Lectotypification of five subspecies names of *Hieracium auriculoides* and *H. brachiatum* (*Asteraceae*) described from the North Caucasus by D.I. Litvinov and K.H. Zahn

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**Abstract.** Five names of subspecies of *Hieracium* s.l. (*Asteraceae*) described from the North Caucasus by D.I. Litvinov and K.H. Zahn are lectotypified: *Hieracium auriculoides* Láng subsp. *basileucum* Litv. et Zahn, *H. auriculoides* subsp. *sabiniceps* Litv. et Zahn (≡ *H. auriculoides* subsp. *sabincephalum* Litv. et Zahn, nom. illeg.), *H. auriculoides* subsp. *sublasiophorum* Litv. et Zahn, *H. auriculoides* subsp. *umbelliforme* Litv. et Zahn (≡ *H. auriculoides* subsp. *subumbelliforme* Zahn, nom. illeg.; *H. subumbelliforme* Úksip), and *H. brachiatum* Bertero ex DC. subsp. *aticaula* Litv. et Zahn. For each subspecies, the following data are provided: basionym, main synonyms, information about type localities according to the protologue, lectotype (is lectotypes, syntypes, if applicable) and their herbarium barcodes, and nomenclatural notes. In addition, scanned images of all newly designated lectotypes are presented.

**Keywords:** *Asteraceae*, *Hieracium*, *Pilosella*, nomenclature, lectotypification, Litvinov, Zahn, North Caucasus

**Introduction**

*Hieracium* s.l. (including currently recognized segregate genera *Hieracium* L. and *Pilosella* Vaill., *Asteraceae*) is considered among the most taxonomically and nomenclaturally difficult groups of genera because of the processes of intensive interspecific hybridization and apomixis observed in some species groups. According to various estimates, the number of taxonomic units described in this group is more than 15 000 (IPNI, http://www.ipni.org/index.html), with about 6 000 taxa being considered apomicts (Shaw, Willis, 1985). Therefore, there are some problems with identification of plants of *Hieracium* and *Pilosella* because their specific morphological characteristics are often not clearly manifested, or the same or similar characters are sometimes present in representatives of several geographically distant and taxonomically distinct groups. Because of that, for addressing various issues of taxonomy of *Hieracium* s.l., comprehensive studies are conducted using anatomical, morphological, populational, genetic, and recently also molecular phylogenetic methods (Sennikov, Illarionova, 2002; Suda, 2007; Zini, 2008; Qurwshi, 2009, etc.).

Because of the large number of infrageneric and infraspecific entities described within *Hieracium* s.l., there is some confusion in delimiting and understanding their taxonomic borders. Therefore, important steps toward resolving taxonomic and nomenclatural problems in this group include proper typification of names applied to various taxa. There are not so many articles about typification of names in *Hieracium* s.l. as could be expected (Gubanov, 2002; Sennikov, 2007; Szelag, 2007, 2011; Tyler, 2007, etc.). Consequently, search for original material and typification of names in *Hieracium* s.l. not only provides a clearer picture of particular species, subspecies, varieties, etc., but also serves for better resolution of taxonomy of the group and floristic research. It is also an important basis for solving the problem of understanding the concepts of "species" (agamospecies, microspecies etc.) and "species aggregates" within the group (Manton, 1958; Úksip, 1960; Sennikov, 2003 etc.).

When managing and inventorying the collections of *Hieracium* s.l. in the National Herbarium of Ukraine (*KW* – Herbarium of the M.G. Kholodny Institute of Botany of the NAS of Ukraine), we studied specimens of exsiccates *Herbarium Florae Rossicae* (HFR) where some taxa of this genus were published. It has become evident that several names of subspecies in *Hieracium* s.l., those described by the German botanist K.H. Zahn...
based on specimens of D.I. Litvinov from the North Caucasus, are still in need of lectotypification. In this article we propose lectotypifications of four names of subspecies of *H. auriculoides* Láng (now accepted as *Pilosella × auriculoides* (Láng) P.D. Sell et C. West) and one name of subspecies of *H. brachiatum* Bertero ex DC. (now *Pilosella brachiatata* (Bertero ex DC.) F.W. Schultz et Sch. Bip.).

**Materials and methods**

Search for authentic material of the studied subspecies of *H. auriculoides* and *H. brachiatum* was performed directly in the collections of the National Herbarium of Ukraine, *KW* (Herbaria..., 2011) and other herbarium collections, including the following ones: *G*, *GH*, *KFTA*, *LE*, *LECB*, *LW*, *MW*, *S*, *WU*, etc. For this purpose, our search was conducted directly in several collections and in online herbarium databases and other resources, for example, Catalogue des herbiers de Genève (*G*): http://www.ville-ge.ch/musinfo/bd/cjb/, *The Gray Herbarium* (*GH*): http://kiki.huh.harvard.edu/, *Virtual Herbaria*: http://herbarium.univie.ac.at/, *JSTOR Global Plants* (https://plants.jstor.org), etc.

Names of taxa and their authors are given mainly according to the International Plant Names Index (IPNI, http://www.ipni.org/). Typification was carried out following the rules of the *International Code of Nomenclature for algae, fungi, and plants* (ICN: McNeill et al., 2012).

The names of taxa are listed alphabetically; for each taxon, the following data are provided: basionym; a short nomenclatural note that include only main synonyms; information about the type (or syntypes) according to protologue; lectotype (isolateotypes, syntypes, as applicable) and their herbarium barcodes (if available); and nomenclatural comments (if necessary). If information about a specimen was taken from online resources, the barcode and web address (URL) are provided.

**Results and Discussion**

1. *Hieracium auriculoides* Láng subsp. *basileicum* Litv. et Zahn, 1907, Repert. Spec. Nov. Regni Veg. 4: 189; id., 1911, Sched. HFR, VII, Nos. 2001–2400: 20, No. 2052; Zahn, 1923, in Engl. Pflzr. IV. 280, Heft 82: 1521. – *Hieracium basileicum* (Litv. et Zahn) Üksip, 1960, Фл. СССР, 30: 493.

   **Type according to protologue:** "Prov. Kuban: In pratis pinetisiccis ad fl. Teberda, 1260 m".

   **Lectotype** (Shiyan et al., designated here): "HFR No. 2052. Кубанск[ая] обл. На сухом лугу по р. Теберде, ок. 1260 м. – Caucasus, Prov. Kuban, in pratis siccis ad fl. Teberda. 28.VI 1905. Д. Литвинов”, *LE* 01024063 (Fig. 1).

2. *Hieracium auriculoides* Láng subsp. *sabiniceps* Litv. et Zahn, 1907, Repert. Spec. Nov. Regni Veg. 4: 190, "sabinocephalum in litt."; Zahn, 1923, in Engl. Pflzr. IV. 280, Heft 82: 1519. – *H. auriculoides* Láng subsp. *sabinocephalum* Litv. et Zahn, 1911, Sched. HFR, VII, Nos. 2001–2400: 22, No. 2057, nom. illeg. – *H. sabiniceps* (Litv. et Zahn) Üksip, 1960, Фл. СССР, 30: 499.

   **Type according to protologue:** "Prov. Kuban: Ad fontes fl. Teberda, 2340 m".

**Isolectotypes: G 00300084 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.g00300084); KFTA 0000451 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.kfta0000451); http://herbarium.univie.ac.at/database/detail.php?ID=503717); LECB 0000290 (http://herbarium.univie.ac.at/database/detail.php?ID=503718); MW s.n. (Gubanov, 2002); S 12-19898 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.s12-19898).

**Syntypes:** "HFR No. 2052. Кубанск[ая] обл. На сухом лугу по р. Теберде, ок. 1260 м. – Caucasus, Prov. Kuban, in pratis siccis ad fl. Teberda. 01.VII 1905. Д. Литвинов", *LE* 01024064; *LE* 01024067.

**Note.** Zahn (1907) provided no information about the collection date in the protologue of *H. auriculoides* subsp. *basileicum*. However, another (later) description of the subspecies was published in 1911 in the HFR exsiccate, in volume 7 of that series edited by Litvinov (Litwinov, 1911). In this publication, original material of this taxon was distributed under No. 2052, with two collection dates. Subsequently Zahn provided a note in his monograph on *Hieracium* in A. Engler’s Das Pflanzenreich: "Subsp. 29. *basileicum* Litw. et Zahn in Fedde, Rep. III. (1907) 189 et in Sched. Herb. fl. Ross. VII. (1911) 20, exs. n. 2052!" (Zahn, 1923). Under No. 2052 of HFR, Litvinov in 1911 in fact published data on two gatherings of *H. auriculoides* subsp. *basileicum*, which differ in their collection dates, 28.VI 1905 and 01.VII 1905 (Litwinov, 1911). Because of that, for each specimen of No. 2051, one of these two dates was underlined manually on the label, indicating the collection date of that particular specimen (see Fig. 1). More than half of original specimens of *H. auriculoides* subsp. *basileicum* that we studied were collected on 28.VI 1905.

We designate here the specimen *LE* 01024063 (Fig. 1) as the lectotype of *H. auriculoides* subsp. *basileicum*; it was collected by Litvinov on 28.VI 1905. This specimen has a typographically printed HFR label with the taxon name, a detailed Latin description by Zahn, the location and date of collection. The remaining original specimens from *LE* collected by Litvinov on 28.VI 1905 are not published exsiccates; they have handwritten labels. Identification of plants (as "*Hieracium panonicum* N.P. subsp. *basileicum* Litw. et Zahn") and the actual text in these labels has some differences in ink color, indicating some time lag between the collection of this material and its processing.
Lectotype (Shiyan et al., designated here): "HFR No. 2057. Kubansk[а]i obл. Истоки р. Теберды, ок. 2270 м., по каменистому склону в подальпийской области. – Prov. Kuban (Caucasus), ad fontes fl. Teberda, in saxosis subalpinis. 12.VII 1905. Собр. Д. Литвинов", LE 01026015 (Fig. 2).

Isolectotypes: GH 00009177 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.gh00009177); KW 000114946; KW 000114947; LE 01026016; LECB 0000292 (http://herbarium.univie.ac.at/database/detail.php?ID=558114); MW s.n. (Gubanov, 2002); S 12-19895 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.s12-19895).

Note. It is likely that the authors used in their correspondence two alternative names before validating this subspecies. When describing new taxa in 1907, Zahn used the name H. auriculoides Láng subs. sabiniceps Litv. et Zahn, but also noted that this subspecies was named (in his letter) as "sabincephalum" (Zahn, 1907). The latter epithet was used for original material published in HFR under No. 2057 (Litwinow, 1911, but the protologue erroneously reported other values of the altitude above sea level than those indicated on Litwinov's specimens. Therefore, to correct errors in citing the type, in 1923 Zahn reported that taxon as "Subsp. 20. sabiniceps Litv. et Zahn in Fedde, Rep. III. (1907) 190. – subsp. sabincephalum Litv. et Zahn in Sched. Herb. fl. Ross. VII. (1911) 22", and cited the type as "Kaukasus: An den Quellen der Teberda, 2270 m, in der Provinz Kuban!" (Zahn, 1923). We designate here as the lectotype of H. auriculoides subsp. sabiniceps one of duplicates collected by Litwinov (LE 01026015) and published in HFR (as "sabincephalum") under No. 2057.

3. Hieracium auriculoides Láng subs. sublasiophorum Litv. et Zahn, 1907. Repert. Spec. Nov. Regni Vég. 4: 188; id. 1911, Sched. HFR, VII, Nos. 2001–2400: 23, No. 2058; Zahn, 1923, in Engl. Pflzr. IV. 280, Heft 82: 1522. – Hieracium sublasiophorum (Litv. et Zahn) Úksip, 1960, Fl. CCCP, 30: 496.

Type according to protologue: "Prov. Kuban: Ad fontes fl. Teberda, 2300 m."

Lectotype (Shiyan et al., designated here): "HFR No. 2058. Kubansk[а]i obл. Истоки р. Теберды, ок. 2300 м., по каменистому склону в подальпийской области.– Prov. Kuban (Caucasus), in subalpinis ad fontes fl. Teberda. 12.VII 1905. Д. Литвинов", LE 01026018 (Fig. 3).

Isolectotypes: GH 00009178 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.gh00009178); KW 000124248; KW 000124250; LE 01026017; LE 01026019; MW s.n. (Gubanov, 2002); S 12-19896 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.s12-19896).

Note. A duplicate description of H. auriculoides Láng subs. sublasiophorum Litv. et Zahn was provided in HFR under No. 2058 (Litwinow, 1911). Texts of descriptions in "Schedae ..." (Litwinow, 1911) and on labels of specimens (Fig. 3) are completely identical to the protologue (Zahn, 1907). One of Litvinow’s duplicates published in HFR under No. 2064 and now deposited in LE is designated here as the lectotype (LE 01026018).

4. Hieracium auriculoides Láng subs. umbelliforme Litv. et Zahn, 1911, Sched. HFR, VII, Nos. 2001 – 2400: 24, No. 2061b. – Hieracium auriculoides Láng subs. subumbelliforme Zahn, 1923, in Engler, Pflanznr. IV. 280, Heft 82: 1517, nom. illeg. – Hieracium subumbelliforme Úksip, 1960, Fl. CCCP, 30: 501, non Jord. ex Boreau (1857).

Type according to protologue: ["HFR] No. 2061a. Черноморская губ. По опушке леса бл. ст. Михайловской – Prov. Czernomorskaja (Caucasus), ad nemorum margines pr. stat. Michailowskaja. 08.VI 1907. Собр. Д. Литвинов; No. 2061b. Черноморск[а]я губ. По приморскому лугу в долине р. Адербы бл. Геленджика – Prov. Czernomorskaja (Caucasus). In partis maritimis ad ostium fl. Aderba pr. Gelendshik. 31.V 1907. Собр. Д. Литвинов".

Lectotype (Shiyan et al., designated here): "HFR No. 2061b. Черноморск[а]я губ. По приморскому лугу в долине р. Адербы бл. Геленджика. – Prov. Czernomorskaja (Caucasus). In partis maritimis ad ostium fl. Aderba pr. Gelendshik. 31.V 1907. Собр. Д. Литвинов", LE 01026020 (Fig. 4).

Isolectotypes: GH 00009179 (http://kiki.huh.harvard.edu/databases/specimen_search.php?mode=details&id=133416); KW 000124247; KW 000124248; LE 01026021; LECB 0000294 (http://herbarium.univie.ac.at/database/detail.php?ID=558116).

Syntype: "HFR No 2061a. Черноморская губ. По опушке леса бл. ст. Михайловской. – Prov. Czernomorskaja (Caucasus), ad nemorum margines pr. stat. Michailowskaja. 03.VI 1907. Собр. Д. Литвинов", S 12-19897 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.s12-19897).

Note. Some confusion occurred with the interpretation of correct names for this taxon at the species and subspecies ranks. It was validly described as a subspecies, H. auriculoides Láng subs. umbelliforme Litv. et Zahn (Litwinow, 1911: 24), but in 1923 K.H. Zahn (in A. Engler’s Das Pflanzenreich) accepted a new name for this subspecies, H. auriculoides subsp. subumbelliforme Zahn, with subsp. umbelliforme Litv. et Zahn cited as its synonym, and indicated two syntypes published in HFR under No. 2061a, b (Zahn, 1923: 1517). Evidently, Zahn (l.c.) considered H. auriculoides subspp. umbelliforme Litv. et Zahn to be a later homonym of H. umbelliforme Jord. ex Boreau (Boreau, 1857: 389). However, according to Art. 11.2 of ICN (McNeill et al., 2012), a name has no priority outside the rank in which it is published. Consequently, the name H. auriculoides subspp. subumbelliforme Zahn is illegitimate, being a superfluous substitute for H. auriculoides.
Fig. 1. Lectotype of *Hieracium auriculoides* Láng subsp. *basileucum* Litv. et Zahn (LE 01024063).

Fig. 2. Lectotype of *Hieracium auriculoides* Láng subsp. *sabiniceps* Litv. et Zahn ("sabinocephalum" Litv. et Zahn, 1911, nom. illeg.) (LE 01026015).
Fig. 3. Lectotype of *Hieracium auriculoides* Láng subsp. *sublasiophorum* Litv. et Zahn (*LE* 01026018).

Fig. 4. Lectotype of *Hieracium auriculoides* Láng subsp. *umbelliforme* Litv. et Zahn ("*subumbelliforme*" Zahn, 1923, nom. illeg.) (*LE* 01026020).
subsp. umbelliforme Litv. et Zahn. Õksip (1960) accepted that taxon as "H. subumbelliforme Zahn" and mentioned in its synonymy the non-existing binomial "H. umbelliforme Litv. et Zahn <...> non Jord. nec Vukot." By doing that, he validated a new name (nomen novum) that should be cited as H. subumbelliforme Õksip (not as a new combination "H. subumbelliforme (Zahn) Õksip").

Considering the studied original materials of H. auricoloides subsp. umbelliforme, we designate here as the lectotype one of duplicates collected by Litvinov (LE 01026020), the one which was published in HRF under No. 2064b.

5. Hieracium brachiatum Bertol. ex DC. subsp. alticaule Litv. et Zahn, 1907, Repert. Spec. Nov. Regni Veg. 4: 184; id., 1911, Sched. HFR, VII, Nos. 2001–2400: 25, No. 2064a; Zahn, 1923, in Engl. Pflzr. IV. 280, Heft 82: 1457. – Hieracium alticaule (Litv. et Zahn) Õksip, 1960, Фл. СССР, 30: 536.

Type according to protologue: "Prov. Kuban: In quercetis ad. fl. Teberda 1260 m. – In silvis m. Shelesnaja pr. Shelesnovodsk".

Lectotype (Shiyan et al., designated here): "HFR No. 2064a. Кубанск[ая] обл. Дубняк в долине р. Тёберды, ок. 1260 м. — Prov. Kuban (Caucasus), in querceto in valle fl. Teberda. 24.VI 1905. Собр. Д. Литвинов", LE 01026014 (Fig. 5).

Isolectotypes: G 00300141 (http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=221207); GH 00009102 (http://kiki.huh.harvard.edu/databases/specimen_search.php?mode=details&id=135567); KW 000114905; KW 000114906; LE 01026012; LE 01026013; LECB 0000299 (http://herbarium.univie.ac.at/database/detail.php?ID=558124); LECB 0000301 (http://herbarium.univie.ac.at/database/detail.php?ID=558125); MW s.n. (Gubanov, 2002); S12-20577 (http://plants.jstor.org/stable/10.5555/al.ap.specimen.s12-20577); WU 0086551 (http://herbarium.univie.ac.at/database/detail.php?ID=982135).

Note. A duplicate description of H. brachiatum Bertol. ex DC. subsp. alticaule Litv. et Zahn was made in 1911 in HRF, where original material of this taxon was listed under No. 2064a (Litvinow, 1911). Texts of the description in "Schedae..." (Litvinow, 1911) and on labels of specimens (Fig. 5) are identical with the text in the protologue (Zhahn, 1907). We designate here as the lectotype one of duplicates collected by Litvinov (LE 01026014) and published in HRF under No. 2064a, which is now deposited in LE; the corresponding locality was mentioned in the protologue (Zahn, 1923). It should be noted that Litvinov published under No. 2064b also specimens of the same taxon from another locality.

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Fig. 5 Lectotype of Hieracium brachiatum Bertol. ex DC. subsp. alticaule Litv. et Zahn (LE 01026014).
Шиян Н.М., 1 Павленко-Барышева В.С., 1 Татанов И.В. 2 Лектотипификация пяти назв піввидів Hieracium auriculoides та H. brachiatum (Asteraceae), описаних з Північного Кавказу Д.І. Литвиновим та К.Г. Цаном. Укр. бот. журн., 2017, 74(6): 532–538.

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Лектотипифіковано назви п’яти піввидів Hieracium s.l. (Asteraceae), описаних Д.І. Литвиновим та К.Г. Цаном з Північного Кавказу: Hieracium auriculoides Lång subsp. basileicum Litv. et Zahn, H. auriculoides subsp. sabineceps Litv. et Zahn (= H. auriculoides subsp. sabinocephalum Litv. et Zahn, nom. illeg.), H. auriculoides subsp. sublasiophorum Litv. et Zahn, H. auriculoides subsp. umbelliforme Litv. et Zahn (= H. auriculoides subsp. subumbelliforme Zahn, nom. illeg.; H. subumbelliforme Üksip) і H. brachiatum Bertero ex DC. subsp. aliticaule Litv. et Zahn. Для кожного піввиду наведені: базіонім, основні синоніми, інформація про тип за протологом, лектотип, ізолектотип, синтіп(и) та їхні баркод(и) відповідного гербарію; подаються номенклатурні нотатки. Подані зображення (скані) усіх п’яти лектотипів, зазначених у статті.

Ключові слова: Asteraceae, Hieracium, Pilosella, номенклатура, лектотипифікація, Литвинов, Zahn, Північний Кавказ