

New localities of rare and threatened species of *Geastrum* (*Lycoperdales*) in Poland

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The paper contains the non-published materials on 9 species of the genus *Geastrum*, collected in 40 localities in Poland during the years 1908–2000. *G. pectinatum* is new to Polish Carpathians.

Key words: *Geastrum*, distribution, new localities, rare and threatened fungi.

INTRODUCTION

The species of the genus *Geastrum* in Poland are mentioned in the Polish monograph of gasteromycetous fungi (Rudnicka-Jezińska 1991). All these species from this genus are rare or very rare and threatened (Wojewoda 1991, 1999; Wojewoda and Ławrynowicz 1992).

The paper concerns 9 species of *Geastrum* collected in 40 localities in Poland, during the years 1908–2000. All examined materials are deposited in KRAM.

The names of species were used according to Rudnicka-Jezińska (l.c.) and Sunhede (1990), the geographical names according to Ciętek and Pietkiewicz (1974) and Kondracki (1976, 1994).

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LIST OF NEW LOCALITIES

Abbreviations: *Ai* – *Alnetum incanae*; *DeF* – *Dentario enneaphyllidis-Fagetum*; *DgF* – *Dentario glandulosae-Fagetum*; *Fc* – *Fagetum carpaticum*; E, R, V – E – endangered, R – rare, V – vulnerable (the Red Book categories according to Wojewoda and Ławrynowicz loc.); Jül. – Jülich (1984); KRAM – Herbarium of Fungi, Institute of Botany, Polish Academy of Sciences, Kraków (F – Fungi); Kriegl. – Krieglsteiner (1991); *LP* – *Leucobryo-Pinetum*; m a.s.l. – meters above sea level; *PA* – *Phyllitido-Aceretum*; *PcC* – *Peucedano cervariae-Coryletum* = *Corylo-Peucedanetum cervariae*; Ref. – References; Rudn. – Rudnicka-Jezierska (1991); Sunh. – Sunhede (1990); *TC* – *Tilio-Carpinetum*; *VuP* – *Vaccinio uliginosi-Pinetum*; W.W. – W. Wojewoda.

Geastrum coronatum Pers.

[non *G. coronatum* (Schaeff.) Schroet. = *G. quadrifidum* Pers.: Pers.]
– *G. limbatum* Fr.

Południowobatyckie Lakelands, Września Plain: 1. Kórnik ca 20 km SE of Poznań, in the arboretum of the Institute of Dendrology of the Polish Academy of Sciences, on the ground, under *Syringa* sp., 9 Sept. 1963, leg. W.W., KRAM–F 27286; capillitial hyphae 1.8–9.6 μm wide, not branched or very sparsely only, spores 4.8–.6 (7.2) μm in diameter (ornamentation included), gleba dark brown to blackish-brown.

Threat: V.

References: Jül. 481 – Kriegl. 159, map 310 – Rudn. 82, figs. 19: 1–3; 20: 10 – Sunh. 147, figs 54–62.

Geastrum fimbriatum Fr.

G. rufescens Pers. emend. Wavren (non *G. rufescens* Pers.: Pers.)
– *G. sessile* (Sow.) Pouz.

Lvov Upland (Wschodniomałopolska Upland), Roztocze Środkowe: 1. Near Stara Huta: Lasowe ("Lasowce"), ca 8 km SE of Zwierzyniec, ca 25 km SW of Zamość, in grassy place in the coniferous forest with *Abies alba* and *Picea abies*, on the ground, among grass, 16 July 1988, leg. M. A. Słomczyńska and P. Słomczyński, KRAM–F 29381.

N Podkarpacie, Kraków Gate: 2. Kraków, Tyniec Hills, near Podgórci Tynieckie housing estate, in deciduous forest (*TC* × *PcC*), on calcareolous soil, 28 Sept. 1974, leg. Z. Wojewoda, KRAM–F 15100. Vistula Lowland: 3. Niepołomice Forest (99 forest section), near Kraków, NE of Chobot, in deciduous wood (*TC*), on the ground, 20 Sept. 1969, leg. B. Książek, KRAM–F 28757.

External W. Carpathians, Gorce Mts.: 4. Piekielko stream valley, ca 1 km. NW of Maniowy, 15 km. E of Nowy Targ, under Mt. Gola Góra, ca 600–700 m a. s.l., in *Alnus incana* forest (*Ai*), on the ground, Aug. 1963, leg. J. Kornas, KRAM–F 28758. 5. Gorce National Park: ca 1 km. E of Przechybka Pass, in the Jaszcz stream valley, ca 5 km N of Ochotnica Górna village centre, ca 13 km NE of Nowy Targ, ca 750 m a.s.l., in the mixed forest, on the ground, 28 July, leg. W. W., KRAM – 50346. 6. Beskid Sądecki Mts.: Mt. Jaworzyna Krynicka Range, W slope of Mt. Makowica, on the bank of Poprad river, near Rytro, ca 15 km S of Nowy Sącz, ca 400 m a.s.l., in deciduous forest (*TC*), on the ground, 20 Aug. 1999, leg. W.W., KRAM–F 50309. This species is new to Gorce Mts. and Gorce National Park.

Central W Carpathians, Orawa-Nowy Targ Basin: 7. Bór na Czerwonym reserve, ca 2.5 km. S of Nowy Targ centre, ca 600 m a.s.l., in coniferous forest, on the ground, under *Picea abies*, 31 July 1976, leg. Z. Heinrich, KRAM–F 25291; basidiospores 2.4–3.6 μm in diameter. Pieniny Mts., Pas Skalicy Spiskich Range: 8. Przełom Białki pod Krempachami reserve, Mt. Kramnica, ca 650 m a.s.l., in the spruce forest with *Pinus sylvestris*, on calcareous soil, 23 Aug. 1968, leg. A. Środoń, KRAM–F 28785. Podtatrzański Rift Fault: 9. Jurgów, Szalasy Jurgowskie, ca 14 km NE of Zakopane, on the Białka river bank, ca 765 m a.s.l., in the forest with *Abies alba* and *Picea abies*, 27 Aug. 1968, leg. A. Środoń, KRAM–F 28786. W Tatra Mts., Tatra National Park: 10. Spadowiec stream valley, near Mt. Kazalnica and Pod Reglami road, between Strążyska and Białego valleys, ca 940 m a.s.l., in mixed forest (*DgF*), on the ground, 7 Oct. 1973, leg. Z. Mirek, KRAM–F 27210. This species is new to Orawa–Nowy Targ Basin.

Wschodniobałtyckie Lakelands, Wschodniosuwalskie Lakeland: 11. Near Giby, ca 8 km S of Sejny, ca 30 km SE of Suwałki, in mixed forest, on the ground, under *Corylus avellana*, 7 Sept. 1974, leg. V. Holubová, KRAM–F 32283. Augustów Plain, Augustów Primeval Forest: 12. Near Płaska, ca 22 km NE of Augustów, Perkuć reserve, on the bank of the Mikaszewo lake, in the mixed forest, on the ground, 8 Sept. 1974, leg. Z. Heinrich, KRAM–F 32284.

Threat: R.

Ref.: Jül. 479 – Kriegl. 159, map 311 – Rudn. 1991: 84, figs. 17: 4; 20: 12; pls. XIV: 4, XV: 7 – Sunh. 1990: 180, figs. 68–76.

Geastrum minimum Schwein.

Śląsk–Kraków Upland, Jaworzno Hills: 1. Jaworzno, Ciężkowice housing estate, ca 3 km W of Jaworzno Ciężkowice railway station, in the pine forest (*LP*), on sandy soil, under *Pinus sylvestris*, 10 Oct. 1962, leg. W.W., KRAM–F 27300. Częstochowa Upland: 2. Mirów village near Mirów castle, ca 8 km SE of Żarki, ca 30 km SE of Częstochowa, on calcareous rocks, on the ground, 25 Sept. 1938, leg. E. Panow (?), KRAM–F 28768.

3. Near Ryczów, ca 6 km SE of Ogradzieniec, ca 15 km NE of Olkusz, in the beech forest with *Pinus sylvestris*, on calcareous soil, among mosses, 24 Apr. 1962, leg. M. Kuc, KRAM – F 27303. Olkusz Upland: 4. Between Podlesie and the ruins of the Rabsztyn castle, ca 6 km NE of Olkusz, at a skirt of the pine forest (*LP*), on sandy soil, 9 Oct. 1963, leg. W.W., KRAM – F 27302.

N Podkarpacie, Tarnobrzeg Plain: 5. Góra Cyranowska Hill, E of Mielec, on the ground, 1 May 1908, leg. W. Szafer, KRAM – F 27304.

Threat: V.

Ref.: Jül. 481 – Kriegl. 160, map 316 – Rudn. 76, figs. 19: 4–5; 20: 7; pl. XII: 6–7 – Sunh. 256, figs. 107–117, 235 B, 236 B.

Geastrum pectinatum Pers.

External W Carpathians, Gorce Mts., Mt. Lubań Range: 1. On the S slope of Mt. Runek, ca 3 km N of Maniowy, ca 17 km E of Nowy Targ, ca 700–800 m a.s.l., in the pine forest, under *Pinus sylvestris*, on the ground, Aug. 1963, leg. J. Kornaś, KRAM – F 28771. Mt. Turbacz Range: 2. Under Mt. Turbacz, Łopuszna: Zarębek Niżni, ca 8 km NE of Nowy Targ, ca 650 m a.s.l., in the spruce forest, on the ground, under *Picea abies*, 10 Oct. 1984, leg. A. Siemińska, KRAM – F 32163; basidiospores globose, epispore dark umber brown, closely covered with irregular, prominent, flattopped warts. This species is new to Gorce Mts. and Polish Carpathians.

Podlasie-Belarus High Plains, Bielsk Podlaski Plain, Białowieża Primeval Forest: 3. NE of Hajnówka, in spruce forest, under *Picea abies*, on the ground, 4 Sept. 1966, leg. W.W., KRAM – F 17945.

Threat: V.

Ref.: Jül. 477 – Rudn. 73, figs. 17: 6; 18: 2; 20: 4; pl. IX: 4–6 – Sunh. 294, figs. 124–132.

Remarks. This species is new to Polish Carpathians.

Geastrum quadrifidum Pers.: Pers.

= *G. coronatum* (Schaeff.) Schroet. in Cohn (non *G. coronatum* Pers.)

Środkowo-Malopolska Upland, Końskie Hills (Suchedniów High Plain): 1. Świnia Góra reserve, ca 6 km SW of Bliżyn, ca 12 km SW of Skarżysko-Kamienna, in the beech forest, on dead, very decayed, lying trunk, among mosses, 4 Apr. 1960, leg. W.W., KRAM – F 27291. Wschodniobałtyckie Lakelands, Augustów Plain, Augustów Primeval Forest: 2. Near Jazy, between Płaska and Mikaszówka, ca 25 km NE of Augustów, in the mixed forest, on the ground, 4 Sept. 1974, leg. Z. Heinrich, KRAM – F 32285.

Podlasie-Belarus High Plains, Bielsk Podlaski Plain, Puszcza Białowieńska Primeval Forest: 3. NE of Hajnówka, in spruce forest, on the ground, under *Picea abies*, 4 Sept. 1966, leg. W. W., KRAM – F 17947.

4. Białowieża National Park, 224 forest section, in wet pine forest (*VuP*), on the ground, under *Pinus sylvestris*, 29 Aug. 1973, leg. W.W., KRAM—F 14451.

External W Carpathians, Gorce Mts., Mt. Turbacz Range, Gorce National Park: 5. Between Mt. Gorc peak and Świnkówka Mountain Meadow, ca 6 km. N of Ochotnica Górna centre, ca 20 km. NE of Nowy Targ, ca 1000 m a.s.l., in the spruce forest, on the ground, under *Picea abies*, 26 July 2000, leg. W.W., KRAM—F 50347.

Central W Carpathians, Orawa—Nowy Targ Basin: 6. Bór Bielski Forest, on left of the road from Łopuszna to Nowa Biała, ca 8 km of Nowy Targ, ca 610 m a. s.l., in spruce forest, on the ground, under *Picea abies*, 9 Sept. 1982, leg. W.W., KRAM—F 19088. This species is new to Orawa—Nowy Targ Basin.

Wschodniobałtyckie Lakelands, Land of Great Mazurian Lakes: 7. Between Mikołajki and Ruciane—Nida, near Kamień, on the Beldany Lake bank, in the coniferous forest with *Picea abies* and *Pinus sylvestris*, on the ground, 2 Sept. 1966, leg. W.W., KRAM—F 17946, rev. S. Sunhede 1989.

Threat: R.

Ref: Jül. 478 — Kriegl. 161, map. 318 — Rudn. 70, figs. 17: 5; 19: 6; 20: 3; pl. X: 2 — Sunh. 338, figs. 146—152.

Geastrum rufescens Pers.: Pers.

(non *G. rufescens* Pers. emend. Waveren = *G. fimbriatum* Fr.)

— *G. vulgatum* Vitt.

Śląsk—Kraków Upland, Jaworzno Hills: 1. Chrzanów, Kolonia Leśna housing estate, in young deciduous forest, on the ground, in rich soil, among fallen leaves, 26 Sept. 1984, leg. L. Olesiński, KRAM—F 27352; basidiospores (2.5)3.0—4.8(5.4) μm in diameter. Częstochowa Upland: 2. Between Klucze and Ogrodzieniec, on calcareous rocks, in the beech forest with *Pinus sylvestris*, on the ground, 27 Aug. 1963, leg. W. W., KRAM—F 28775, basidiospores 4.2—5.0 μm . Krzeszowice Rift Fault: 3. Kobylany Ravine, 16 km NW of Kraków, in a young deciduous forest, on calcareous soil, on the ground, 2 Nov. 1975, leg. A. Siemińska, KRAM—F 30601, basidiospores 3.6—5.4 μm .

N Podkarpacie, Kraków Gate: 4. Kraków, Sikornik, at a skirt of a young deciduous forest, on calcareous soil, 15 Sept. 1975, leg. W.W., KRAM—F 30600; basidiospores 4.8—6 μm in diameter.

Threat: E.

Ref: Jül. 479 — Kriegl. 162, map 321 — Rudn. 83, fig. 20: 11; pls. IX: 2, XII: 8 — Sunh. 357, figs. 155—164.

Geastrum schmideli Vitt.

— *G. nanum* Pers.

Lvov Upland (Wschodniomałopolska Upland), Central Roztocze: 1. Stara Huta, Lasowe ("Lasowce"), ca 8 km. SE of Zwierzyniec, ca 25 km SW of

Zamość, on a slope, at a skirt of the pine forest, on sandy soil, 16 July 1988, leg. M. A. Słomczyńska and P. Słomczyński, KRAM—F 29379.

N Pokarpacie, Vistula Lowland: 2. On the left of the road from Koprzywnica to Sandomierz, near Szewce, ca 10 km SW of Sandomierz, in grassy place with *Cerasus fruticosa* and *Stipa* sp., near a field, on loess soil, Oct. 1963, leg. W.W., KRAM—F 27308—27309.

Threat: E

Ref.: Jül. 476 — Kriegl. 161, map. 317 — Rudn. 76, figs. 19: 7—9; 20: 6; pl. XIV: 3 — Sunh. 397, figs 177—186.

Geastrum striatum DC.

— *G. bryantii* Berk.

Lvov Upland (Wschodniomałopolska Upland), Central Roztocze: 1. Stara Huta, Lasowe ("Lasowce") near bound of Roztocze National Park, ca 8 km SE of Zwierzyniec, ca 25 km SW of Zamość, on sandy slope, near the forest with *Pinus sylvestris*, 16 Juni 1988, leg. M. A. Słomczyńska and P. Słomczyński, KRAM—F 29379. 2. As above, in a garden near a house, on naked soil, 18 July 1988, leg. M. A. Słomczyńska and P. Słomczyński, KRAM—F. 29380. 3. As above, in deciduous forest, on the ground, under *Corylus avellana*, 16 July 1988, leg. A. M. Słomczyńska and P. Słomczyński, KRAM—F 29382.

N Pokarpacie, Tarnów High Plain: 4. Tarnów, Krasickiego street, in a room, in a flower-pot, on the ground, 1986, leg. T. Cybularz, KRAM—F 29739, basidiospores 3.6—6 μ m in diameter, capillitial threads up to 6 μ m wide. Rzeszów Piedmont: 5. Bolestraszyce near Przemyśl, in an arboretum, on the ground, 16.10.1994, leg. U. Bielczyk, KRAM—F 50345.

Threat: E.

Ref.: Jül. 476 — Kriegl. 162, map 323 — Rudn. 72, figs. 18: 4; 20: 5; pls. X: 1; XI: 4 — Sunh. 426, figs. 192—198.

Geastrum triplex Jungh.

— *G. indicum* (Klotzsch) S. Rauschert, ss. Rauschert, Dörfelt

Śląsk—Kraków Upland, Olkusz Upland: 1. Jaroszewiec ("Rabsztyn"), ca 6 km NW of Olkusz, in the forest with *Fagus sylvatica*, *Lunaria rediviva* and *Phyllitis scolopendrium* on calcareous rocks (*DeF* × *PA*?), according to Wojewoda (1961) *Fc*, according to Matuszkiewicz and Matuszkiewicz (1973) *DeF*, on the ground, together with *Langermannia gigantea* (Batsch: Pers.) Rostk., 9 Sept. 1993, leg. W.W., KRAM—F 34886.

Lvov Upland (Wschodniomałopolska Upland), Central Roztocze: 2. Stara Huta, Lasowe ("Lasowce"), ca 8 km SE of Zwierzyniec, ca 25 km SW of Zamość, at skirt of forest, near road, under *Aesculus hippocastanum*, 30 Sept.

1988, KRAM—F 29343, leg. A. M. Słomczyńska and P. Słomczyński. As 2, in *Alnus forest*, on naked soil, 20 Aug. 1989, leg. A. M. Słomczyńska and P. Słomczyński, KRAM—F 30886.

Threat: V.

References: Jül. 480 — Kriegl. 162, map 324 — Rudn. 67, figs. 18: 1; 19: 1; 20: 2; pl. IX: 3 — Sunh. 445, figs. 202—209.

REFERENCES

- Ciętak Z., Pietkiewicz A. 1974. Anglo-Polish Geographical glossary. Inst. Geogr. PAN, Warsaw.
- Jülich W. 1984. Die Nichtblätterpilze, Gallertpilze und Bauchpilze. In: H. Gams (ed.), *Kleine Kryptogamenflora 2b/1. Basidiomyceten 1*. Ed. G. Fischer, Stuttgart—New York.
- Kondracki J. 1978. *Geografia fizyczna Polski*. PWN, Warszawa.
- Kondracki J. 1994. *Geografia Polski. Mezoregiony fizycznogeograficzne*. Wyd. Nauk. PWN, Warszawa.
- Kriegsteiner G. J. 1991. *Verbreitungsatlas der Großpilze Deutschlands (West). Band 1: Ständerpilze Teil A: Nichtblätterpilze*. E. Ulmer, Stuttgart.
- Matuszkiewicz W., Matuszkiewicz A. 1973. Przegląd fitosocjologiczny zbiorowisk leśnych Polski. Cz. 1. Lasy Bukowe. *Phytocoenosis* 2: 143—202.
- Rudnicka-Jeziarska W. 1991. *Flora Polska. Grzyby (Mycota)*, 23: *Lycoperdales, Sclerodermatales, Tulostomatales, Nidulariales, Phallales, Podaxales*. PAN. Instytut Botaniki. Kraków.
- Sunhede S. 1990 (1989). *Geastraceae (Basidiomycotina)*. Synopsis Fungorum. 1. Fungiflora. Oslo.
- Wojewoda W. 1961 (1960). Obserwacje mikologiczne w płatach *Fagetum carpaticum* i *Pineto-Vaccinietum myrtilli* w okolicy Rabszyna. *Fragm. Flor. Geobot.* 6 (4): 725—768.
- Wojewoda W. 1991 (1990). Pierwsza czerwona lista grzybów wielkoowocnikowych (macrofunges) zagrożonych w polskich Karpatach. *Studia Ośr. Dokum. Fizjogr. PAN Oddz. Kraków* 18: 239—261.
- Wojewoda W. 1999. Czerwona lista grzybów wielkoowocnikowych Górnego Śląska. *Centr. Dziedz. Przyr. Gór. Śląska Raporty Opinie* 3: 8—51.
- Wojewoda W., Ławrynowicz M. 1992. Red list of threatened macrofungi in Poland. In: K. Zarzycki, W. Wojewoda, Z. Heinrich (eds.), *List of threatened plants in Poland*. 2 ed.: 27—56. Pol. Acad. Sci. W. Szafer Inst. Bot. Kraków.

Nowe stanowiska rzadkich i zagrożonych gatunków *Geastrum* (*Lycoperdales*) w Polsce

Streszczenie

W artykule wymieniono 40 stanowisk rzadkich i zagrożonych w Polsce 9 gatunków rodzaju *Geastrum*. Te wszystkie gatunki znajdują się na czerwonych listach grzybów wielkoowocnikowych zagrożonych w Polsce. Opisane tu stanowiska *Geastrum* zostały stwierdzone w latach 1908—2000. *G. pectinatum* został po raz pierwszy podany dla polskich Karpat. Badane okazy znajdują się w zbiorach KRAM.