 3). *Orientalia delphica* Radoman 1973 Delfinél patak; Athén-Mesaglion közt északra Arlatitól (Radoman 1985) (10. ábra: 4). *Sadleriana cavernosa* Radoman 1978 Tonjaica Tunj városnál (Radoman 1985) (10. ábra: 5). *Anagastina vidrovani* (Radoman 1973) Vidrovan patak Nikgél városnál (Radoman 1985) (10. ábra: 6). *Clameia brocki* Boeters et Gittenberger 1990 (Kabat-Herschler 1993) (10. ábra: 7). *Pyrgula thlesseana* Jaeckel 1967 Mesaglion (Jaeckel, Klemm, Meise 1975) (10. ábra: 8). *Chilpyrgula schlickumi* Schütt 1962 Amvrakia tó (Radoman 1985) (11. ábra: 1). *Graecoanatolica vegonitcola* (Schütt 1962) Vegeritida-tó Arnissa várostól nem messze (Radoman 1985) (11. ábra: 2). *Grossuana serbica vuriliiana* Radoman 1966 Kamena Vurla-patak a Larissa-Ahén útnál, Ayia Satira 50 km-re Karpensiontől a Frangista falu közelében a Karpention-Agrinion útnál (Radoman 1985) (11. ábra: 3). *Islamia trichomana* Radoman 1978 a Panetolica-hegység déli részén Trichonik-tó északi partja Mírtához és Agrinia városhoz közel (Radoman 1985) (11. ábra: 4). *Islamia graeca* Radoman 1973. Az Amyrakia-tó nyugati partja (Radoman 1985) (11. ábra: 5).

Albania: Ponto-mediterrán elemek:

Lynnidia hadzii Bole 1958. Az Ochridi tó keleti része Veli

Malaprespia albanica (Radoman 1973) Molo Jezero south of Lake Prespa (Radoman 1985) (Fig. 12: 1). *Ochrigocea stankovici* (Hadzisce 1956) Lake Ohrid and at Sveti Naumn Zagorican creek (Radoman 1985) (Fig. 12: 2). *Albaniana albanica* (Radoman 1973). Mikro Prespa Lake (Kabat-Herschler 1993) (Fig. 12: 3). *Prespiana lacustris* (Radoman 1973). *Prespoliturea valvataeformis* (Radoman 1973) SW rocky shores of Lake Prespa (Radoman 1983) (Fig. 12: 4). *Albaniana albanica* (Radoman 1973) Vetroko creek close to Malo Jezero Pond (Kabat-Herschler 1993) (Fig. 12: 5). *Hydrobia struranyi* var. *pygmaea* (Westerlund 1902). *Ochrigocea samuili* (Hadzisce 1956), *Pseudamnicola rotunda* (Radoman 1964) Lake Ohrid (Kabat-Herschler 1993) (Fig. 12: 6). *Belgrandia macedonica* (Hadzisce 1958), *Malaprespia albanica* (Radoman 1973) Prespa Lake (Radoman 1985, Kabat Herschler 1993) (Fig. 12: 7). *Gocea ochridiana* (Hadzisce 1956), *Pseudamnicola arnata* (Radoman 1956), *Pygrula paveovici* (Polinski 1929), *Myropyrgula stankovici* (Polinski 1929) *Horatia stankovici* (Hadzisce 1956), *Ochrigocea karevi* (Hadzisce 1956) Lake Ohrid (Kabat-Herschler 1993) (Fig. 12: 8). *Parabythinella graeca* (Radoman 1978) Malo Jezero (Radoman 1985) (Fig. 13: 1). *Orientalia lacustris* (Radoman 1983) Sentari Pond (Radoman 1983) (Fig. 13: 2). *Parabythinella malaprespensis* (Radoman 1973) Jezro Pond rocky substrate (Radoman 1983) (Fig. 13: 3). *Orientalia elongata* (Radoman 1973) Seutari Pond and Isle of Vraujina, Vranjina creek (Radoman 1985) (Fig. 13: 4). *Pyrgohydobia jablicensis* Radoman 1955 Sun creek 4 km west of Struga (Radoman 1985) (Fig. 13: 5). *Graecoanatolica macedonica* (Radoman et Stankovic 1978) Dojran Lake at Kakirnes, Dajran city at the Macedonian border (Radoman 1985) (Fig. 13: 6). *Pyrgohydobico grochmalickii* (Polonera 1929), *Ginaia munda* (Sturany 1894), *Mycropyrgula stankovici* (Polinski 1929). Lake Ohrid (Zilch-Jaeckel 1961) (Fig. 13: 7) *Ochridopyrgula macedonica* (Brusina 1866) Zagorican spring: Veli Dab, southern part of Lake Skodra (Radoman 1985) (Fig. 13: 8). Chara zone, Lake Ohrid (Radoman 1983) (Fig. 14: 1). *Chilopyrgula filocinta* (Polinski 1939) Lake Ohrid (Zilch-Jaeckel 1961) (Fig. 14: 2). *Chilopyrgula wagneri* (Polonera 1929), *Chilopyrgula pavlovici* (Palonera 1929), *Chilopyrgula dybowski* (Polonera 1929) Lake Ohrid (Zilch-Jaeckel 1961) (Fig. 14: 3). *Chilopyrgula sturanyi* (Brusina 1896) Lake Ohrid (Kabat-Herschler 1993) (Fig. 14: 4). *Prespopyrgula prespensis* (Urbanski 1939) sandy zone of Lake Prespa (Radoman 1983) (Fig. 14: 5). *Pyrgohydobia sanctinaumi* (Radoman 1955) shallow pond south of Lake Ohrid (Radoman 1983) (Fig. 14: 6). *Paludina curta kicavica* (Radoman 1973) close ot Lake Ohrid at Izvor, 15 km from Klecevó (Radoman 1983) (Fig. 14: 7). *Bythinella drimice* (Radoman 1976) canalized areas of Drimnél Beli and Crni at the Macedonian border (Radoman 1983) (Fig. 14: 8). *Chilopyrgula balcaniformis* (Polinski 1939) Lake Ohrid, at 40-60 m opposite of Gorica Hill (Radoman 1985) (Fig. 15: 1). *Orientalia curta* (Küster 1852) Lake Ohrid and creek near river Zeta. (Welter-Schultes 1996) (Fig. 15: 2), *Orientalia lacustris* (Radoman 1983) Scutari Pond (Radoman 1985) (Fig. 15: 3).

Dabnál (Radoman 1985) (11. ábra: 6). *Orientalia curta* (Küster 1852) Prespa-tó az Ochridi-tó közelében (Volrath-Weise 1996) (11. ábra: 7). *Hydrobia ventrosa* (Montagu 1803). A Skodra-tótól délre (Volrath Wiese 1996) (11. ábra: 8). *Prespoliturea malaprespensis* (Radoman 1973), *Malaprespia albanica* (Radoman 1973) Molo Jezero délre a Prespa-tótól (Radoman 1985) (12. ábra: 1) *Ochrigocea stankovici* (Hadzisce 1956) Ochridi-tó és Sveti Naumnál a Zagorican-patak (Radoman 1985) (12. ábra: 2). *Albaniana albanica* (Radoman 1973). Mikro Prespa-tó (Kabat-Herschler 1993) (12. ábra: 3). *Prespiana lacustris* (Radoman 1973). *Prespoliturea valvataeformis* (Radoman 1973) A Prespa-tó délnyugati sziklás partján (Radoman 1983) (12. ábra: 4). *Albaniana albanica* (Radoman 1973) Vetroko-patak nem messze a Malo Jezero-tóhoz (Kabat-Herschler 1993) (12. ábra: 5). *Hydrobia struranyi* var. *pygmaea* (Westerlund 1902). *Ochrigocea samuili* (Hadzisce 1956), *Pseudamnicola rotunda* (Radoman 1964) Ochridi tó (Kabat-Herschler 1993) (12. ábra: 6). *Belgrandia macedonica* (Hadzisce 1958), *Malaprespia albanica* (Radoman 1973) Prespa-tó (Radoman 1985, Kabat Herschler 1993) (12. ábra: 7). *Gocea ochridiana* (Hadzisce 1956), *Pseudamnicola arnata* (Radoman 1956), *Pygrula paveovici* (Polinski 1929), *Myropyrgula stankovici* (Polinski 1929) *Horatia stankovici* (Hadzisce 1956), *Ochrigocea karevi* (Hadzisce 1956) Ochridi-tó (Kabat-Herschler 1993) (12. ábra: 8). *Parabithinella graeca* (Radoman 1978) Malo Jezero (Radoman 1985) (13. ábra: 1). *Orientalia lacustris* (Radoman 1983) Sentari-tó (Radoman 1983) (13. ábra: 2). *Parabithinella malaprespensis* (Radoman 1973) Jezro-tó köves részein (Radoman 1983) (13. ábra: 3). *Orientalia elongata* (Radoman 1973) Sentari-tó és Vraujina-szigeten a Vraujina-patak (Radoman 1985) (13. ábra: 4). *Pyrgohydobia jablicensis* Radoman 1955 Sun-patak 4 km-re nyugatra Struga várostól (Radoman 1985) (13. ábra: 5). *Graecoanatolica macedonica* (Radoman et Stankovic 1978) Dojran-tó Kakirnesnél, Dajran városhoz közel Macedonia határán (Radoman 1985) (13. ábra: 6). *Pyrgohydobico grochmalickii* (Polonera 1929), *Ginaia munda* (Sturany 1894), *Mycropyrgula stankovici* (Polinski 1929). Ochridi-tó (Zilch-Jaeckel 1961) (13. ábra: 7). *Ochridopyrgula macedonica* (Brusina 1866) Zagorican-forrás: Veli Dabnál, A Scodra-tó déli vége (Radoman 1985) (13. ábra: 8). Ochridi-tó chara-zóna (Radoman 1983) (14. ábra: 1). *Chilopyrgula filocinta* (Polinski 1939) Ochridi-tó (Zilch-Jaeckel 1961) (14. ábra: 2). *Chilopyrgula wagneri* (Polonera 1929), *Chilopyrgula pavlovici* (Palonera 1929), *Chilopyrgula dybowski* (Polonera 1929) Ochridi-tó (Zilch-Jaeckel 1961) (14. ábra: 3). *Chilopyrgula sturanyi* (Brusina 1896) Ochridi-tó (Kabat-Herschler 1993) (14. ábra: 4). *Prespopyrgula prespensis* (Urbanski 1939) Prespa-tó homokos zónája (Radoman 1983) (14. ábra: 5). *Pyrgohydobia sanctinaumi* (Radoman 1955) Ochridi-tótól délre sekély kis tó (Radoman 1983) (14. ábra: 6). *Paludina curta kicavica* (Radoman 1973) közel az Ochridi-tóhoz Izvornál Klecevótól 15 km-re (Radoman 1983) (14. ábra: 7). *Bythinella drimice* (Radoman 1976) Drimnél Beli és Crni csatornázott területe a Macedon határnál (Radoman 1983) (14. ábra: 8). *Chilopyrgula balcaniformis* (Polinski 1939)

Paludina curta albanica (Radoman 1973) Globarda creek close to Karca (Albania), and Jamina Pond between Sedence and Krionesi (Western Greece) (Radoman 1983) (Fig. 15: 4). *Lychnidia sublitoralis* (Radoman 1967) sublitoral zone of Lake Ohrid opposite Gorica Hill (Radoman 1983) (Fig. 15: 5). *Zaumia sanctizaumi* (Radoman 1964) SW part of Lake Ohrid, littoral zone (Radoman 1983) (Fig. 15: 6). *Zaumia kusceri* (Hadzisce 1956) Lake Ohrid and creek at Sveti Naum (Radoman 1983) (Fig. 15: 7). *Lychnidia hadzii* (Hadzisce 1956), *Lychnidia stankovici* (Hadzisce 1956), *Lychnidia karamani* (Hadzisce 1956) Lake Ohrid, eastern littoral parts at Veli Dab (Radoman 1983) (Fig. 15: 8). *Lychnidia gjorgjevici* (Radoman 1962), small pond at Sveti Naum, southern margin of Lake Ohrid; not present in the latter (Radoman 1983) (Fig. 16: 1). *Pseudohoratia brusinae* (Radoman 1953-64) Lake Ohrid to a depth of 50 m. (Radoman 1983) (Fig. 16: 2). *Pseudohoratia ohridana* (Polinski 1929) Lake Ohrid (Radoman 1983) (Fig. 16: 3). *Pseudohoratia lacustris* (Radoman 1964) Lake Ohrid, Chara zone to a depth of 10 m (Radoman 1983) (Fig. 16: 4). *Dolapia armata* (Radoman 1956) Lake Ohrid at Veli Dab; rocky shore (Radoman 1983) (Fig. 16: 5). *Ochrigocea mitedinorum* (Hadzisce 1956) Lake Ohrid near Pestani village (Radoman 1983) (Fig. 16: 6). *Polinskiola polinskii* (Radoman 1960), *Ochrigocea samnile* (Hadzisce 1956) Lake Ohrid at Veli Dab, protected rocky shore (Radoman 1983) (Fig. 16: 7). *Ochridohauffenia sanctinaumi* (Radoman 1964) Sveti Naum small creek, not present in Lake Ohrid (Radoman 1983) (Fig. 16: 8). *Ochridohauffenia drimica* (Radoman 1964) Crai Drim channel at Shaga near Lake Ohrid (Radoman 1983) (Fig. 17: 1). *Ochridohauffenia minuta* (Radoman 1955), Studenicista creek close to Ohrid city (Radoman 1983) (Fig. 17: 2). *Ochridohauffenia sublitoralis* (Radoman 1962) sublitoral zone of Lake Ohrid between 50-60 m (Radoman 1983) (Fig. 17: 3). *Ochridohoratia carinata* (Radoman 1956), *Ochridohauffenia depressa* (Radoman 1965) southern part of Lake Ohrid at Veli Dab near Sveti Naum (Radoman 1983) (Fig. 17: 4). *Ochridohoratia pygmaea* (Westerlund 1902) southern shores of Lake Ohrid (Radoman 1983) (Fig. 17: 5). *Strugia ochridana* (Radoman 1973) cave close to Struga creek in the Ohrid Basin (Radoman 1983) (Fig. 17: 6). *Horatia novosebensis* (Radoman 1966) north of Novo Selo and Lake Ohrid (Radoman 1983) (Fig. 17: 7). *Ochrigocea stankovici* (Hadzisce 1956) Lake Ohrid and Zagorican creek at Sveti Naum (Radoman 1983) (Fig. 17: 8).

Macedonia: Ponto-Mediterranean Elements:

Grossuana serbia scupica (Radoman 1973) Rasce creek 25 km west of Skopje (Radoman 1985) (Fig. 18: 1) *Grossuana serbica macedonica* (Radoman 1973) creek at Valenlovo south of Scutari (Radoman 1985) (Fig. 18: 2). *Horatica macedonica* (Kuscer 1936) Rosce creek at the villages of Matka and Bigor west of Skopje, and Izvor creek at Izvor 4 km of Kicevo, creek at Slarpec 16 km of Kicevo, and Crna creek 6 km of Kicevo (Radoman 1985) (Fig. 18: 3). *Prespiana lacustris* (Radoman 1973), *Prespolitoralia valvataeformis* (Urbanski 1939) Lake Prespa (Jaeckel-Klemm-Meise 1957) (Fig. 18: 4). *Grossuana serbica*

Ochrudi-tó 40-60 méteren Gorica-heggyel szemben (Radoman 1985) (15. ábra: 1). *Orientalia curta* (Küster 1852) Ochrudi-tó és a Zeta-folyó közelében patak. (Welter-Schultes 1996) (15. ábra: 2), *Orientalia lacustris* (Radoman 1983) Scutari-tó (Radoman 1985) (15. ábra: 3). *Paludina curta albanica* (Radoman 1973) Globarda-patak Karcahoz közel (Albánia) és Jamina-tó Sedence és Krionesi közt (Nyugat-Görögország) (Radoman 1983) (15. ábra: 4). *Lychnidia sublitoralis* (Radoman 1967) az Ochrudi-tó szublitorális zónája Gorica-heggyel szemben (Radoman 1983) (15. ábra: 5). *Zaumia sanctizaumi* (Radoman 1964) az Ochrudi-tó délkeleti része littoralis zóna (Radoman 1983) (15. ábra: 6). *Zaumia kusceri* (Hadzisce 1956) az Ochrudi-tó és déli részéhez közel patak Sveti Naumnál (Radoman 1983) (15. ábra: 7). *Lychnidia hadzii* (Hadzisce 1956), *Lychnidia stankovici* (Hadzisce 1956), *Lychnidia karamani* (Hadzisce 1956) az Ochrudi-tó keleti része littoralis zóna Veli Dabnál (Radoman 1983) (Fig. 15: 8). *Lychnidia gjorgjevici* (Radoman 1962), kis tó Sveti Naumnál az Ochrudi-tó déli végén; a tóban nincsen (Radoman 1983) (16. ábra: 1). *Pseudohoratia brusinae* (Radoman 1953-64) Ochrudi-tó 50 méter mélységgig. (Radoman 1983) (16. ábra: 2). *Pseudohoratia ohridana* (Polinski 1929) Ochrudi-tó (Radoman 1983) (16. ábra: 3). *Pseudohoratia lacustris* (Radoman 1964) Ochrudi-tó charázona 10 méterig az északi töltéshalomnál (Radoman 1983) (16. ábra: 4). *Dolapia armata* (Radoman 1956) Ochrudi-tó Veli Dabnál; köves part (Radoman 1983) (16. ábra: 5). *Ochrigocea mitedinorum* (Hadzisce 1956) Ochrudi-tó Pestani falu közelében (Radoman 1983) (16. ábra: 6). *Polinskiola polinskii* (Radoman 1960), *Ochrigocea samnile* (Hadzisce 1956) Ochrudi-tó Veli Dabnál köves zárt parton (Radoman 1983) (16. ábra: 7). *Ochridohauffenia sanctinaumi* (Radoman 1964) Sveti Naumnál kis patak az Ochrudi-tóban nincsen (Radoman 1983) (16. ábra: 8). *Ochridohauffenia drimica* (Radoman 1964) Crai Drim csatorna, folyó Shaga városnál az Orchidi-tónál (Radoman 1983) (17. ábra: 1). *Ochridohauffenia minuta* (Radoman 1955), Studenicista-patak Ochrid városhoz közel (Radoman 1983) (17. ábra: 2). *Ochridohauffenia sublitoralis* (Radoman 1962) Ochrudi-tó szublitorális zónája 50-60 méterig (Radoman 1983) (17. ábra: 3). *Ochridohoratia carinata* (Radoman 1956), *Ochridohauffenia depressa* (Radoman 1965) Ochrudi-tó déli része Veli Dabnál közel Sveti Naumhoz (Radoman 1983) (17. ábra: 4). *Ochridohoratia pygmaea* (Westerlund 1902) Ochrudi-tó déli partja (Radoman 1983) (17. ábra: 5). *Strugia ochridana* (Radoman 1973) barlang közel a Struga-patakhoz az Ochrudi-medencében (Radoman 1983) (17. ábra: 6). *Horatia novosebensis* (Radoman 1966) északra Novo Selótól és az Ochrudi-tótól (Radoman 1983) (17. ábra: 7). *Ochrigocea stankovici* (Hadzisce 1956) Ochrudi-tó és Sveti Naumnál a Zagorican-patak (Radoman 1983) (17. ábra: 8).

Macedonia: Ponto-mediterrán elemek:

Grossuana serbia scupica (Radoman 1973) Rasce-patak 25 km-re nyugatra Skopjetől (Radoman 1985) (18. ábra: 1) *Grossuana serbica macedonica* (Radoman 1973) patak a Valenlovo falunál délré Scutaritől (Radoman 1985) (18. ábra: 2). *Horatica macedonica* (Kuscer 1936) Skopjetől

(Radoman 1973). Creek at Sopocani Monastery near river Raska (Kabat-Herschler 1993) (Fig. 18: 5). *Bithynella schmidti dispersa* (Radoman 1975). Creek int he Tara valley, canalized part of Drina, Dobslavina 5 km of Majkovic, Zvijizda-Ivanograd, 3 km of Srdjavec and the Kvac valley, creek at Milosev Dob, canalized area of Ibar, Vrela creek at Osavnica and creeks at Rozajena and Pazaj (Radoman 1983) (Fig. 18: 6).

Macedonia, Bosnia-Herczegovina: Ponto-Mediterranean Elements:

Bythinella croatica (Hirc 1881) Lesnica county, Bród, Martinesdica, Draga (Kabat-Herschler 1993) (Fig. 18: 7).

Albanian-Macedonian borderline: Ponto-Mediterranean Elements:

Bythinella drimica (Radoman 1976) Redica river at the road of Dabar-Marovó, Monastrici at the road of Struga-Dabar and several creeks of the Radika valley (Radoman 1983) (Fig. 18: 8). *Bythinella schmidti heteola* (Radoman 1976) creeks at Ivangrad, at Plavsko Jezero, Marica river at Andrijevica, Tara river at Holastin Titograd (Radoman 1983) (Fig. 19: 1).

Montenegro: Ponto-Mediterranean Elements:

Emericia taciti (Bourguignat 1880) Cattaro in several creeks (Kabat-Herschler 1993) (Fig. 19: 2). *Saxurinator dalmaticus* (Schütt 1961) south of Sopot: Svitarska (Kabat-Herschler 1993) (Fig. 19: 3). *Paludine curta narentana* (Radoman 1973) Buna river near the Neretva (Radoman 1983) (Fig. 19: 4). *Orientalia montana* (Radoman 1973) small creek 15 km NW of Budva, Studanec creek, plus Dobra brook at Bax and Ulcinj (Radoman 1983) (Fig. 19: 5). *Anagastina gluholodolica* (Radoman 1983) Gluhido at Veljiko-Virpazar, several creeks at Cirmica (Radoman 1985) (Fig. 19: 6). *Belgrandiella dabriana* (Radoman 1973) Dabar river at Dabarska cavel 6-8 km of Sanski Most (RAaoman 1985) (Fig. 19: 7). *Anagastina scutarica* (Radoman 1973) Scutari Pond near Luka Krinjicke (Radoman 1983) (Fig. 19: 8). *Anagastina zetavalis* (Radoman 1973) Zeta river near Titograd, Dobro creek north of Danilovgrad (RADoman 1985) (Fig. 20: 1). *Lanzaia vjetreniae* (Küster 1933) Hercegovi: spring (Kabat-Herschler 1993) (Fig. 20: 2). *Bacenica spiridoni* (Radoman 1973) Spiron Izvar: Studenac creek Braceni not far from Virpazar (Radoman 1983) (Fig. 20: 3). *Zavalia vjetreniae* (Radoman 1973). Creek close to the Zavala at Popovo Polje (Radoman 1983) (Fig. 20: 4). *Paludina gagatinella* (Küster 1852), *Horatia kusceri* (Hadzisce 1956) Ljuta creek at Kotor (Kabat-Herschler 1993) (Fig. 20: 5). *Gracenica spiridoni* (Radoman 1973) Spiridon Izvor Studeac creek near Braceni, not far from Virpazar (Radoman 1983) (Fig. 20: 6). *Lanzaia sheti* Bole 1960 Popovo Polje: creek near Zavala (Radoman 1983) (Fig. 20: 7).

Anagasta vidrovani (Radoman 1973) Vidrovani, and Lake Scutari near Niksce (Kabat-Herschler 1993) (Fig. 20: 8). *Orientalia elongata* (Radoman 1973) island of Scutari Lake and Vrajina creek (Radoman 1983) (Fig. 21: 1). *Bacenica spiridoni* (Radoman 1973) Spiron creek Pockneret, near Braceni, Virpazar (Kabat-Herschler 1993) (Fig. 21: 2). *Paludina curta* (Küster 1852) creek near Zeta (Kabat-Herschler 1993) (Fig. 21: 3). *Iglica bagliviaeformis*

nyugatra a Rosce-patak Matka és Bigor faluknál és 4 km-re Kicevotól az Izvor-patak Izvor falunál, 16 km-re Kicevotól Slarpec falunál patak, valamint 6 km-re Kicevotól Crnapatak (Radoman 1985) (18. ábra: 3). *Prespiana lacustris* (Radoman 1973), *Prespolitoralia valvataeformis* (Urbanski 1939) Prespa-tó (Jaeckel-Klemm-Meise 1957) (18. ábra: 4). *Grossuana serbica* (Radoman 1973). Raska-folyó közelében patakban a Sopocani Monasterynél (Kabat-Herschler 1993) (18. ábra: 5). *Bithynella schmidti dispersa* (Radoman 1975). A Drina csatornázási területén Tara-völgyben patak, Dobslavina falunál 5 km-re Majkovictól Zvijizda falunál-Ivanogránál, 3 km-re Srdjavec falutól és a Kvac-völgyben és Milosev Dobnál patak, az Ibar csatornázási területe a Vrela-patakban Osavnica falunál és Pazajnál a Rozajenál-patak (Radoman 1983) (18. ábra: 6).

Macedonia, Bosznia Hercegovina: Ponto-mediterrán elemek:

Bythinella croatica (Hirc 1881) Lesnica megye, Bród, Martinesdica, Draga (Kabat-Herschler 1993) (18. ábra: 7).

Albán-Macedon határ: Ponto-mediterrán elemek:

Bythinella drimica (Radoman 1976) Redica-folyó a Dabar-Marovó útnál, Monastrici a Struga-Dabar útnál és a Radika-völgy több patakja (Radoman 1983) (18. ábra: 8). *Bythinella schmidti heteola* (Radoman 1976) Ivangradnál patak, Plavsko Jezeronál patak, Andrijevicanál a Marica-folyó, Tara-folyó és Holastin Titogránál (Radoman 1983) (19. ábra: 1).

Montenegro Ponto-mediterrán elemek:

Emericia taciti (Bourguignat 1880) Cattaro több patakban (Kabat-Herschler 1993) (19. ábra: 2). *Saxurinator dalmaticus* (Schütt 1961) Sopottól délre: Svitarska (Kabat-Herschler 1993) (19. ábra: 3). *Paludine curta narentana* (Radoman 1973) a Buna-folyó a Neretva közelében (Radoman 1983) (19. ábra: 4). *Orientalia montana* (Radoman 1973) Budva várostól 15 km-re északnyugatra kis patak, és a Studanec-patak, valamint Bax és Ulinj közelében Dobra víz (Radoman 1983) (19. ábra: 5). *Anagastina gluholodolica* Radoman 1983) Gluhido falunál Veljiko-Virpazarnál, Cirmicanál több patak (Radoman 1985) (19. ábra: 6). *Belgrandiella dabriana* (Radoman 1973) Dabar-folyó a Dabarska-barlangnál 6-8 km-re Sanski most-tól (RAaoman 1985) (19. ábra: 7). *Anagastina scutarica* (Radoman 1973) Scutari-tó Luka Krinjickéhez közel (Radoman 1983) (19. ábra: 8). *Anagastina zetavalis* (Radoman 1973) Zeta-folyó Titograd közelében, Danilovgrádtól északra a Dobro-patak (Radoman 1985) (20. ábra: 1). *Lanzaia vjetreniae* (Küster 1933) Hercegovina-forrás (Kabat-Herschler 1993) (20. ábra: 2). *Bacenica spiridoni* (Radoman 1973) Spiron Izvar: Studenac-patak Braceni falu közelében Virpazartól nem messze (Radoman 1983) (20. ábra: 3). *Zavalia vjetreniae* (Radoman 1973). Popovo Poljenál Zavalához közelí patak (Radoman 1983) (20. ábra: 4). *Paludina gagatinella* (Küster 1852), *Horatia kusceri* (Hadzisce 1956) Ljuta-patak Kotornál (Kabat-Herschler 1993) (20. ábra: 5). *Gracenica spiridoni* (Radoman 1973) Spiridon Izvor Studenac-patak Braceni falu közelében, Virpazartól nem messze (Radoman 1983) (20. ábra: 6). *Lanzaia sheti* Bole 1960 Popovo Poljenál Zavalához közelí patak

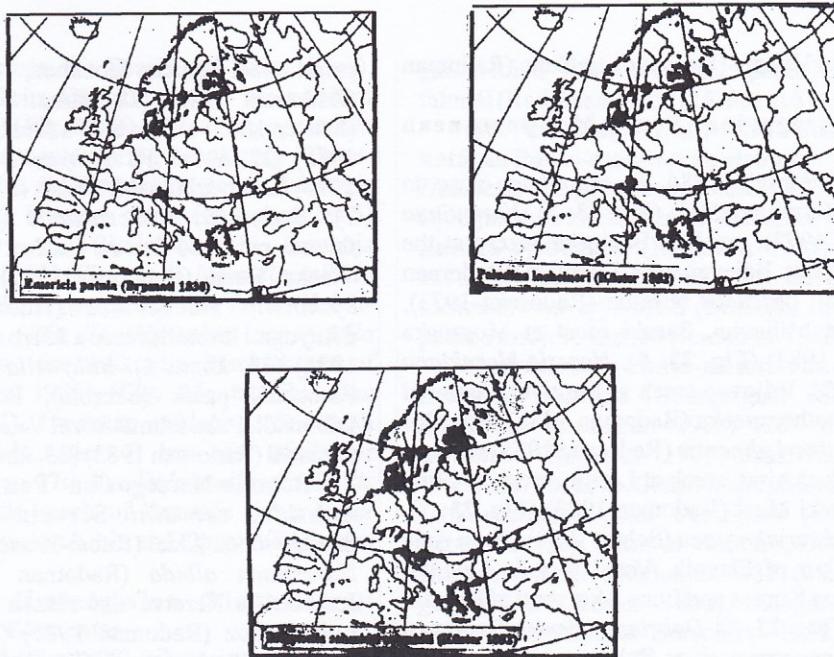


Fig. 32.
32. ábra

(Schütt 1975) creek at Dubrovnik (Kabat-Herschler 1993) (Fig. 21: 4).

Montenegro-Serbian borderline: Ponto-Mediterranean Elements:

Paludina curta privensis (Radoman 1973) Jezero creek at Rudo, west of Pribej in the area of Drina (Radoman 1983) (Fig. 21: 5). *Paludina curta mostarensis* (Radoman 1973) Neretva valley, central parts near Mostar-Sarajevo (Radoman 1983) (Fig. 21: 6). *Paludina curta anogastica* Radoman 1973 river at Moraca 50 km north of Titograd, several creeks (Radoman 1983) (Fig. 21: 7).

Serbia: Ponto-Mediterranean Elements:

Lithoglyphus notatus (Frauenfeld 1865) Popovo Selo; Vodia creek at Bulgarica, near Petrovác (Radoman 1983) (Fig. 21: 8). *Terranigra kosovica* (Radoman 1978) creek at Cona Zemija, Mala Reka region, Pridvornica village at Mala and Velika reka at the spring of Nerodinska river (Radoman 1983) (Fig. 22: 1). *Belgrandiella krupensis* Radoman 1973. spring at Krupa, on the right side of the Zomaja river (Radoman 1983) (Fig. 22: 2) *Sarajana apfelbecki* (Brancsik 1888), creek west of Vrelo Bosne near Sarajevo (Radoman 1983) (Fig. 22: 3). *Grossuana serbica remesiana* (Radoman 1973) creek south of Bela Palanka at Dioljana 10 km from Pirot (Radoman 1985) (Fig. 22: 4). *Sarajan apfelbecki driniana* (Radoman 1975). Koestica, creek 2 km from the Drina river, Brodesi, creek 300 m from the Drina, 2 brooks near Perucac brook, 13 km of Bajina Basta (Radoman 1985) (Fig. 22: 5). *Lithoglyphus apertus* (Küster 1852) Sava at the influx with the Danube (Radoman 1985) (Fig. 22: 6). *Bythynella drimica alba* (Radoman 1976) Koznyar road at Metohia (Radoman 1983) (Fig. 22: 7). *Bythynella serborientalis* (Radoman 1978). Creek at Vrelo 33 km north of Pirot and 3 km from Visoka Rena (Radoman 1985) (Fig. 22: 8). *Parabythinella macedonica* (Hadzisce 1958) SW littoral part of Lake Prespa (Radoman 1985) (Fig. 23: 1). *Bithynella robicina* (Clessin 1890) creek at Potoce (Serbia), Poniková creek 6 km of Dibma, at the

(Radoman 1983) (20. ábra: 7). *Anagasta vidrovani* (Radoman 1973) Vidrován, és Nikscétől északra és a Scutari-tó (Kabat-Herschler 1993) (20. ábra: 8). *Orientalia elongata* (Radoman 1973) Scutari-tó szigete és Vrajina-patak (Radoman 1983) (21. ábra: 1). *Bacenia spiridoni* (Radoman 1973) Spirov-patak Pockneret, Braceni közel, Virjazar (Kabat-Herschler 1993) (21. ábra: 2). *Paludina curta* (Küster 1852) Patak Zeta közelében (Kabat-Herschler 1993) (21. ábra: 3). *Iglica bagliviae-formis* (Schütt 1975) Dubrovniknál patak (Kabat-Herschler 1993) (21. ábra: 4).

Montenegro-Szerbia határán Ponto-meditérán elemek:

Paludina curta privensis (Radoman 1973) Jezero-patak Rudonál, nyugatra Pribej városától a Drina areájában (Radoman 1983) (21. ábra: 5). *Paludina curta mostarensis* (Radoman 1973) Nevetva-völgy középső része Mostar-Sarajevo-hoz közel (Radoman 1983) (21. ábra: 6). *Paludina curta anogastica* Radoman 1973 Moracánál folyó 50 km-re északra Titogrától több patakban (Radoman 1983) (21. ábra: 7).

Szerbia-Ponto-mediterrán elemek:

Lithoglyphus notatus (Frauenfeld 1865) Popovo Selo; Vodia-patak Bulgaricánál, Petrovác közelében (Radoman 1983) (21. ábra: 8). *Terranigra kosovica* (Radoman 1978) Cona Zemijánál patak, Mala Reka körzete, Pridvornica falunál Mala- és Velika-folyó a Nerodinska-folyó kezdeténél (Radoman 1983) (22. ábra: 1). *Belgrandiella krupensis* Radoman 1973. Forrás Krupanál Zomaja-folyó jobb oldali mellékfolyójánál (Radoman 1983) (22. ábra: 2) *Sarajana apfelbecki* (Brancsik 1888). Vrelo Bosnetől nyugatra közel Sarajevóhoz patak (Radoman 1983) (22. ábra: 3). *Grossuana serbica remesiana* (Radoman 1973) Bela Palankatól délre nagy patak Dioljana falunál 10 km-re Pirottól (Radoman 1985) (22. ábra: 4). *Sarajan apfelbecki driniana* (Radoman 1975). Koestica falunál patak 2 km-re a Drina-folyótól, Brodesi falunál patak 300 m-re Drinatól, 2

village of Paka near Velenje (Slovenia). at Celja (Radoman 1983) (Fig. 23: 2).

Bosnia-Herczegovina Ponto-Mediterranean Elements:

Aristidia servaini Servain 1884. Bosnia river close to Sarajevo (Kabat-Herschler 1993) (Fig. 23: 3). *Narentiana albida* (Radoman 1973). creek at Bacinska Jezero at the lower Neretva and at Bajevei near Lukovac (Radoman 1983) (Fig. 23: 4). *Orientali bosnica* (Radoman 1973), Miljevici creek at Miljevici, Sanski most at Mosanska Krupa (Radoman 1983) (Fig. 23: 5). *Horatia klecakiana* (Bourguignat 1887). Vrijovae creek at the river Cetina at Livro and several other creeks (Radoman 1988) (Fig. 23: 6). *Graziana lecheineri glinensis* (Radoman 1975) creek at Otoka, Vrelo creek at Ajrat, creek at Lasnic, creek at Gline 15 km SW of Sanski Most (Radoman 1983) (Fig. 23: 7). *Sarajana apfelbecki erythropana* (Schütt 1959). Plava roda Basinae creek 7 km of Flavnik, Vasiljiva voda Levnici, Sujica river between Kupres and Luno 2 km west of Falnik (Radoman 1983) (Fig. 23: 8). *Dobriana bosnica* Radoman 1993. Dabaraska cave near river Dabar, south of Sanski Most (Kabat-Herschler 1993) (Fig. 24: 1). *Sarajana apfelbecki favnicensis* (Radoman 1975). Plavaroda Basinac creek 7 km of Fravnik, Vasiljiva voda Lavnici, Sujica river between Kupres and Luno 2 km west of Falnik (Radoman 1985) (Fig. 24: 2). *Lanzaia bosnica* (Bole 1970). Spring of river Dabar 6 km south of Sanski Most (Radoman 1985) (Fig. 24: 3). *Plagigeyeria plagiostoma* (Wagner 1917). Vrelo Bosna and the spring of river Bosna near Sarajevo (Radoman 1983) (Fig. 24: 4). *Islamia valvataformis* (Möllendorf 1873) Vrelo Bosne near Sarajevo (Radoman 1985) (Fig. 24: 5). *Islamia bosnica* (Radoman 1973) Podgaj creek 11 km of Doboij (Radoman 1985) (Fig. 24: 6). *Emerici narentana* (Bourguignat 1880). Neretva river near Metrovic, Desila, Lukova and Bajevci, Klokočevac and Bijeli at several places (Radoman 1985) (Fig. 24: 7). *Bithynella samecana* (Clessin 1911). At Fravnic Plava Voda (Radoman 1985) (Fig. 24: 8). *Dobriana bosnica* (Radoman 1974) Dabarska Cave; near the river Dabar south of Sanski Most (Kabat-Herschler 1993) (Fig. 25: 1). *Aristidia serveini* (Servain 1886) Bosna river near Sarajevo (Radoman 1985) (Fig. 25: 2). *Graziana vrbasensis* (Radoman 1975) creek 8 km of Jejce (Radoman 1985) (Fig. 25: 3). *Geyeria plagiostoma* (Wagner 1914) Bosna creek (Kabat-Herschler 1993) (Fig. 25: 4). *Sadleriana supercarinate* (Bole 1972) Vrelo Gacka river, Majerevo Vrelo creek at Zagrevici and Lesca villages (Radoman 1985) (Fig. 25: 5).

Croatian (Dalmatia)- Bosnia-Herczegovina borderline: Ponto-Mediterranean Elements:

Hadziella ephippiostoma (Kuscer 1932) creek at Podgora near Ljubljana (Kabat-Herschler 1993) (Fig. 25: 6). *Zavalia vjetrenicae* (Radoman 1973) Vjetrenica cave at Zavala (Radoman 1985) (Fig. 25: 7). *Frauenfeldia lacheineri* var. *apfelbecki* (Brancsik 1888) creek at Vrelo Bosnal near Sarajevo (Radoman 1985) (Fig. 25: 8).

Croatia: Ponto-Mediterranean Elements:

Emericia brusinae (Bourguignat 1880) near Ribaric Enerc (Radoman 1985) (Fig. 26: 1). *Graziana slavonica* (Radoman 1975) Jankovae creek (Radoman 1983) (Fig. 26: 2). *Graziana papukensis* (Radoman 1975) Jankovac creek

patak közel Perucac broakhoz, 13 km-re Bajina Bastahoz (Radoman 1985) (22. ábra: 5). *Lithoglyphus apertus* (Küster 1852) a Száva és a Duna beömlésénél (Radoman 1985) (22. ábra: 6). *Bythynella drimica alba* (Radoman 1976) Koznyári útnál Metohia (Radoman 1983) (22. ábra: 7). *Bythynella serborientalis* (Radoman 1978). Vrelo falunál patak 33 km-re északra Pirok város és 3 km-re Visoka Rena (Radoman 1985) (22. ábra: 8). *Parabythinella macedonica* (Hadzisce 1958) Prespa-tó délnyugati littoralis része a Szerb-Albán határon (Radoman 1985) (23. ábra: 1). *Bithynella robicina* (Clessin 1890) Potocenál patak (Szerbia), Ponikovó-patak 6 km-re Dibmától. Paka falunál közel Velenjéhez (Szlovénia). Celja városnál (Radoman 1983) (23. ábra: 2).

Bosznia-Hercegovina Ponto-mediterrán elemek: *Aristidia servaini* Servain 1884. Bosznia-folyó Szarajevóhoz közel (Kabat-Herschler 1993) (23. ábra: 3). *Narentiana albida* (Radoman 1973). Patak Bacinska Jezeronál a Neretva alsó részén és Bajevei falunál közel Lukovachoz (Radoman 1983) (23. ábra: 4). *Orientali bosnica* (Radoman 1973), Miljevici-patak Miljevici falunál, Sanskimost Mosanska Krupanál (Radoman 1983) (23. ábra: 5). *Horatia klecakiana* (Bourguignat 1887). Vrijovae-patak a Cetina-folyónál Livro városnál és ott több patak (Radoman 1988) (23. ábra: 6). *Graziana lecheineri glinensis* (Radoman 1975) Otoka falunál patak, Vrelo kis patak Ajrat falunál, Lasnic falunál, patak Gline várostól 15 km-re délkeletrre Sanskimosttól (Radoman 1983) (23. ábra: 7). *Sarajana apfelbecki erythropana* (Schütt 1959). Plava roda Basinae-patak 7 km-re Flavniktól Vasiljiva voda Levnici falunál patak, 2 km-re nyugatra Falvniktól a Sujica-folyó Kupres és Luno közt (Radoman 1983) (23. ábra: 8). *Dobriana bosnica* Radoman 1993. Dabaraska-barlang közel a Dabar-folyóhoz, délre Sanskimost (Kabat-Herschler 1993) (24. ábra: 1). *Sarajana apfelbecki favnicensis* (Radoman 1975). Plavaroda Basinac-patak 7 km-re Fravniktól, Vasiljiva voda Lavnici falunál patak, 2 km-re nyugatra Travniktól, a Sujica-folyó Kupres és Luno közt (Radoman 1985) (24. ábra: 2). *Lanzaia bosnica* (Bole 1970). A Dabar-folyó forrása 6 km-re délre Sanski Most-tól (Radoman 1985) (24. ábra: 3). *Plagigeyeria plagiostoma* (Wagner 1917). Vrelo Bosna a Bosna-folyó forrása közel Szarajevóhoz (Radoman 1983) (24. ábra: 4). *Islamia valvataformis* (Möllendorf 1873) Vrelo Bosne Szarajevóhoz közel (Radoman 1985) (24. ábra: 5). *Islamia bosnica* (Radoman 1973) Podgaj-patak 11 km-re Dobojtól (Radoman 1985) (24. ábra: 6). *Emerici narentana* (Bourguignat 1880). Neretva-folyó Metrovic városhoz közel, Desila, Lukova és Bajevci falvaknál, Klokočevac és Bijeli falunál több helyen (Radoman 1985) (24. ábra: 7). *Bithynella samecana* (Clessin 1911). Fravnicnál a Plava víz és patakban (Radoman 1985) (24. ábra: 8). *Dobriana bosnica* (Radoman 1974) Dabarska-barlang; közel a Dabar-folyóhoz, délre Sanskimosttól (Kabat-Herschler 1993) (25. ábra: 1). *Aristidia serveini* (Servain 1886) Bosznia-folyó Szarajevóhoz közel (Radoman 1985) (25. ábra: 2). *Graziana vrbasensis* (Radoman 1975) Jejcetől 8 km-re patak (Radoman 1985) (25. ábra: 3). *Geyeria plagiostoma* (Wagner 1914) Bozna-patak (Kabat-Herschler 1993) (25. ábra: 4). *Sadleriana supercarinate* (Bole 1972) Vrelo

south of Ceralija (between the Drava and Sava rivers), Papuk Mts. 5 km of Vicin, Dobuka creek 7 km north of Velika (Radoman 1985) (Fig. 26: 3). *Paludina gagatinella* (Küster 1852). Zuagora, Ljuta Spring Monastery (Kabat-Herschler 1993) (Fig. 26: 4). *Ventrosia cissana* (Radoman 1973). Zrce, Pag Island, brackish water (Radoman 1985) (Fig. 26: 5). *Islamia zermanica* (Radoman 1973). Zrmanja river (Kabat-Herschler 1993) (Fig. 26: 6). *Narentina albida* (Radoman 1973). Northern part of Bocina Pond (Kabat-Herschler 1993) (Fig. 26: 7). *Hydrobia consociella* (Frauenfeld 1863) Krka river at Skradin, brackish part of Zrmja river (Radoman 1985) (Fig. 26: 8). *Paludina kutschigi* (Küster 1892), *Ventrosia spalatina* (Radoman 1973) Pontana brackish waters 3 km east of Trogir (Radoman 1985) (Fig. 27: 1). *Dalmatella fluviatilis* (Radoman 1973) middle reach of Zrmanja river, lower reach of the Neretva between Kerla and Opusin (Radoman 1985) (Fig. 27: 2).

Croatia: Bosnia-Herzegovina (Montenegro): Ponto-Mediterranean Elements:

Lithoglyphus fuscus (Pfeiffer 1828) tributaries of the Sava the Una and the Urbas (Radoman 1985) (Fig. 27: 3). *Lithobitella chilodia* (Westerlund 1886). Spiron Izvor Studenac creek near Braceni not far from Vírpazar (Radoman 1985) (Fig. 27: 4). *Pseudamnicola miliaria* (Frauenfeld 1863) Una spring near Neteka (Kabat-Herschler 1993) (Fig. 27: 5). *Dalmatella shati* (Velkovrh 1970) creek close to the Kerka creek at Sibenik (Kabat-Herschler 1993) (Fig. 27: 6). *Lanzaia elephantota* (Brusina 1906) spring in Dalmatia (J.Bole 1968) (Fig. 27: 7). *Bithynella kapciana* (Radoman 1976) Marjerovo Vrelo Gracka polje creek, Velebit Mts. Klamac creek, 4-5 km off the road to Plitvice (Radoman 1983) (Fig. 27: 8).

Croatia (Dalmatia)-Slovenia: Ponto-Mediterranean Elements:

Graziana lackeineri adrolitoralis (Radoman 1975) small creek south of Delnice at Lakve, Zdrava voda at the Adriatic coast, near the road of Karlovac-Rijeka, small creek at Hiriska Bistrice NW of Rijeka, creek at Podraje near Hirska Bistrice, small creek at Rijecina, small creeks at Vrulja Javor and Krmin, plus creek east of Bribis, spring at Lakve, creek at Kozji Lem, creek at Rejnevica west of Brinje (Radoman 1983) (Fig. 28: 1). *Turbo elephantotus* (Mühlfeld 1824) Adriatic coast and Croatian coastline creeks (Radoman 1983) (Fig. 28: 2). *Belgrandiella zermanica* (Radoman 1973) Zrmanja river above Jankovica (Radoman 1985) (Fig. 28: 3).

Croatia: Ponto-Mediterranean Elements:

Iglica luxurians (Kuscer 1932) Podgora spring at Podgora near Vrliko (Radoman 1985) (Fig. 28: 4).

Slovenia: Ponto-Mediterranean Elements:

Sadleriana robici (Clecic 1890) Krka river at Brznic, Globucia, Kostanjevica (Radoman 1985) (Fig. 28: 5), *Lithoglyphus neofontinalis* (Radoman 1978) Grabrorc creek, Úrka river, Iscica river south of Ljubljana (Radoman 1985) (Fig. 28: 6). *Erythropomaria verdica* (Radoman 1978). Verd creek at Verd near Vrhnika (Radoman 1985) (Fig. 28: 6). *Erytropomatiana erythropornatia* (Hauffen 1856). Babja Lukaja valley near Gorican NW of Ljubljana. (Radoman 1985) (Fig. 28: 8). *Hauffenia michleri* (Kuscer 1932) Mocilnik: Ljublajica spring near

gacka-folyó Majerevo Vrelo-patak Zagrevici és Lesca falunál (Radoman 1985) (25. ábra: 5).

Horvátország (Dalmácia) Bosznia-Hercegovina határán Ponto-mediterrán elemek:

Hadziella ephippiostoma (Kuscer 1932) Podgoránál patak Ljubljanához közel (Kabat-Herschler 1993) (25. ábra: 6). Zavalia vjetrenicae (Radoman 1973) Vjetrenica-barlang zavalánál (Radoman 1985) (25. ábra: 7). *Frauenfeldia lacheineri var apfelbecki* (Brancsik 1888) Vrelo Bosnánál patak Szarajevo mellett (Radoman 1985) (25. ábra: 8).

Horvátország Ponto-mediterrán elemek:

Emericia brusinae (Bourguignat 1880) Ribaric Enerc közelében (Radoman 1985) (26. ábra: 1). *Graziana slavonica* (Radoman 1975) Jankovae-patak (RADoman 1983) (26. ábra: 2). *Graziana papukensis* (Radoman 1975) Jankovac-patak délré Ceralijától (Dráva, Száva közt), Papuk-hegység, 5 km-re Vicinhez, Dobuka-patak 7 km-re északra Velikától (Radoman 1985) (26. ábra: 3). *Paludina gagatinella* (Küster 1852). Zuagora a Ljuta Spring kolostornál (Kabat-Herschler 1993) (26. ábra: 4). *Ventrosia cissana* (Radoman 1973). Zrce-, Pag-sziget, brakkvíz (Radoman 1985) (26. ábra: 5). *Islamia zermanica* (Radoman 1973). Zrmanja-folyó (Kabat-Herschler 1993) (26. ábra: 6). *Narentina albida* (Radoman 1973). A Bocina-tó északi része (Kabat-Herschler 1993) (26. ábra: 7). *Hydrobia consociella* (Frauenfeld 1863) Krka-folyó Skradinnál, a Zrmja-folyó brakkvízi része (Radoman 1985) (26. ábra: 8). *Paludina kutschigi* (Küster 1892), *Ventrosia spalatina* (Radoman 1973) Pontana brakkvíz Trogirtől 3 km-re keletre (Radoman 1985) (27. ábra: 1). *Dalmatella fluviatilis* (Radoman 1973) Zrmanja-folyó középső részén, a Nevetva-folyó alsó részén Kerla és Opusin közt (Radoman 1985) (27. ábra: 2).

Horvátország: Bosznia-Hercegovina (Montenegro) Ponto-mediterrán elemek:

Lithoglyphus fuscus (Pfeiffer 1828) A Száva mellékfolyói az Una és Urbas (Radoman 1985) (27. ábra: 3). *Lithobitella chilodia* (Westerlund 1886). Spiron Izvor Studenac-patak Braceni falu közelében Virpazartól nem messze (Radoman 1985) (27. ábra: 4). *Pseudamnicola miliaria* (Frauenfeld 1863) Una-forrás melletti Neteka (Kabat-Herschler 1993) (27. ábra: 5). *Dalmatella shati* (Velkovrh 1970) A Kerka-patakhoz közeli patak Sibeniknél (Kabat-Herschler 1993) (27. ábra: 6). *Lanzaia elephantota* (Brusina 1906) forráscsiga Dalmáciában (J.Bole 1968) (27. ábra: 7). *Bithynella kapciana* (Radoman 1976) Marjerovo Vrelo Gracka-patak Velebit-hegység Klamac-patak, a Plitvicei úttól 4-5 km-re (Radoman 1983) (27. ábra: 8).

Horvátország (Dalmácia) Szlovénia: Ponto-mediterrán elemek:

Graziana lackeineri adrolitoralis (Radoman 1975) délré Delnicétől Lakve falunál kis patak, Zdrava voda, Adria tengerparton nagy patak, a Karlovai-Rijekai útnál, Kispatkak Hiriska Bistricénél északnyugatra Rijekától, Podrajenál patak közel Hiriska Bistricéhez, Rijecinanál kis patak, Vrulja Javor falunál kis patak és Krmin falunál, továbbá keletre Bribistől patak, Lakve falunál forrás, Kozji Lemnál patak, Rejnevica falunál patak nyugatra Brinjetől (Radoman 1983) (28. ábra: 1). *Turbo elephantotus* (Mühlfeld 1824) Adria part és Kroatica határos régió vizei (Radoman 1983) (28. ábra: 2). *Belgrandiella zermanica*

Vrhnika (Radoman 1985) (Fig. 29: 1). *Kerkia kusceri* (Bole 1961). Jama Krka cave SE of Ljubljana (Radoman 1985) (Fig. 29: 2). *Paladilhiopsis grobléni* (Kuscer 1928). Southern slopes of Javornik, in the Vranjagrec cave, near Seonica (Radoman 1985) (Fig. 29: 3). *Paladilhiopsis robicina* (Clessin 1882) creek at Potoce north of Kranj (Radoman 1985) (Fig. 29: 4). *Bokana umbilicata* (Kuscer 1932). Spring of Ljubljanica, at the road of Ljubljana-Postejna (Radoman 1985) (Fig. 29: 5). *Belgrandiella pageti* (Schütt 1970). Tounjcica Care near Tounj, area of the Kupe channel (Radoman 1985) (Fig. 29: 6). *Belgrandiella kuesteri* (Boeters 1970). Smarna Gore creek at Kraina NE of Ljubljana, area of the Sava channel, the channel areas of Ljubljanica and Kerka rivers, at Robic 5 km of Cerknica (Radoman 1985) (Fig. 29: 7). *Belgrandiella robusta* (Radoman 1975) Vrkaika: Loska Dolina creek (Radoman 1985) (Fig. 29: 8). *Belgrandiella conica* (Radoman 1975) creek Mrzik, southern parts of the Cerknica Basin 3 km west of Obra (Radoman 1985) (Fig. 30: 1). *Belgrandiella crucis* (Kusce 1928) Gorenje Jezero, Ofazerski Obrha, eastern fringe of the Cerknica Basin (Radoman 1985) (Fig. 30: 2). *Belgrandiella superior* (Kuscer 1932) Krizna Jama (Radoman 1985) (Fig. 30: 3). *Belgrandiella schlescki* (Kuscer 1932). Krizna Jama Blaska Polica and Loz, 15 km of Cernica (Radoman 1985) (Fig. 30: 4). *Belgrandia kusceri* (Wagner 1914) Rakovski creek at Rakk (Radoman 1985) (Fig. 30: 5). *Sadleriana schmidti* (Menke 1852) Suslica at the Krka creek, near Nova Mestro (Radoman 1985) (Fig. 30: 6). *Hauffenia wagneri* (Kuscer 1928) Vranja Pec Cave north of Sevnica, Kranja Valley north of Sevnicatól (Radoman 1985) (Fig. 30: 7). *Neohoratia subpiscinalis* (Kuscer 1932) creek near Ljubljana (Kabat-Herschler 1993) (Fig. 30: 8). *Mikrsalpinx subscripta* (Kuscer 1932) Bistra creek at Ljubljana (Kabat-Herschler 1993) (Fig. 31: 1). *Mervicia exinua* (Bole 1967) Dovjec north of Ljubljana (Kabat-Herschler 1993) (Fig. 31: 2). *Paludina fluminensis* (Schütt 1847), creek near Ljubljana (Kabat-Herschler 1993) (Fig. 31: 3). *Lanzaiopsis savinica* (Bole 1989), near Luce in the Sabinska Alps (Kabat-Herschler 1993) (Fig. 31: 4). *Hauffenia kusceri* (Bole 1961) Krka creek SW of Ljubljana. (J.Bole 1968) (Fig. 31: 5). *Belgrandiella umbilicata* (Kuscer 1932) Malcilnik spring at the river Ljubljana (Kabat-Herschler 1993) (Fig. 31: 6).

Croatia-Slovenia: Ponto-Mediterranean Elements: *Bithynella lacheineri* (Küster 1852), *Bythinella schmidti* (Küster 1852). SE Alps, Dinarides, Velebit south of Zagreb, Southern Croatian Mts, Slury, Ogulin, Jesernica, Paenik Ogelin, Detulja, Plaska by Vratnik, - Krizhizing, Sanjoska draga, Kistenja spring in the Velebit, Stiranca, Brusara, Jedovna at 860 m Ostra (Soós 1943) (Fig. 31: 5).

Slovenia-Serbia-Macedonia: Ponto-Mediterranean Elements:

Sadleriana fluminensis (Küster 1852). Ljubljana river near Vrnike, creek near Skopja, Istrico river at Zezero, creek at Brezicé, creek at Koston-Javica (Radoman 1985) (Fig. 31: 6).

Slovenia-Serbia-Italy: Ponto-Mediterranean Elements:

Emericia patula (Brumati 1838) Tinara river not far from Triest,1 Malfalcone (Italy), Neretva (Serbia) (Radoman 1985) (Fig. 31: 7).

(Radoman 1973) Zrmanja-folyó Jankovica lenk felett (Radoman 1985) (28. ábra: 3).

Horvátország Ponto-mediterrán elem:

Iglica luxurians (Kuscer 1932) Podgora-forrás Podgoranál Vrlikohoz közel (RADOMAN 1985) (28. ábra: 4).

Szlovénia: Ponto-mediterrán elemek:

Sadleriana robici (Clecin 1890) Krka-folyó Brznicé-nél, Globucianál, Kostanjevicanál (Radoman 1985) (28. ábra: 5). *Lithoglyphus neofontinalis* (Radoman 1978) Grabroruc patak, Urka-folyó, Iscica-folyó Ljubljanatól délre (Radoman 1985) (28. ábra: 6). *Erythropomatia verdica* (Radoman 1978). Verd falunál a Verd-patakban Vrhnika közelében (Radoman 1985) (28. ábra: 7). *Erytropomatiana erythropornatia* (Hauffen 1856). Babja Lukaj-völgy Goricana falu közelében északnyugatra Ljubljanatól. (Radoman 1985) (28. ábra: 8). *Hauffenia michleri* (Kuscer 1932) Mocilmik: Ljublajica-forrás Vrhnika közelében (Radoman 1985) (29. ábra: 1). *Kerkia kusceri* (Bole 1961). Jama Krka-barlang Ljubljanatól délkeletra (Radoman 1985) (29. ábra: 2). *Paladilhiopsis grobléni* (Kuscer 1928). Javornik-hegy déli oldala Vranjagrec-barlang, Seonica közelében (Radoman 1985) (29. ábra: 3). *Paladilhiopsis robicina* (Clessin 1882) patak Potoce falunál északra Kranjtól (Radoman 1985) (29. ábra: 4). *Bokana umbilicata* (Kuscer 1932). Ljubljanica-folyó forrása, a Ljubljana-Postejna útnál (Radoman 1985) (29. ábra: 5). *Belgrandiella pageti* (Schütt 1970). Tounjcica Care közelében Tounj városhoz, a Kupe-csatorna areája (Radoman 1985) (29. ábra: 6). *Belgrandiella kuesteri* (Boeters 1970). Smarna Gore-patak Kraina északkeletere Ljubljanatól, a Száva-csatorna areája, Ljubljanica- és Kerka-folyó, -csatorna areája, Robicnál 5 km-re Cerknica váröstől (Radoman 1985) (29. ábra: 7). *Belgrandiella robusta* (Radoman 1975) Vrkaika falunál a Loska Dolina nagy patak (RADOMAN 1985) (29. ábra: 8). *Belgrandiella conica* (RADOMAN 1975) a Mrzik-patak, a déli része a Cerknica-medencének 3 km-re nyugatra Obratól (Radoman 1985) (30. ábra: 1). *Belgrandiella crucis* (Kusce 1928) Gorenje Jezero falunál Ofazerski Obrha keleti vége a Cerknica-medencének (Radoman 1985) (30. ábra: 2). *Belgrandiella superior* (Kuscer 1932) Krizna Jama (Radoman 1985) (30. ábra: 3). *Belgrandiella schlescki* (Kuscer 1932). Krizna Jama Blaska polica és Loznál, Cernicatól 15 km-re (Radoman 1985) (30. ábra: 4). *Belgrandia kusceri* (Wagner 1914) Rakovski-patak Rakknál (Radoman 1985) (30. ábra: 5). *Sadleriana schmidti* (Menke 1852) Suslica a Krka-pataknál, Nova Mistrohoz közel (Radoman 1985) (30. ábra: 6). *Hauffenia wagneri* (Kuscer 1928) Vranja Pec-barlang északra Szevnicatól, Kranja-völgy északra Sevnicatól (Radoman 1985) (30. ábra: 7). *Neohoratia subpiscinalis* (Kuscer 1932) patak Ljubljana közelében (Kabat-Herschler 1993) (30. ábra: 8). *Mikrsalpinx subscripta* (Kuscer 1932) Bistra-patak Ljubljanánál (Kabat-Herschler 1993) (31. ábra: 1). *Mervicia exinua* (Bole 1967) Dovjec északra Ljubljanatól (Kabat-Herschler 1993) (31. ábra: 2). *Paludina fluminensis* (Schütt 1847), Ljubljana közelében patak, folyó (Kabat-Herschler 1993) (31. ábra: 3). *Lanzaiopsis savinica* (Bole 1989), Luce közelében a Sabinska-Alpokban (Kabat-Herschler 1993) (31. ábra: 4). *Hauffenia kusceri* (Bole 1961) Krka-patak délnyugatra

Austria-Slovenia :Alpian- Ponto-Mediterranean Elements:

Paludina lacheineri (Küster 1852), Andritz Ursprung near Graz, Merica creek at the road to Dravograd, creek at Bela Vodal, Huda Likaja creek, at the road to Velenje (Karavankas) Kurska Gora creek, creek at Lepetnik, Vinska Gora, north of Celje, creek at Paka close to Velenje (Radoman 1985) (Fig. 32: 2). *Bithynella schmidti schmidti* (Küster 1852) Ina valley Northern Tirolean Limestone Alps, Lack region Bavaria, Krumback spring at Oszhen Hausen Würthian Algau-Tirolean Alps, cave at Babja Luknja 13 km NW of Ljubljana, channelized area of the river Sava. Krajnska Góra Begunja creek, creeks at Tirosek and Bac, Meznice Resnica, Jarj (Radoman 1985) (Fig. 32: 3).

Summary

The studied area yielded 261 taxa dwelling in springs, creeks, rivers, karst waters, lakes, and coastal brackish waters. The distribution of these are the following: European Elements with a scattered distribution: 1; Carpathian Elements 4, Carpathian-Alpian Elements 1, Ponto-Caspian 5, Euxinian 22, Ponto-Mediterranean 229. The majority of the Ponto-Mediterranean Elements occur in the following countries: Greece 20, Albania 71, Montenegro 20, Bosnia-Herzegovina 19 and Slovenia 26. Croatia yielded 19 taxa including the shared border regions as well. While Slovenia and the Austrian Alps had 2 elements of this group.

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Ljubljánától. (J.Bole 1968) (31. ábra: 5). *Belgrandiella umbilicata* (Kuscer 193) Malcilmik-forrás a Ljubljana-folyónál (Kabat-Herschler 1993) (31. ábra: 6).

Horvátország Szlovénia Ponto-mediterrán elem:

Bithynella lacheineri (Küster 1852), *Bythinella schmidti* (Küster 1852). Délkeleti-Alpok, Dinaridák, Velebit Zágrából délre, Délhorvát-hegyvidék, Slury, Ogulin, Jesernica, Paenik Ogelin, Detulja, Plaska mellett Vratnik, -Krizhizung mellett, Sanjoska draga, Kistenja-forrás a Velebitben, Stiranca, Brusara, Jedovna 860 m-en Ostra (Soós 1943) (31. ábra: 7).

Szlovénia, Szerbia, Macedónia: Ponto-mediterrán elem:

Sadleriana fluminensis (Küster 1852). Ljubljana-folyó Vrníkéhez közel, Skopja közelében, patak Zezero falunál, Istrico-folyó, Brezicénél patak, Koston-Javicanál patak (Radoman 1985) (31. ábra: 8).

Szlovénia-Szerbia, Olaszország Ponto-mediterrán elem:

Emericia patula (Brumati 1838) Tinara-folyó nem messze Triesttől Malfalcone (Olaszország), Neretva (Szerbia) (Radoman 1985) (32. ábra: 1).

Ausztria-Szlovénia Alpi-Pontomediterrán elemek:

Paludina lacheineri (Küster 1852), Andritz Ursprung Graz mellett, Merica-patak a Dravográdi útnál, patak Bela Vodenál, Huda Likaja-patak, a Velenjei útnál (Karavankák) Kurska Gora falunál patak, Lepetnik falunál patak, Vinska Goránál patak, északra Celjétől, Paka falunál patak Velenjéhez közel (Radoman 1985) (32. ábra: 2). *Bithynella schmidti schmidti* (Küster 1852) Ina-völgy, Észak-Tirol mészalapok, Lack-terület Bayer-Felső Sváben, Krumback-forrás Oszhen Hausennál, Würth, Algau-Tiroli mészalapok, barlang Babja Luknja 13 km-re északnyugatra Ljubljánától, a Száva csatornázási területe. Krajnska Górán a Begunja-patak, Tirosek falunál patak, Bac falunál patak, Meznicénél patak, Resnicanál patak, Jarj falunál patak (Radoman 1985) (32. ábra: 3).

Összefoglalás

A vizsgált területen 261 faj került elő. Ezek forrásokban, patakokban, folyóvizekben, karsztvizekben és tengerparti brakkvizekben fordulnak elő. Széttagolt elterjedésű európai elem 1, Kárpáti 4, Kárpáti-Alpi 1, Ponto-Caspi 5, Euxin 22, Ponto-mediterrán 229. A legtöbb Ponto-mediterrán elem Görögországban 20, Albániában 71, Montenegróban 20, Bosznia-Hercegovinában 19 és Szlovéniában 26 fordul elő. Horvátországban a határterületekkel együtt 19 faj került elő. Az ausztriai Alpokban és Szlovénia ponto-mediterrán területén 2 faj él.

Literature / Irodalom

Angel M. Angelov (2000): Catalogus Faunae Bulgaricae 4. Mollusca (Gastropoda et Bivalvia aquae dulcis. Pensoft et Brackhuys Publishers B.V. Sofia-Leiden 1-57.

- Bilgin, F. (1980): Bati Analoluinun bazi önemli tatlı sulasından tגולanan Mollusca türlerinin sistematigi ve dagilisi. Diyarbakır üniverisitesi Tip. Fakultesi Dergisi Vol2. Diyarbakır 1-64.
- Bole, J. (1968): Zur Problematik der Gattung Lanzaia Brusina (Gastropoda) Bioloski Vestnik VII. Ljubljana 55-59.
- Butot L. J. M., Walter-Schultes, F. (1994): Bibliography of the Mollusc faune of Grece 1758-1994 schriften zur Malakozoologie aus den Haus der Natur, Cismar Heft 7. 1-160.
- Dhora, Dh et Walter-Schultes, F.W. (1996): List of species and atlas of the non-marine molluscs of Albania Schriften zur Malakozoologia Heft 9. Cismar, 90-197.
- De Lattin, G. (1967): Grundriss der Zoogeographie, Gustav Fischer Verlag, Jena, 1-602.
- Dévai Gy. (1976): A magyarországi szitakötő (Odonata) fauna chorologiala vizsgálata (The chorological research of the dragonfly (Odonata fauna of Hungary) Acta Biol. Debrecina Debrecen, 13 (1), 119-157.
- Grossu, A. (1986): Gastropoda Romaniae I. Editura Litera Bucuresti, 1-524.
- Jaeckel, S.G., Klemm. W.Meise, W. (1957): Die Land und Süßwasser der Nördlichen Balkanhalbinsel. Abh.und Berichte aus dem Statlichen Múseum für Tierkunde Forschungstelle, Dresden 23,2, 141-205.
- Jaeckel, S.G., Klemm. W.Meise, W. (1975): Die Land und Süßwasser-mollusken der nördlichen Balkanhalbinsel. Abh. Der Tierkunde, Dresden 23(2)., Leipzig, 141-205.
- Kabat Alan, R et Herschler, R (1993): The Prosobranch snail Family Hydrobiidae (Gastropoda: Rissoidae) Review of classification and supraspecific Taxa. Smithsonian Institution Press, Washington D.C. 1-94.
- Lisicky M. J. (1991): Mollusca Slovenska VEDA Slovenskaj Akadémie vied Bratislava 1-341.
- Lozek V. (1956): Klic Ceskoslovenskje Měkkys Slovenska Akadémia Vied Bratislava 1-437.
- Pintér L., Richnovszky A., S.Szigethy A. (1979): A magyarországi recens puhatestűek elterjedése. Soósiana Suppl. 1., 1-351.
- Radoman, P. (1983): Hydrobioidea a Superfamily of Prosobranchia (Gastropoda) 1. Systematics. Serbian Academy of Sciences and Arts monograph Vol.DXLVII, Beograd 1-209.
- Radoman P. (1985): Hydrobioidea. A Superfamily of Prosobranchia (Gastropoda) II. Origin zoogeography. Evolution ize the Balkans and Asia Minor, Beograd 1-173.
- Rähle, W. (1980): Land und süßwassermollusken von Kephallinia und zakynthos (Ionische Inseln) Arch. Moll. 110 (4-6), 199-224.
- Schütt, H. (1980): Zur kenntnis griechscher Hydrobiiden Arch. Moll. Frankfurt am Main 110 (4-6) 115-149.
- Snegarova, L. (1954): Gastropoda fauna. Achridsko Ezero, Acta musei Macedonici Scientarium Naturalium, Skopje Tom 11, 55-64.
- Soós L (1943): A Kárpát-medence Mollusca-faunája Budapest Magyar Tudományos Akadémia 1-478.
- Varga Z. (1971): A szétterjedési centrumok és a szétterjedési folyamat jelentősége a földrajzi izoláció kialakulása és a mikroevolúció szempontjából. Állattani Közlemények 18, (1-4); 142-149.
- Varga, Z (1975): Geographische Isolation und subspeciation bei den Hochgebirgslepidopteren der Balkanhalbinsel Acta Entomol. Jugoslavia 11 (1-2): 5-40.
- Wollrath Wiese (1996): The non marine Mollusca of Albania Schriften zur Malakozoologie aus dem Haus der Natur, Cismar Heft 9; 1-224.
- Peter Glöer (2002): Die Tierwelt Deutschland 73. Teil Die Süßwassergastropoden Nord und Mittel Europas Conde Books 1-327.
- Zilch, A., Jaeckel, S.G.A. (1961): Die Tiervelt Mittel Europas Mollusken. Verlag von Quelle et Meyer Leipzig 1-286.
- Welter-Schultes, F.W. (1996): Nou marine molluscs recently collected in Albania. Schriften zur Malakozoologie aus dem Haus der Natur Cismar Hef9. 21-32.