

New taxa of *Hieracium* and *Pilosella* (Asteraceae) - from Northern and Central Greece

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Abstract: As a result of targeted collecting and systematical field studies and revisions of herbarium material of the genera *Hieracium* and *Pilosella* (Asteraceae), seven new species and two new subspecies of *Hieracium* and one new species of *Pilosella* from Northern and Central Greece are described and illustrated: *Hieracium sabaudolympicum* GOTTSCHL. & DUNKEL; *H. racolympicum* GOTTSCHL. & DUNKEL; *H. umbrolympicum* GOTTSCHL. & DUNKEL; *H. xanthicum* GOTTSCHL. & DUNKEL; *H. pseudolachenalii* GOTTSCHL. & DUNKEL; *H. gramosicum* GOTTSCHL. & DUNKEL; *H. racolympicum* subsp. *lycopifoliopsis* GOTTSCHL. & DUNKEL; *H. retyezatense* subsp. *spathopsis* GOTTSCHL. & DUNKEL; *H. camkorijense* subsp. *boreograecum* GOTTSCHL. & DUNKEL, and *Pilosella willingorum* GOTTSCHL. Due to the taxonomic evaluation of *H. pseudolympicum* ZAHN, a new combination of the taxon into *H. sparsum* FRIV. subsp. *pseudolympicum* (ZAHN) GOTTSCHL. & DUNKEL comb. nov. is proposed.

Zusammenfassung: Als Ergebnis von speziell der Gattung *Hieracium* (Asteraceae) gewidmeten Felduntersuchungen und Kartierungen in Nord-Griechenland sowie Revision von Herbarmaterial werden sieben neue Arten und zwei neue Unterarten der Gattung *Hieracium* und eine neue Art aus der Gattung *Pilosella* beschrieben und abgebildet: *Hieracium sabaudolympicum* GOTTSCHL. & DUNKEL, *H. racolympicum* GOTTSCHL. & DUNKEL, *H. umbrolympicum* GOTTSCHL. & DUNKEL, *H. xanthicum* GOTTSCHL. & DUNKEL, *H. pseudolachenalii* GOTTSCHL. & DUNKEL, *H. gramosicum* GOTTSCHL. & DUNKEL, *H. racolympicum* subsp. *lycopifoliopsis* GOTTSCHL. & DUNKEL, *H. retyezatense* subsp. *spathopsis* GOTTSCHL. & DUNKEL, *H. camkorijense* subsp. *boreograecum* GOTTSCHL. & DUNKEL und *Pilosella willingorum* GOTTSCHL. Die taxonomische Neubewertung von *H. pseudolympicum* ZAHN macht eine Umkombination dieses Taxons als Unterart von *H. sparsum* FRIV. nötig.

Key words: *Hieracium*, *Pilosella*, Greece, new species, new subspecies, new combination, lectotypification.

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INTRODUCTION

The knowledge of the genus *Hieracium* (Asteraceae) in Greece still depends mainly on investigations made in the 19th and early 20th centuries by Heldreich, Orphanides, Sintenis, Haussknecht, Baldacci, Halácsy, Bornmüller, and K.H. Rechin-ger. However, all these explorers were interested in the whole phanerogamic flora and paid attention to the genus *Hieracium* incidentally and only for some striking plants. Up until now, no systematic hieraciological research has been undertaken. The present knowledge of the genus *Hieracium* and *Pilosella* in Greece

is summarized in the annotated checklist by DIMOPOULOS et al. (2013) and the Med-check list edited by W. GREUTER (2008).

However, recently collected herbarium specimens of diverse botanists, seen by the first author, revealed some unknown and new taxa for the Greek flora. This led to the assumptions that the complete life-stock of the genus is unknown and that there is a richness and (reticulate) diversity in the genus known from other countries in the Balkans and from other genera of the Greek flora.

Therefore, we decided to start a new project entitled “The Reinvestigation of *Hieracium/Pilosella* in Greece.”

MATERIAL AND METHODS

Collection activities focused primarily on Northern Greece (for itinerary, see GOTTSCHLICH 2018; for collection sites, see map in DUNKEL & GOTTSCHLICH 2018).

The examination of the collected specimens was undertaken by the first author by means of an extensive available documentation of type specimens and other *Hieracium* collections from Greece, seen during the last three decades in the herbaria of APP, B, BASBG, BOLO, BORD, BOZ, BP, BREM, BRNM, BRNU, FR, G, G-BOISS, G-BU, GJO, GRM, GZU, HAL, HBG, HEID, IBF, JE, LAU, LI, LY, M, MSB, MSTR, NAP, NCY, P, STU, TAU, TUB, W, WU, Z/ZT as well as in the private collections of P. Authier, E. Bergmeier, E. Eleftheriadou, R. Franke, T. Götz, N. Hölzl, H. Kalheber, L. Meierott, J. Petermann, U. Raabe, A. Strid, K. Theodoropoulos and M. Zimmermann.

RESULTS

The *Hieracium* taxa new to the Greek flora, but formerly described from other countries, have been published separately (DUNKEL & GOTTSCHLICH, 2018). Here, taxa new to science are presented.

1. New species

1.1. *Hieracium gramosicum* GOTTSCHL. & DUNKEL, **spec. nova** (naegelianum – substellatum?) (Fig. 1, 11a)

Description: *Planta* perennis; *rhizoma* subcrassum, horizontale vel obliquum; *caulis* verticalis, rectus, solidus, (15)20–25(–30) cm altus, rubro-brunneus, subtiliter striatus, phyllopodus, pilis simplicibus nullis, pilis glanduliferis perparvulis sparsis vel modice densis, pilis stellatis sparsis vel modice densis perinsignes radiis longis; *folia rosularia* 4–6, petiolata, petiolus 1–3 cm longus viridis, pilis simplicibus sparsis, 1–1,5 mm longis, dentatis, pilis stellatis radiis longis modice densis, laminae exteriorum ellipticae, 1,5–4,5 × 1,3–1,7 cm, interiorum anguste ovatae-lanceolatae vel lanceolatae, 5–10 × 1,5–1,8 cm, subcoriaceae, griseo-virides, margine integerrimo vel remote denticulato, laminae basis breviter vel longe in petiolo attenuata, apex acutus, pilis simplicibus supra nullis, in margine et subtus in costa dorsali sparsis, 1 mm longis, dentatis, pilis glanduliferis nullis, pilis stellatis supra sparsis vel modice densis, subtus modice densis; *folium caulinum* solum lanceolatum vel anguste lanceolatum, integerrimum, color indumentumque ut in foliis basalibus; *synflorescentia* laxa paniculata vel racemoso-paniculata, raro racemosa, rami (0–)1–2(–3), arcuato-ascendentes, tenues (ø 0,4–0,5 mm), (2–)4–10(–12) cm longi, quisque calathodio 1–2(–3), calathodii (1–)2–5(–7), acladium 2,5–5 cm longum; *pedunculum* bracteis nullis, pilis simplicibus nullis vel solitariis, 1 mm longis, albis, basin versus atris, pilis glanduliferis nullis vel solitariis, 0,1–0,2 mm longis, pilis stellatis sparsis vel modice densis; *involucrum* 11–12 mm longum, semiglobosum vel late ellipsoideum; *involucris phylla* obscure olivacea vel atroviridia, anguste olivaceo-marginata, pauciserialia, 0,9–1 mm lata, exteriora subobtusata, interiora acuta, pilis simplicibus sparsis, 1–1,5 mm longis, infra medium atris, saepe

geniculatis, pilis glanduliferis sparsis, 0,3–0,5 mm longis, pilis stellatis modice densis; *ligulae* lingulatae, luteae, ligulorum dentes glabri; *styli* lutei; *alveoli achaeniae* non videtur; *florescentia*: Iulius.

Holotypus: Greece, Western Makedonia, Nom. Kastoria, western slope of Mount Gramos above the village Gramos (40°20'N 20°48'E), subalpine calcareous grasslands and screes, 1900 m s.m., 11.7.20117, G. Gottschlich-68090a & F. G. Dunkel-34506, B; **Isotypi:** UPA, Hb. Gottschlich-68090a, Hb. Dunkel-34506.

Etymology: Named after the Mount Gramos.

Taxonomy: Cursorily, *H. gramosicum* resembles *H. coloriscapum* but differs clearly by another indument of the capitula with the presence of stellate hairs and especially by the covering of the leaves with stellate hairs on both sides. Beyond that, these stellate hairs are of a special kind – long stalks and long rays – known only from *Hieracium* sect. *Stelligera*. *H. stelligerum* FROEL. itself is an endemic species of Southern France, occurring together with *H. substellatum* ARV.-TOUV. & GAUT., which is interpreted as “*H. stelligerum* – *planchonianum*”. Two subspecies of *H. substellatum* (subsp. *simonkaianum* ZAHN and subsp. *tordanum* (ZAHN) ZAHN) from Romania have been described. However, whether a relationship exists between *H. gramosicum* and *H. substellatum* must remain unsettled for the present. Nevertheless, this remarkable taxon is worth being registered.

1.2. *Hieracium pseudolachenalii* GOTTSCHL. & DUNKEL, **spec. nova** (bracteolatum – murorum) (Fig. 2, 11b)

Description: *Planta* perennis; *rhizoma* subcrassum, obliquum; *caulis* verticalis, rectus, solidus, (30–)40–60(–70) cm altus, olivaceus, inferne saepe rubro-brunneus, subtiliter striatus, phyllopodus, pilis simplicibus inferne sparsis, 2–3 mm longis, mollis, albis, sursum solitariis vel nullis, pilis glanduliferis perparvulis sparsis vel modice densis, pilis stellatis sparsis vel nullis; *folia rosularia* 3–5, petiolata, petiolus 3–5 cm longus, viridis vel rubrobrunneus, pilis simplicibus sparsis vel modice densis, laminae exteriorum obovatae, 3–5 × 2–2,5 cm, interiorum ovatae vel late ellipticae, 7–12 × 3–6 cm, molles, papyraceiformiter tenues, supra virides, subtus albo-virides, margine remote dentato vel serrato, raro denticulato, laminae basis breviter vel longe in petiolo attenuata, apex rotundatus vel acutus, pilis simplicibus utrimque sparsis, 0,8–1,2 mm longis, mollis, albis, in margine et subtus in costa dorsali modice densis, pilis glanduliferis stellatisque nullis; *folia caulina* 2–3(–5), cito decrescentia, inferior petiolo 3–5(10) cm longo, remote dentatum, media breviter petiolata vel cuneata-sessilia, breviter dentata vel denticulata, superiora rotundata-sessilia, denticulata vel integerrima, color indumentumque ut in foliis basalibus; *synflorescentia* paniculata vel racemoso-paniculata, raro racemosa, rami (1–)2–4(–6), stricti vel arcuato-ascendentes, tenues (ø 0,4–0,5 mm), (2–)5–10(–15) cm longi, quisque calathodio 1–2(–4), calathodii (2–)4–7(–10), acladium 1–2(–4) cm longum; *pedunculum* 1–3 bracteis albo-viridibus, pilis simplicibus sparsis, 1 mm longis, albis, pilis glanduliferis sparsis, 0,1–0,2 mm longis, luteis, pilis stellatis sparsis vel modice densis; *involucrum* (8–)9–10(–11) mm longum, semiellipsoideum; *involucris phylla* dilute viridia vel olivacea, albom-

arginata, pauciserialia, 1 mm lata, exteriora subobtusata, interiora acuta, pilis simplicibus sparsis, basin versus atris, pilis glanduliferis sparsis, 0,2–0,5 mm longis, pilis stellatis in margine sparsis vel modice densis, dorso plerumque nullis; *ligulae* lingulateae, luteae, ligulorum dentes glabri; *styli* lutei papillis nigris; *alveoli* margine breviter dentati; *achaenia* 2,5–3 mm longa, dilute brunnea; *florescentia*: Iulius.

Holotypus: Greece, Thessalia, Nom. Magnisia, Volos, SW Chánia, 750 m NW Agriolefkes (Mt. Pilio Ski Resort) (39°23'28"N 23°04'35"E), edge of *Fagus* forest, 1220 m s.m., 5.7.2013, F. G. Dunkel-30124, B; Isotypi: *Hieracia* Europaea Selecta No. 802 (FI, FR, H, IBF, LI, M, PAL, UPA, W, Hb. Gottschlich-60499, Hb. Dunkel-30124, Hb. Brandstätter).

Taxonomy: The specific epithet *H. pseudolachenalii* indicates a similar growth form and habitus as for the Central European *H. lachenalii*. However, this is only an analogy as the thin, paperlike leaves and the little capitula point to an influence of *H. bracteolatum* Sm. occurring in the same region. *H. bracteolatum* is a rather isolated species of the genus *Hieracium* with only a few known intermediate species. The indument of *H. pseudolachenalii* with glandular hairs points to a species of the section *Hieracium*.

1.3. *Hieracium racolympicum* GOTTSCHL. & DUNKEL, **spec. nova** (racemosum > olympicum), (Fig. 3, 11c)

Description: *Planta* perennis; *rhizoma* crassum, obliquum; *caulis* verticalis, rectus, solidus, (20–)40–60(–70) cm altus, dilute olivaceus, inferne saepe rubro-brunneus, subtiliter striatus, aphyllipodus, raro hypo- vel pseudophyllipodus, pilis simplicibus inferne densis vel subdensis, 3–5 mm longis, subrigidis, albis, sursum modice densis vel sparsis, pilis glanduliferis nullis, pilis stellatis sparsis; *folia caulina* (10–)15–25(–35), submollia, inferiora vel media saepe dense conferta, superiora cito decrescentia, habitus plantae ergo pyramidaliformis, folia inferiora in petiolum alatum contracta, superiora basin versus attenuata vel rotundata, laminae inferiorum anguste ellipticae vel late lanceolatae, 8–12 × 2–4 cm, superiorum ovatae vel anguste ovatae, 1–3 × 0,5–2 cm, virides, denticulatae, raro breviter dentatae, apex acuminatus, pilis simplicibus supra et in margine sparsis vel modice densis, subtus et in costa dorsali modice densis, 3–5 mm longis, submollis, albis, pilis glanduliferis nullis, pilis stellatis subtus sparsis; *synflorescentia* paniculata, raro racemoso-paniculata, rami (3–)5–8(–12), 2–6(–10) cm longi, subcrassi, stricti vel arcuato-ascendentes, quisque calathidio (1–)2–3(–5), calathidia (3–)8–15(–20), acladium 1,5–2 cm longum; *pedunculum* 2–3 bracteis dilute olivaceis, sub involucre saepe confertis, pilis simplicibus nullis vel sparsis, raro modice densis, pilis glanduliferis nullis, pilis stellatis subdensis vel densis; *involucrum* 9–10 mm longum, semiglobosum vel semiellipsoideum; *involucri phylla* olivacea, dilute marginata, pauciserialia, 1–1,5 mm lata, subacuta, pilis simplicibus sparsis vel modice densis, raro solitariis vel nullis, 1–2 mm longis, albis basi atris, pilis glanduliferis nullis, pilis stellatis subdensis vel densis; *ligulae* lingulateae, luteae, ligulorum dentes glabri; *styli* lutei papillis nigris; *alveoli* margine sublonge dentati; *achaenia* 3–3,2 mm longa, (semper?) brunnea; *florescentia*: Iulius.

Holotypus: Greece, Eastern Makedonia, Nom. Drama, Paranesti, street to Thermia, N of water reservoir (41°22'01"N

24°27'59"E), granite rock wall, 230 m s.m., 15.7.2017, G. Gottschlich-68220 & F. G. Dunkel-34712+34717, B; Isotypi: UPA, Hb. Gottschlich-68220, Hb. Dunkel-34712+34717.

Specimens seen: Central Makedonia, Nom. Serres, street to Leilias (41°15'02"N 23°35'05"E), rocky roadside with *Pinus*, 1480 m s.m., 17.7.2017, F. G. Dunkel-34761, Hb. Dunkel-34761; Eastern Makedonia, Nom. Kavala, Pangeon, eastern slope (40°55'06"N 24°11'48"E), *Quercus-Fagus*-forest, along a forest road, 770 m s.m., 5.7.2013, L. Meierott-2013-557, Hb. Meierott-2013-557; Nom. Drama, Paranesti, Forest of Frakto above Thermia (41°29'51"N 24°26'21"E), granite detritus under young *Pinus* forest, 950 m s.m., 15.7.2017, G. Gottschlich-68240 & F. G. Dunkel-34664+34665+34667+34671, Hb. Gottschlich-68240, Hb. Dunkel-34664+34665+34667+34671; Nom. Drama, Paranesti, Forest of Frakto above Thermia (41°30'27"N 24°27'03"E), granite detritus under young *Pinus* forest, 1080 m s.m., 15.7.2017, F. G. Dunkel-34677, Hb. Dunkel-34677; Nom. Xanthi, Stavroupoli, 900 m S Livaditis (41°17'47"N 24°39'54"E), slope in *Fagus* forest, 1266 m s.m., 28.7.2016, F. G. Dunkel-33704, Hb. Dunkel-33704, Hb. Gottschlich-66691; Nom. Xanthi, 2,2 km NE Livaditis, street to Dasiko Chorio (41°18'48"N 24°41'35"E), edge of *Fagus* forest, slope, 1177 m s.m., 28.7.2016, F. G. Dunkel-33723, Hb. Dunkel-33723, Hb. Gottschlich-66683; Nom. Xanthi, Stavroupoli, Kallitheia → Dasiko Chorio (41°18'32"N 24°42'53"E), rocky roadside, 1327 m s.m., F. G. Dunkel-33848, Hb. Dunkel-33848; Nom. Xanthi, Melissa near Kallitheia (41°14' N 24°44'E), *Quercus dalaechampii* forest, 460 m s.m., H. Zoller-s.n., BAS, Hb. Gottschlich-60235; Nom. Xanthi, above Kallitheia (41°17'19"N 24°44'19"E), *Pinus* forest, 1250 m s.m., 14.7.2017, F. G. Dunkel-34592, Hb. Dunkel-34592; Nom. Xanthi, Likodromio → Kallitheia → Livaditis (41°07'N 24°45'E), rocky roadside, 466–650 m s.m., 7.8.2012, F. G. Dunkel-29409, Hb. Dunkel-29409, Hb. Gottschlich-59483; Nom. Xanthi, Likodromio → Kallitheia (41°13'40"N 24°45'04"E), rocky roadside, silicate screes, 423 m s.m., 30.7.2016, F. G. Dunkel-33789, Hb. Dunkel-33789; Nom. Xanthi, Likodromio → Kallitheia (41°13'59"N 24°45'22"E), rocky roadside, silicate screes, 490 m s.m., 14.7.2017, G. Gottschlich-68152 & F. G. Dunkel, Hb. Gottschlich-68152; Nom. Xanthi, ESE Likodromio (41°13'08"N 24°46'58"E), *Quercus frainetto* forest, 370 m s.m., 14.7.2017, G. Gottschlich-68147 & F. G. Dunkel-34613, Hb. Gottschlich-68147, Hb. Dunkel-34613; Nom. Xanthi, Echinosis, Dimari, in direction NW along a streambed (41°21'06"N 24°49'30"E), damp rocks, 800–1280 m s.m., 11.8.2012, F. G. Dunkel-29495, Hb. Dunkel-29495; Nom. Xanthi, NNE Xanthi in direction to Echinosis (41°15'54"N 24°56'43"E), rocky slope along the road, 370 m s.m., 11.8.2012, F. G. Dunkel-29470+29471, Hb. Dunkel-29470+29471; Nom. Rodopi, Virsini → Kalivea (41°16'54"N 25°49'54"E), granite detritus, 550 m s.m., 16.7.2017, G. Gottschlich-68285 & F. G. Dunkel, Hb. Gottschlich-68285; Nom. Evros, Alexandroupoli Essymi, N Essymi → Megalo Derio, S slope of M. Kallitheia (41°03'58"N 25°54'29"E), *Fagus* forest, 757 m s.m., 9.8.2012, F. G. Dunkel-29457, Hb. Dunkel-29457, Hb. Gottschlich-59524.

Etymology: composed name referring to the intermediate morphology with parts of *H. racemosum* as well as *H. olympicum*.

Taxonomy: in its shape form, *H. racolympicum* resembles *H. racemosum* but differs from this species by its greyish capitula with the dense indument of stellate hairs.

1.4. *Hieracium sabaudolympicum* GOTTSCHL. & DUNKEL, **spec. nova** (sabaudum > olympicum) (Fig. 4, 11d)

Description: *Planta* perennis; *rhizoma* crassum, obliquum; *caulis* verticalis, rectus, sublignosus, (60–)80–

100(-125) cm altus, dilute olivaceus, inferne saepe rubro-brunneus, subtiliter striatus, aphyllopodus, pilis simplicibus inferne densis, 5 mm longis, rigidis vel subsetosis, albis, sursum modice densis vel sparsis, pilis glanduliferis nullis, pilis stellatis sparsis; *folia caulina* (15-) 20-30(-40), rigidiuscula, inferiora basin versus petioliformiter attenuata, superiora sessilia, basin versus breviter attenuata vel rotundata, laminae inferiorum anguste ellipticae vel late lanceolatae, 10-15 × 3-5 cm, superiorum ovatae vel anguste ovatae, 3-7 × 1,5-3 cm, obscure virides, integerrimae vel denticulatae, raro breviter serrato-dentatae, apex acuminatus, pilis simplicibus supra et in margine sparsis, subtus et in costa dorsali modice densis, 2-3 mm longis, subrigidis, albis, pilis stellatis glanduliferisque nullis; *synflorescentia* paniculata, rami (5-)8-15(-20), (2-)4-10(-20) cm longi, subcrassi, stricti vel arcuato-ascendentes, quisque calathidio (1-)2-4(-6), calathidia (5-)10-20(-40), acladium 2-3 cm longum; *pedunculum* 2-3 bracteis dilute olivaceis, sub involucri saepe confertis, pilis simplicibus glanduliferisque nullis, pilis stellatis densis; *involucrum* 10-12 mm longum, semiglobosum; *involucri phylla* dilute olivacea, pluriserialia, externa subadpressa, subobtusata, 1-1,8 mm lata, subacuta, pilis simplicibus nullis, solitariis vel sparsis, 1-2 mm longis, albis basi atris, pilis glanduliferis nullis, pilis stellatis subdensis; *ligulae* lingulatae, luteae, ligulorum dentes glabri; *styli* lutei; *alveoli* margine breviter vel sublonge dentati; *achaeonia* 3-3,2 mm longa, atrobrunnea; *florescentia*: Iulius.

Holotypus: Greece, Eastern Makedonia, Nom. Xanthi, Stavroupoli, between Likodromio and Kallithea (41°13'40"N 24°45'04"E), stony roadside, granite screes, 420 m s.m., 30.7.2016, F. G. Dunkel-33787, B; Isotypi: UPA, Hb. Dunkel-33787, Hb. Gottschlich-6670.

Specimens seen: Greece, Eastern Makedonia, Nom. Drama, Paranesti, Forest of Frakto, above Thermia (41°29'51"N 24°26'21"E), granite soil under young *Pinus* wood, 950 m s.m., 15.7.2017, G. Gottschlich-68243 & F. G. Dunkel, Hb. Gottschlich-68243; Nom. Xanthi, Drama → Stavroupoli, near Krini (41°15'23"N 24°27'30"E), rocky roadside, 288 m s.m., 13.8.2012, F. G. Dunkel-29513, Hb. Dunkel-29513, Hb. Gottschlich-59531; Nom. Drama, Paranesti, Forest of Frakto (41°27'20"N 24°27'48"E), granite rock, 480 m s.m., 15.7.2017, G. Gottschlich-68225 & F. G. Dunkel-34652, TAU, Hb. Gottschlich-68225, Hb. Dunkel-34652; Nom. Xanthi, between Dipotama and Greek-Bulgarian border, roadside, (41°23'N 24°37'E), roadside, granite screes, 850-1150 m s.m., 3.8.2016, F. G. Dunkel-33856+33858, Hb. Dunkel-33856+33858, Hb. Gottschlich-66704+66708; Nom. Xanthi, Stavroupoli, 250 m NE Sasi-ko Chorio Erymanthos (41°19'59"N 24°42'51"E), *Fagus-Pinus-Abies*-forest, 1320 m s.m., 30.7.2016, F. G. Dunkel-33796; Nom. Xanthi, Stavroupoli, Kallithea → Dasiko Chorio (41°17'35"N 24°44'14"E), roadside, 1278 m s.m., 30.7.2016, F. G. Dunkel-33839, Hb. Dunkel-33839; Nom. Xanthi, Likodromio → Kallithea → Livaditis (41°07'N 24°45'E), stony roadside, granite screes, 466-650 m s.m., 7.8.2012, F. G. Dunkel-29412-1, Hb. Dunkel-29412-1 Hb. Gottschlich-59480; Nom. Xanthi, Likodromio → Kallithea → Livaditis (41°14'39"N 24°45'21"E), shady roadside, granite, 610 m s.m., 14.7.2017, G. Gottschlich-68161, Hb. Gottschlich-68161; Nom. Xanthi, Stavroupoli, between Likodromio and Kallithea (41°13'40"N 24°45'04"E), stony roadside, granite screes, 423 m s.m., 30.7.2016, F. G. Dunkel-33831, Hb. Dunkel-33831, Hb. Gottschlich-66695; Nom. Xanthi, Stavroupoli, between Likodromio and Kallithea (41°13'40"N 24°45'05"E), stony roadside, granite screes, 440 m s.m., 14.7.2017, G. Gottschlich-68150 & F. G. Dunkel-34618+34619, Hb. Gottschlich-68150, Hb. Dunkel-34618+34619; Nom. Xanthi, Stavroupoli, Likodromio → Kallithea (41°14'22"N 24°45'51"E), stony slope

with silicate screes, 564 m s.m., 30.7.2016, F. G. Dunkel-33790, Hb. Dunkel-33790; Nom. Xanthi, Stavroupoli, Likodromio → Kallithea (41°14'22"N 24°45'52"E), slope with *Populus* sp., 537 m s.m., 30.7.2016, F. G. Dunkel-33784, Hb. Dunkel-33784.

Etymology: composed name referring to the intermediate morphology with parts of *H. sabaudum* as well as *H. olympicum*.

Taxonomy: Regarding the growth form, *H. sabaudolympicum* resembles the Central European *H. sabaudum*. It differs from this species by its denser indument of +- rigid simple hairs and the greyish involucre caused by a dense indument of stellate hairs. This can be taken as an introgression of *H. olympicum*.

1.5. *Hieracium umbrolympicum* GOTTSCHL. & DUNKEL, spec. nova (umbrosum – olympicum) (Fig. 5, 11e)

Description: *Planta* perennis; *rhizoma* subcrassum, obliquum; *caulis* verticalis, rectus, solidus, (30-)40-60(-70) cm altus, olivaceus, inferne saepe rubro-brunneus, subtiliter striatus, aphyllopodus, raro hypo- vel pseudophyllopodus, pilis simplicibus inferne subdensis, 2-3 mm longis, submollis, albis, sursum modice densis vel sparsis, pilis glanduliferis stellatisque nullis; *folia caulina* (6-)8-12(-16), submollia, plusminusque aequaliter inserata, cito decrescentia, folia inferiora longe (4-8 cm) petiolata, media breviter (1-2 cm) petiolata, superiora rotundata, sessilia vel subamplexicaulia, laminae inferiorum late lanceolatae, 10-12 × 2,5-5 cm, mediorum ovatae, 5-8 × 3-5 cm, superiorum anguste ovatae, 2-3 × 0,5-1,5 cm, virides, integerrimae vel denticulatae, apex subacutus vel acuminatus, pilis simplicibus supra sparsis, in margine et subtus sparsis vel modice densis, in costa dorsali modice densis, 3-5 mm longis, mollis, albis, pilis stellatis nullis, margo pilis glanduliferis solitariis vel sparsis; *synflorescentia* paniculata, rami (1-)2-5(-6), 2-6 cm longi, tenues, stricti, raro arcuato-ascendentes, quisque calathidio 1(-2), calathidia 2-6, acladium 1,5-3 cm longum; *pedunculum* 2-4 bracteis olivaceis, pilis simplicibus nullis vel solitariis, pilis glanduliferis nullis, pilis stellatis subdensis; *involucrum* 9-10 mm longum, semiellipsoideum; *involucri phylla* obscure olivacea, dilute marginata, pauciserialia, 0,9-1,1 mm lata, acuta, pilis simplicibus sparsis, 1 mm longis, subgeniculatis, griseis, basi atris, pilis glanduliferis sparsis, 0,3 mm longis, pilis stellatis subdensis; *ligulae* lingulatae, luteae, ligulorum dentes glabri; *styli* lutei; *alveoli* *achaeoniae* non videtur; *florescentia*: Iulius.

Holotypus: Greece, Eastern Makedonia, Nom. Xanthi, Stavroupoli, street to Livaditis (41°17'46"N 24°39'53"E), granite detritus in a young pinus forest, 1260 m s.m., 14.7.2017, G. Gottschlich-68211 & F. G. Dunkel-34608, B; Isotypi: UPA, Hb. Gottschlich-68211, Hb. Dunkel-34608.

Specimens seen: Eastern Makedonia, Nom. Xanthi, above Kallithea (41°18'55"N 24°42'22"E), damp granite rock, 1240 m s.m., 14.7.2017, G. Gottschlich-68201, Hb. Gottschlich-68201.

Etymology: Composed name referring to the intermediate morphology of both, *H. umbrosum* and *H. olympicum*.

Taxonomy: Regarding the grey appearance and the indument of the capitula (densely covered by stellate hairs, subrigid

simple hairs with black base), *H. umbrolympicum* resembles *H. olympicum*. The growth form with several stem leaves corresponds to the widespread Central European *H. lachenalii*. As this species is very rare in Greece and *H. umbrolympicum* is characterized by sparse glandular hairs along the margin of the leaves, it is more appropriate to hypothesize an introgression of *H. umbrosum* subsp. *abietinum*.

1.6. *Hieracium xanthicum* GOTTSCHL. & DUNKEL, **spec. nova** (umbellatum > sparsum) (Fig. 6, 11f)

Description: *Planta* perennis; *rhizoma* subcrassum, obliquum; *caulis* verticalis, rectus, solidus, (30-)40-60(-70) cm altus, olivaceus, inferne saepe rubro-brunneus, subtiliter striatus, aphyllopodus, pilis simplicibus inferne sparsis, 1-1,5 mm longis, mollis, albis, sursum solitariis vel nullis, pilis glanduliferis nullis; *folia caulina* (8-)10-15(-20), coriacea, aequaliter inserata, sensim decrescentia, inferiora longe attenuata, indistincte petiolata, reliqua ad basim rotundata, sessilia, laminae inferiorum lanceolatae, 7-10 × 1,5-2 cm, reliquae late vel anguste ovato-lanceolatae 1,5-5 × 0,2-1 cm, virides, denticulatae, apex acutus vel acuminatus, pilis simplicibus supra nullis, in margine et subtus in costa dorsali sparsis, 1-1,5 mm longis, mollis, albis, pilis glanduliferis nullis, pilis stellatis subtus sparsis; *synflorescentia* paniculata, rami 3-6(-10), 1-4 cm longi, tenues, stricti, raro arcuato-ascendentes, quisque calathidio 1-2(-3), calathidia (5-)10-15(-20), acladium 1-1,5 cm longum; *pedunculum* 2-4 bracteis olivaceis, pilis simplicibus glanduliferisque nullis, pilis stellatis subdensis; *involucrum* 8-9 mm longum, semiellipsoideum; *involucri phylla* olivacea, pluriserialia, 0,9-1 mm lata, exteriora subobtusa, interiora subacuta, glabris; *ligulae* lingulatae, luteae, ligulorum dentes glabri; *styli* lutei papillis nigris; *alveoli* margine breviter dentati; *achaenia* 3,2 mm longa, atro-brunnea; *florescentia*: Iulius.

Holotypus: Greece, Eastern Makedonia, Nom. Xanthi, Likodromio → Kallithea → Livaditis (41°07'N 24°45'E), rocky roadside, 466-650 m s.m., 7.8.2012, F. G. Dunkel-29413, B; Isotypi: UPA, Hb. Dunkel-29413, Hb. Gottschlich-59477.

Specimens seen: Eastern Makedonia, Nom. Xanthi, Stavroupoli, street to Livaditis, S kato Karyofito (41°15'18"N 24°40'42"E), granite detritus, 520 m s.m., 14.7.2017, G. Gottschlich-68213 & F. G. Dunkel, Hb. Gottschlich-68213; Nom. Xanthi, Likodromio → Kallithea → Livaditis (41°14'15"N 24°45'52"EE), rocky roadside, shrubs, 544 m s.m., 5.7.2014, F. G. Dunkel-32153, Hb. Dunkel-32153, Hb. Gottschlich-64733.

Etymology: Name refers to the former Nomos Xanthi.

Taxonomy: Regarding the morphology, *H. xanthicum* can be characterized as “umbellatum > sparsum”. It is quite different from *H. pelagae* (DEGEN & ZAHN) DEGEN & ZAHN (≡ *H. dacicum* var. *pelagae* DEGEN & ZAHN), interpreted by Zahn as “sparsum – umbellatum”. Semiamplexicaul leaf insertion of lower leaves of *H. pelagae* fits more with *H. sparsum* while in *H. xanthicum*, the lower leaves are indistinct petiolate. Furthermore, *H. pelagae* is distinctly covered with simple hairs on peduncles and phyllaries, which *H. xanthicum* lack. Its capitula are entirely glabrous.

1.7. *Pilosella willingorum* GOTTSCHL., **spec. nova** (leucopsilon > onegensis), (Fig. 7, 12a+b)

Description: *Planta* perennis; *rhizoma* horizontale vel obliquum; *stolones* 1-2, repentes, (4-)7(-9) cm longi, axis tenuis, Ø 0,8-1 mm, viridis, ad basim etiam rubro-viridis, pilis simplicibus sparsis, albis, pilis glanduliferis nullis, pilis stellatis basin versus nullis, alibi sparsis vel modice densis, internodia 1-2 cm longa, folia stolonorum lente decrescentia, anguste lanceolato-obovata vel anguste lanceolata, pilis simplicibus modice densis, pilis glanduliferis nullis, pilis stellatis supra nullis, subtus modice densis vel densis; *caulis* verticalis, solidus, subcrassus (Ø 0,8-1,0 mm), (14-)17(-20) cm altus, viridis, basin versus rubro-violaceus, subtiliter striatus, phyllopodus, pilis simplicibus modice densis, 2-3 mm longis, subrigidis, albis, basi atris, pilis glanduliferis sparsis, sursum modice densis, 0,2-0,3 mm longis, nigris, pilis stellatis subdensis; *folia rosularia* (3-)5(-7), lamina anguste obovata, 3-12 × 0,5-1,5 cm, submollis, viridis, integerrima, apice rotundata vel acuta, pilis simplicibus supra et subtus sparsis vel modice densis, 2-3 mm longis, subrigidis, albis, pilis glanduliferis nullis, pilis stellatis supra nullis, subtus sparsis, in costa dorsali modice densis; *folia caulina* 1; *synflorescentia* profunde furcata, ramus 7-8 cm longus, calathidia 2; *acladium* 13-14 cm longum; *pedunculus* subcrassus (Ø 1,5 mm), pilis simplicibus modice densis, 2-3 mm longis, subrigidis, basi atris, sursum cinereis, apice albo, pilis glanduliferis subdensis, 0,2-0,3 mm longis, atris, pilis stellatis densis; *involucrum* 8 mm longum, semiglobosum; *involucri phylla* dilute viridia, pallide marginata, pauciseriata, adpressa, 1,3 mm lata, apice acuto, pilis simplicibus subdensis, 1,5-1,8 mm longis, basibus eximie latis, atris (totum involucrem propterea habito nigro), sursum cinereis, pilis glanduliferis secus marginem nullis, in facie dorsali sparsis, 0,2 mm longis, pilis stellatis margine nullis, in facie dorsali sursum sparsis; *ligulae* lingulatae, luteae, externae rubrostriatae; *styli* lutei; *achaenia* non vidi; *florescentia*: Iulius.

Holotypus: Greece, Nom. Drama, SW Walddorf Elatias, 41°28'01"N 24°10'15"E, Schuttreiße in Fichtenwald, 1560 m, 2.7.2017, E. & R. Willing-280.755, B 10 0811998.

Etymology: The species is dedicated to Rita and Eckhard Willing who are studying the Greek flora with great emphasis (see their annual contributions to the Flora Hellenica under www.willing-botanik.de). It was part of a loan of 229 *Hieracium* and *Pilosella* specimens, collected by them in Greece, which was sent to the first author for revision by the Botanical Museum of Berlin (B).

Taxonomy: Due to few stellate hairs on the lower surface of leaves and the lacking of several thick stolons, the plant cannot be classified as an untypically branched *P. officinarum*.

In fact, the glandular hairs on the whole stem (Fig. 12d) indicates a hybrid origin from *P. onegensis*. The nearly lacking or solitary presence of stolons and the broad phyllaries point to *P. leucopsis* as second parent.

Only two hybrids of *P. onegensis* of the “Acaulia” morphotype are known:

- *P. pawlowskiella* (pseudopilosella > onegensis), described by MERXMÜLLER (1970) from Bulgaria.

- *P. onegensis* × *officinarum* is mentioned without a binary name from Slovakia by ROTREKLOVÁ et al. (2005).

Apart from the morphology, cytological data also support the formula “leucopsilon > onegensis”, since both *P. leucopsilon* (syn.: *P. hoppeana* subsp. *testimonialis*) and *P. onegensis* are diploid and sexual (KRAHULCOVÁ et al. 2016).

As no experimental data exist to the hybrid character - stabilized or not -, the traditional species concept in hieraciology is followed, and the bastard sign (×) and the designation as notho-species is omitted.

2. New subspecies

2.1. *Hieracium camkorijense* subsp. *boreograecum*

GOTTSCHL. & DUNKEL, **subsp. nova** (Fig. 8, 12c)

Diagnosis: Differt a subspeciebus *camkorijense* et *perlongiramum* foliis tantum denticulatis, a subspecie *rila* foliis caulibus minus numerosis (4-6 vicem 10-12).

Holotypus: Greece, Nom. Drama, Paranesti, Forest of Frakto above Thermia (41°29'50"N 24°26'16"E), granite detritus, 880 m s.m., 15.7.2017, G. Gottschlich-68236 & F. G. Dunkel-34661, B; Isotypi: UPA, Hb. Gottschlich-68236, Hb. Dunkel-34661.

Specimens seen: Nom. Drama, Paranesti, Forest of Frakto above Thermia (41°29'19"N 24°26'07"E), compacted granite detritus, 800 m s.m., 15.7.2017, G. Gottschlich-68232 & F. G. Dunkel, Hb. Gottschlich-68232; Nom. Drama, Paranesti, Forest of Frakto above Thermia (41°29'51"N 24°26'21"E), granite detritus in a young *Pinus* forest, 950 m s.m., 15.7.2017, G. Gottschlich-68239 & F. G. Dunkel, Hb. Gottschlich-68239; Nom. Drama, Paranesti, Forest of Frakto above Thermia (41°28'27"N 24°26'25"E), granite rocks under *Pinus*, 670 m s.m., 15.7.2017, G. Gottschlich-68226a & F. G. Dunkel-34663, Hb. Gottschlich-68226a, Hb. Dunkel-34663; Nom. Drama, Paranesti, Forest of Frakto above Thermia (41°30'27"N 24°27'03"E), granite detritus in a young *Pinus* forest, 1080 m s.m., 15.7.2017, G. Gottschlich-68244 & F. G. Dunkel-34674, Hb. Gottschlich-68244, Hb. Dunkel-34674; Nom. Xanthi, Livaditis, 2 km E Neohori (41°17'26"N 24°39'57"E), granite rocks, open screes, 1210-1280 m s.m., 13.8.2012, F. G. Dunkel-29527-3, Hb. Dunkel-29527, Hb. Gottschlich-59578; Nom. Xanthi, Livaditis → Kallithea, (41°18'35"N 24°40'07"E), granite rocks, forest slope, 1220 m s.m., 13.8.2012, F. G. Dunkel-29531+29532, Hb. Dunkel-29532, Hb. Gottschlich-59544+59545; Nom. Xanthi, Stavroupoli, street to Livaditis (41°18'54"N 24°40'43"E), *Fagus-Pinus-Betula* forest, 1250 m s.m., 14.7.2017, G. Gottschlich-68205 & F. G. Dunkel-34644, Hb. Gottschlich-68205, Hb. Dunkel-34644; Nom. Xanthi, N Livaditis (41°19'06"N 24°41'29"E), road in *Fagus* forest, 1180 m s.m., 10.7.2013, L. Meierott-2013/709, Hb. Meierott-2013/709, Hb. Gottschlich-59785.

Etymology: Refers to the currently known distribution area in Northern Greece.

Taxonomy: *H. camkorijense* has been described from the Bulgarian Rila Mountains (see lectotype in SZELĄG 2015). Two subspecies of Bulgaria are known (subsp. *camkorijense* and subsp. *rilae*) as is one of Romania (subsp. *perlongiramum*), and other ones of Turkey (ZAHN 1921-23, SELL & WEST 1975, here treated at species level). All Turkish taxa have a more or less “robust” structure. Of the Balkan taxa, *H. camkorijense* subsp. *boreograecum* is sufficiently different by its denticulated leaf margin and small number of cauline leaves.

2.2. *Hieracium racolympicum* subsp. *lycopifoliopsis*

GOTTSCHL. & DUNKEL, **subsp. nova** (Fig. 9, 12d)

Diagnosis: Differt a typo foliis caulibus mediis rotundatis-sessilibus basin versus profunde dentatis.

Holotypus: Greece, Eastern Makedonia, Nom. Xanthi, above Kallithea (41°16'46"N 24°44'40"E), *Fagus* forest, 1190 m s.m., 14.7.2017, G. Gottschlich-68171, B; Isotypi: UPA, Hb. Gottschlich-68171.

Specimens seen: Eastern Makedonia, Nom. Xanthi, Likodromio → Kallithea (41°14'54"N 24°45'53"E), shrubby roadside, 640 m s.m., 14.7.2017, G. Gottschlich-68164 & F. G. Dunkel-34627, Hb. Gottschlich-68164, Hb. Dunkel-34627; Nom. Xanthi, Likodromio → Kallithea (41°14'40"N 24°46'02"E), shady roadside, 590 m s.m., 14.7.2017, G. Gottschlich-68160 & F. G. Dunkel-34624, Hb. Gottschlich-68160, Hb. Dunkel-34624.

Etymology: The insertion of the middle stem leaves resembles a little *Hieracium lycopifolium*.

2.3. *Hieracium retyezatense* subsp. *spathopsis*

GOTTSCHL. & DUNKEL, **subsp. nova** (Fig. 10, 12e)

Diagnosis: *Hieracium retyezatense* subspeciei *sparsolo* et subspeciei *oligoschisto* simile, differt a primo foliis distincte spatulatis, a secundo foliis integerrimis.

Holotypus: Greece, Eastern Makedonia, Nom. Xanthi, Likodromio → Kallithea → Livaditis (41°18'19"N 24°43'20"E), edge of forest, 1360 m s.m., 5.7.2014, F. G. Dunkel-32175, B; Isotypi: UPA, Hb. Dunkel-32175, Hb. Gottschlich-64730.

Taxonomy: *H. sparsum* is one of the dominant species in the Balkan Peninsula which shows many introgression into other species. *H. retyezatense*, described from the Retyezat Mountains in Romania, is a polymorph species. 12 subspecies are known (ZAHN 1922-38); most of them have rosette leaves with oval or elliptic leaf blades. Two others with narrow leaves, known from Croatia and Bosnia-Herzegovina, can be separated from our new subsp. *spathopsis* as indicated in the diagnosis (and name!).

3. New combination

Hieracium sparsum subsp. *pseudolympicum* (RECH. f. & ZAHN) GOTTSCHL. & DUNKEL, **comb. nova**

ZAHN (1939) described *H. pseudolympicum* from the region of Serres and characterized it as “sparsum-olympicum”. However, the cited specimen does not demonstrate any morphological features of *H. olympicum*: The phyllaries especially completely lack stellate hairs. Although the involucre bracts are covered with simple hairs, these hairs are completely white and without a broad black base as in *H. olympicum* and its intermediate species. Beyond that, hairy capitula exist in several other taxa of the collective species of *H. sparsum*. Therefore, we taxonomically include *H. pseudolympicum* in *H. sparsum* and select a lectotype for the name:

Hieracium sparsum subsp. *pseudolympicum* (RECH. f. & ZAHN) GOTTSCHL. & DUNKEL, **comb. nov.**

Basionym: *H. pseudolympicum* RECH. f. & ZAHN, Bot. Jahrb. Syst. 69: 535 (1939).

Lectotypus, hoc loco designatus: “Macedonia orientalis, in monte Leila prope Serrai (Serres)”, in pinetis, substr. silic., alt. 1400 m, 12. VI. 1936, K. H. Rechinger, Iter Graecum IV, No. 10744, W-1939-2137.

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Fig. 1: *Hieracium gramosicum* GOTTSCHL. & DUNKEL, habitus.



Herb. G. Gottschlich

60499 / 1

Fig. 2: *Hieracium pseudolachenalii* GOTTSCHL. & DUNKEL, habitus.



Herb. G. Gottschlich

68220/1

Fig. 3: *Hieracium racolypticum* GOTTSCHL. & DUNKEL, habitus.



Herb. G. Gottschlich

6 6 7 0 2 / 1

Fig. 4a: *Hieracium sabaudolympicum* GOTTSCHL. & DUNKEL, upper part of the stem.



Fig. 4b: *Hieracium sabaudolypticum* GOTTSCHL. & DUNKEL, middle part of the stem.



Fig. 4c: *Hieracium sabaudolypticum* GOTTSCHL. & DUNKEL, lower part of the stem.



Herb. G. Gottschlich

68211/1

Fig. 5: *Hieracium umbrolympicum* GOTTSCHL. & DUNKEL, habitus.



Fig. 6: *Hieracium xanthicum* GOTTSCHL. & DUNKEL, habitus.



** Kommentar zu Beleg: B-100811998

Die Blätter sind unterseits vergleichsweise wenig sternhaarig, so dass eine untypisch gabelige Form von *P. officinarum* ausscheidet. Die Pflanze entspricht morphologisch vielmehr der Kombination

leucopsilon > *onegensis*

Auf *leucopsilon* verweisen die geringe Korbzahl, die Rotstreifung der Ligulae, die breiten, etwas bauchigen äußeren Hüllblätter und die nur spärlich ausgebildeten Läufer, auf *onegensis* die geringe Sternhaarbekleidung der Blattunterseite, die deutliche Bedrüsung des Stängels und die hellgrünen, weichlichen Blätter.

Da beide Elternarten diploid sind, ist eine solche Kombination nicht unwahrscheinlich.

G.Gottschlich 6/2018

Pilosella willingorum Gottschl.
spec. nova
Herb.: HOLOTYPE
det./ref. J. Schnl. G. Gottschlich, Tübingen 2016/8

HERBARIUM WILLING

Nr. : 280.755
Fam. : Asteraceae
Art : *Pilosella leucopsilon* (ARV.-TOUV.) GOTTSCHL.
subsp. *pilisquama* (NÄGELI & PETER) GOTTSCHL.
GR, Drama, SW Walddorf Elatias, 02.07.2017
Schuttreiße in Fichtenwald, 1560 mv6
Dra 245, 41°28'01"N, 24°19'15"E

acc.
13. FEB. 2018

30/2018-106

Mus. Bot. Berol.



Fig. 7: *Pilosella willingorum* habitus.



Fig. 8: *Hieracium camkorijense* subsp. *boreograecum* GOTTSCHL. & DUNKEL, habitus.



Herb. G. Gottschlich

68171/1

Fig. 9a: *Hieracium racolympicum* subsp. *lycopifoliopsis* GOTTSCHL. & DUNKEL, upper part of the stem.



Herb. G. Gottschlich

68171/2

Fig. 9b: *Hieracium racolympicum* subsp. *lycopifoliopsis* GOTTSCHL. & DUNKEL, lower part of the stem.



Herb. G. Gottschlich

64730/1

Fig. 10: *Hieracium retyezatense* subsp. *spathopsis* GOTTSCHL. & DUNKEL, habitus.

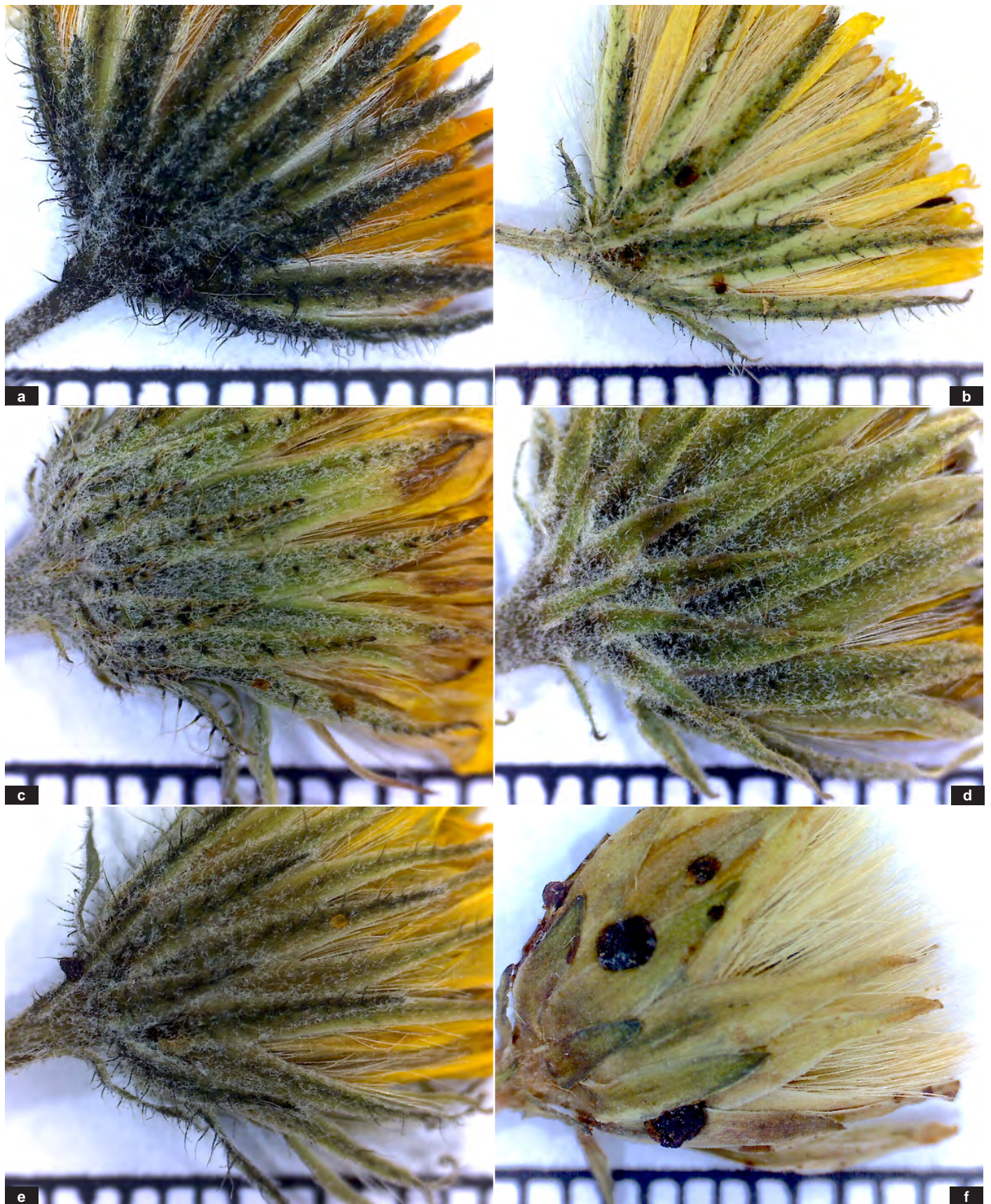


Fig. 11: capitula: **a:** *H. gramosicum*, **b:** *H. pseudolachenalii*, **c:** *H. racolympicum*, **d:** *H. sabaudolympicum*, **e:** *H. umbrolympicum*, **f:** *H. xanthicum*.

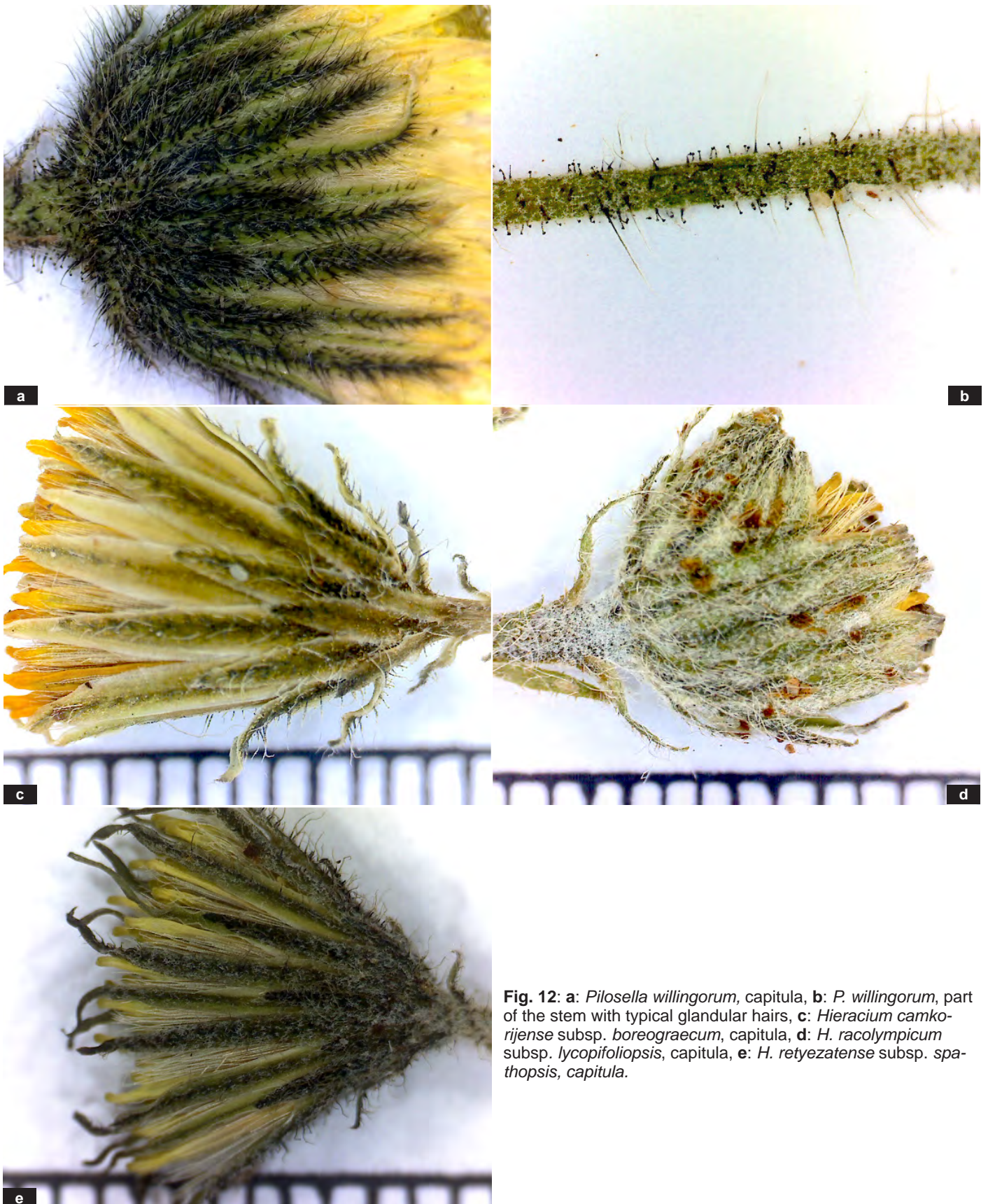


Fig. 12: **a:** *Pilosella willingorum*, capitula, **b:** *P. willingorum*, part of the stem with typical glandular hairs, **c:** *Hieracium camkorejense* subsp. *boreograecum*, capitula, **d:** *H. racolypticum* subsp. *lycopifoliopsis*, capitula, **e:** *H. retyezatense* subsp. *spatopsis*, capitula.

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