Hieracium pignattianum (*Asteraceae*), a new species from the Madonie Mountains (N-Sicily)

Francesco M. Raimondo & Emilio Di Gristina

Abstract

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A new endemic species of *Hieracium* belonging to the group of *Hieracium racemosum* is here described from the Madonie Mountains (Sicily) and named *H. pignattianum*. This new taxon occurs along the border of the *Fagus sylvatica* wood on carbonate soils. Here, its taxonomic relationship is commented and a key to the group is provided.

Introduction

Hieracium L. is a complex genus characterized by a high diversity. It consists of perennial herbaceous plants, subdivided by Zahn (1921-1923) in basic species or cardinal groups, (*species principales collectivae*, "Hauptarten") where elements are well-defined by their own combination of morphologic features, and in intermediate species or intermediary groups (*species intermedie collectivae*, "Zwischenarten") which include morphologic features of two or more basic species (Sell & West 1976, Pignatti 1982, Buttler 1991).

The group of *Hieracium racemosum* Waldst. & Kit. (Subg. *Hieracium*) includes 29 specific and infraspecific taxa (Zahn 1922) that Sell & West (1976) gathered in 6 species occurring throughout central-southern Europe, the Balkan peninsula and Turkey. They are: *H. barbatum* Tausch, *H. crinitum* Sibth. & Sm., *H. italicum* Fries, *H. moesiacum* (Kerner & Uechtr.) Sell & West, *H. racemosum* Waldst. & Kit. and *H. virgaurea* Cosson. According to Sell & West (1976), all the above-mentioned taxa occur in Italy, while Pignatti (1982) excluded *H. moesiacum*. Afterwards, Arrigoni (1986) described *H. limbarae* and *H. oliastrae,* two new species endemic to Sardinia, both belonging to the group of *H. racemosum*.

In Sicily the group of *H. racemosum* is represented by *H. crinitum* which, besides this region, occurs in the Italian Peninsula, Corsica, the Balkan Peninsula and Turkey (Fiori 1928, Sell & West 1975, 1976, Pignatti 1982). Other reports from Sardinia (Fiori 1928, Sell & West 1975, 1976, Pignatti 1982) have been denied by Arrigoni (1987).

In the Sicilian floristic District (*sensu* Giacomini 1958), *H. crinitum* frequently occurs in woods on the highest reliefs of north-west Sicily and on the island of Salina (Lojacono 1906). Its populations appear very polymorphous and differentiated.

With regard to this region, morphologic and genetic studies on *H. crinitum* have put in evidence another population close to this species but significantly distinct from it (Di Gristina & al. 2002). Such population, which occurs in the Madonie Mountains (CN - Sicily), is here described as a new species called *Hieracium pignattianum*.

Hieracium pignattianum Raimondo & Di Gristina **sp. nova**

TYPUS – *Holotypus*: Sicilia, Monti Madonie, Contrada Passo della Botte tra Piano Battaglia e Petralia Sottana (Palermo), 37°51'15,7''N – 14°03'13,6''E, ai margini del faggeto su suolo carbonatico, 1340 m a.s.l., 29. 08. 2001, *Raimondo & Di Gristina* (PAL). – *Isotypi* in PAL, FI, G, SIV, B, RNG, CAT.

ICONOGRAPHY – Fig. 1.

DIAGNOSIS – *Herba rosulata vel pseudorosulata, rhizomate obliquo. Caulis 10 - 25 cm altus, simplex, erectus, modice pilosus (1-2 (-4) mm), modice vel dense floccosus. Folia inferiora pallide viridia, saepe maculis purpureis apice, utrimque valde floccosa, leviter pilosa (1-2 (-3) mm) – in costa dorsali et in petiolo subdense pilosa – et sparsim microglandulosa, maxime ad marginem. Lamina ovata, ovato-lanceolata, 3-7,5 (-8) × 2,5-4,5 cm, ad marginem integra vel raro breviter dentata, acuminata vel acuta, leviter attenuata, saepe basi late rotundata vel leviter subcordata; petiolus tenuis a lamina eximie distinctus. Folia caulina valde exigua vel squamiformia (0,7-1,5 × 0,3-0,5 cm), sessilia vel semiamplexicaulia, lanceolata, ovato-lanceolata, acuminata, modice pilosa (1-2 (-4) mm) floccosaque. Inflorescentia racemosa; capitula 3-6; pedunculi modice vel dense floccosi, leviter pilosi glandulosique; squamae virides, exteriores triquetrae, interiores lineares, acutae vel obtusae, 7-10 mm, leviter floccosae et glandulis dilutis (luteolis) minutis vel longis dense obsitae. Ligulae pallide luteae, apice glabrae; styli luteo-obscuri. Achenia luteo-brunnea, costata, 3-4 mm. Pappus albido-ochraceus.*

ETYMOLOGIA – *Nomen perillustri magistro Alexandro Pignatti, peritissimo mediterraneearum plantarum, nuper Florae italicae auctori, dicatum.*

DESCRIPTION – Herb rosulate or pseudorosulate, with oblique rhizome. Indumentum with eglandular dentate hairs (1-2 (-4) mm), stellate hairs and with glandular hairs. Stem, 10-25 cm, erect, simple, scape-shaped with scattered eglandular dentate hairs mixed with numerous stellate hairs. Lower leaves light green often with purple red spots at the apex; stellate hairs numerous on both surfaces and mixed with sparse eglandular dentate hairs – abundant only on the lower blade, along the midrib and the petiole – and with some small glandular hairs especially on edges. lamina ovate or ovate-lanceolate, 3-7,5 (-8) × 2,5-4,5 cm, entire or finely denticulate, acuminate or acute, slightly attenuate or subcordate at base; petiole distinct 3-5,5 (-6,5) mm; cauline leaves lanceolate to linear, 0,7-1,5 × 0,3-0,5 cm, with stellate and 2-4 mm eglandular dentate hairs. Inflorescence racemose with 3-6 capitula; peduncles with numerous or dense stellate hairs, sparse eglandular dentate hairs and sparse glandular hairs. Bracts green; external bracts triangular, the inner ones linear,

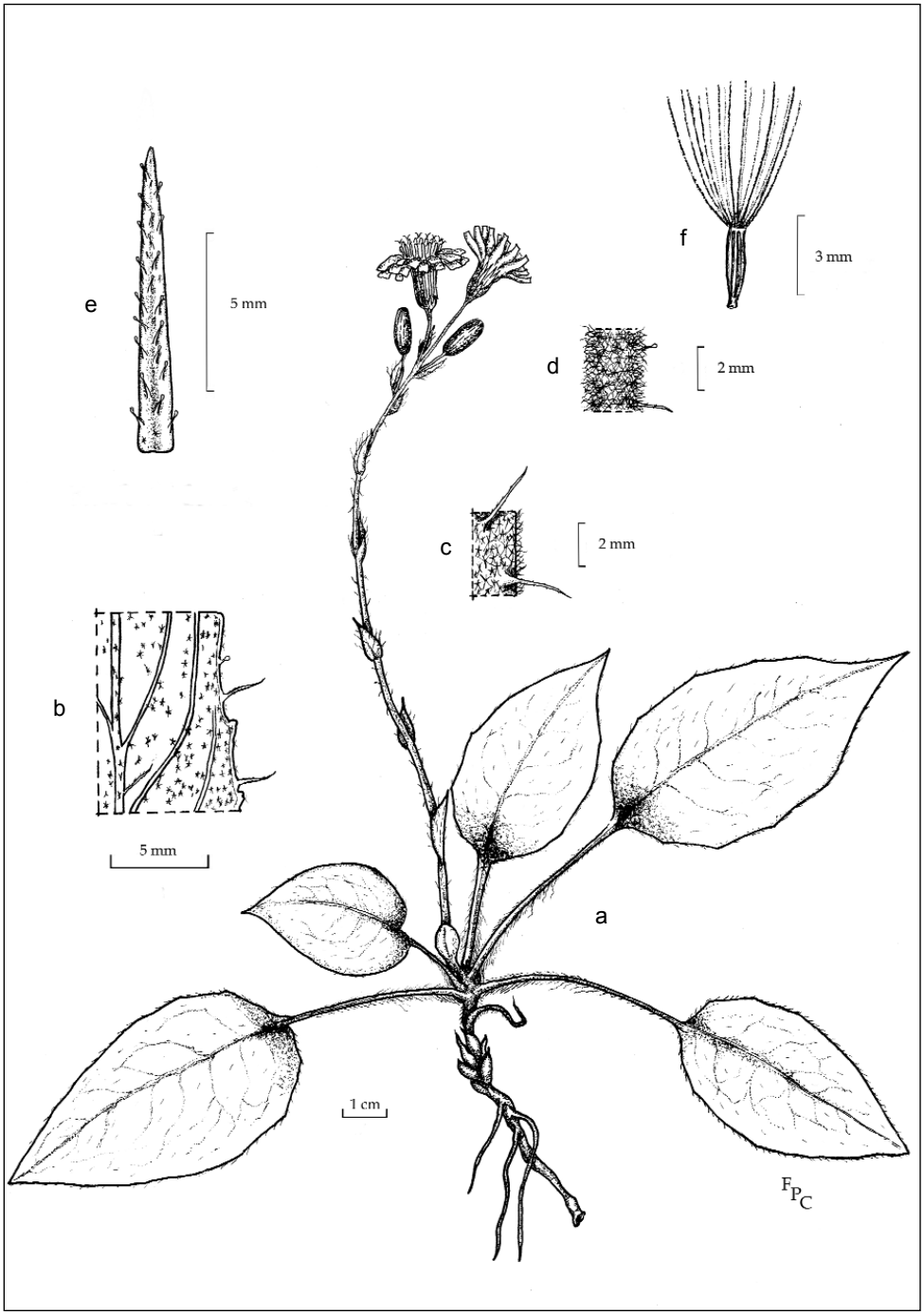

Fig. 1. *Hieracium pignattianum:* a) habit; b) leaf margin in detail; c) stem; d) peduncle; e) involucral bract; f) achene. Drawn by F. P. Campione.

7-10 mm, acute or obtuse, with numerous light glandular hairs of different length and sparse stellate hairs. Ligules light yellow, glabrous at the apex; styli sooty yellow. Achenes 3-4 mm long, brownish-yellow, ribbed. Pappus whitish.

BIOLOGICAL FORM – Hemicryptophyte, rosulate or pseudorosulate, with oblique rhizome.

PHENOLOGY – Flowering August - October (Fig. 2).

CHROMOSOME NUMBER – $2n$=27=3x (Fig. 3).

DISTRIBUTION AND ECOLOGY – *Hieracium pignattianum* occurs in the Madonie Mountains between the territories of Polizzi Generosa and Petralia Sottana (Fig. 4). It is a calcicolous taxon, frequent on the borders of *Fagus sylvatica* wood (Fig. 5), along the rocky slopes facing the north of Monte Mufara, Monte Quacella, Monte Daino, Cozzo del Filatore, Pizzo dell'Inferno and Rocca di Mele, between 1300 and 1700 m a. s. l. along with *Luzula sieberi* Tausch subsp. *sicula* (Parl.) Pignatti, *Anthyllis vulneraria* L. subsp. m*aura* (Beck) Lindb., *Hypochoeris laevigata* (L.) Ces., P. & G., *Trifolium pratense* L., etc.

STATUS – According to IUCN (2001), *Hieracium pignattianum* should be classified as "Vulnerable" (VU).

TAXONOMIC RELATIONSHIP – *Hieracium pignattianum* shows close relationship with the taxa of the *H. racemosum* group (sect. *Italica* Fries), which includes ± comose plants, with soft, elliptical, ovate, oblong-lanceolate leaves, entire to serrate-dentate, acute or acuminate, attenuate or rounded at base, wing-petiolate or with petiole clearly distinguished from the lamina, with or without stellate hairs and with small glandular hairs on edges; few or numerous capitula; peduncles with numerous or dense stellate hairs, with few or numerous eglandular dentate and glandular hairs; light or dark green bracts, subglabrous or with few or numerous eglandular dentate hairs, stellate and glandular hairs; glabrous ligules and sooty-yellow styli; grey, yellow, light brown or reddish-brown and blackish achenes (Zahn 1922, Sell & West 1976).

Within this group, *H. pignattianum* turns out to be similar to *H. crinitum* because of the presence of numerous glandular hairs on bracts, but the two species show marked differences as regards morphologic features. Significant divergences involve indumentum, leaf morphology and size of bracts. *H. pignattianum* shows reduced and short hairiness (1-2 (-4) mm) and numerous stellate hairs on both leaf surfaces (Fig. 6), while *H. crinitum* presents thick hairiness, characterized by 2-8 (-10) mm eglandular dentate hairs, and leaves usually lacking stellate hairs (Fig. 7). Leaves of *H. pignattianum* are ovate, ovate-lanceolate, entire or with very minute teeth, slightly attenuate, usually rounded or subcordate at base, with petiole clearly distinguished from lamina, while the leaves of *H. crinitum* are elliptic, elliptic-lanceolate, ovate in young individuals, dentate to serrate-dentate, clearly attenuate and often winged-petioled. Bracts range from 7 to 9 (-10) mm, while the ones belonging to *H. crinitum* are generally larger and range from 9 to 12 (-16) mm (Tab. 1).

Fig. 2. *Hieracium pignattianum*: blooming individual in its *locus classicus.*

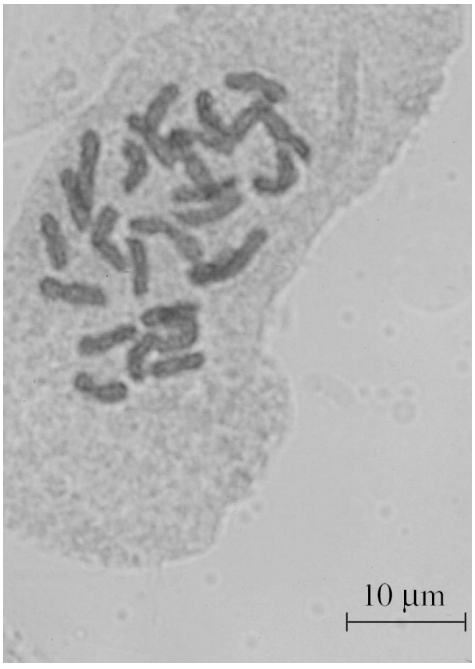

Fig. 3. Mitotic metaphase plate of *Hieracium pignattianum*.

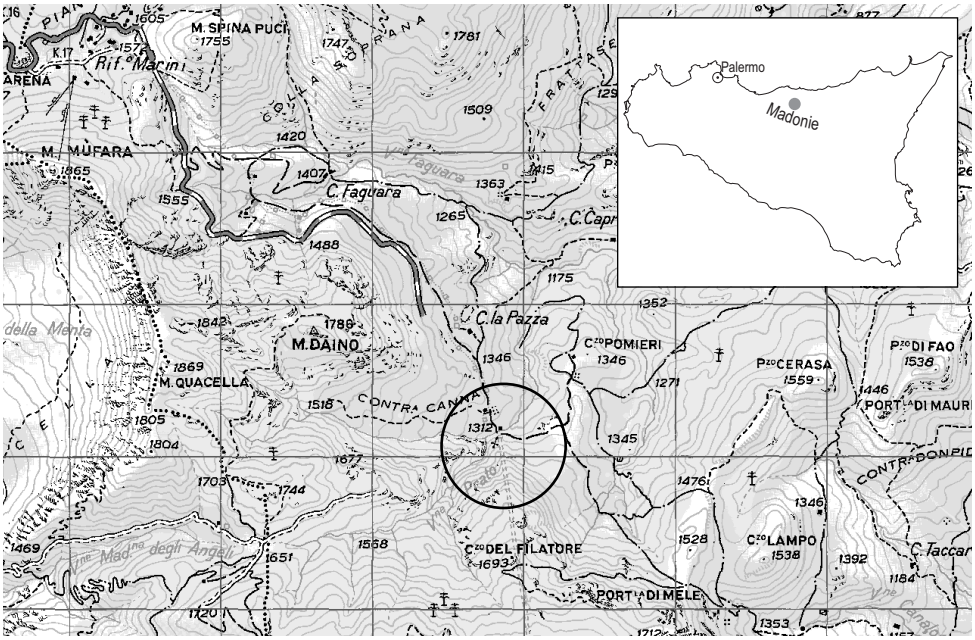

Fig. 4. The *locus classicus* location of *Hieracium pignattianum* within the Madonie Mountains (○).

Fig. 5. Habitat of *Hieracium pignattianum* in its *locus classicus*.

With regard to the other taxa of the *H. racemosum* group, *H. pignattianum* is distinct from *H. limbarae*, from *H. moesiacum* and from *H. racemosum* by morphology of leaves, indumentum of bracts and colour of scales and achenes (Tab. 1). *H. pignattianum* shares with *H. barbatum* modest hairiness and color of scales and achenes, with *H. italicum* and with *H. virgaurea* shares the above-mentioned features, the morphology of leaves and the presence of abundant stellate hairs on leaves; it differs from *H. barbatum*, from *H. italicum* and from *H. virgaurea* for its involucre indumentum whose bracts lack evident glandular hairs (Tab. 1). Because of the presence of some glandular hairs on bracts, of its leaf morphology and its rather minor dimension, *H. pignattianum* is similar to *H. oliastrae*; yet, it is different for its reduced indumentum and for its bracts which are rich in glandular hairs but lack long eglandular dentate hairs (Tab. 1).

Therefore *H. pignattianum* is different from other entities already assigned to the group of *H. racemosum* for its morphologic features and, because of its punctual location, it is geographically isolated. As regards phylogenetic relationship, *H. lucidum* Guss. – an endemic exclusive to Monte Gallo (Palermo) and one of the few sexed diploid species of the entire genus (Merxmüller 1975 Brullo & Pavone 1978) – could represent an ancestral taxon (Pignatti 1979) of *H. pignattianum* as shown by the close genetic correlation between the two taxa (Di Gristina & al. 2003).

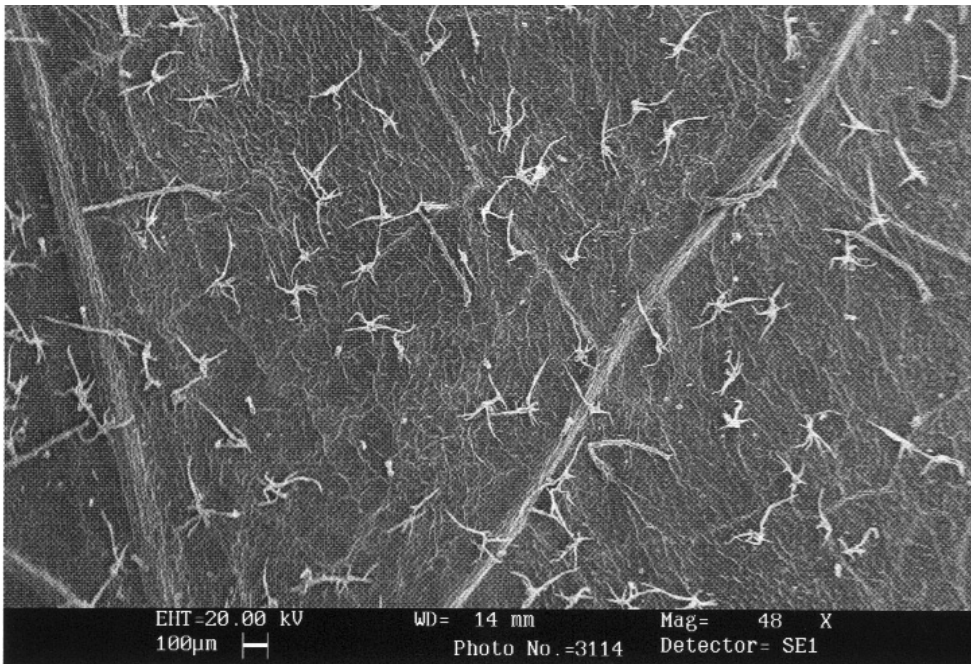

Fig. 6. SEM micrograph of the lower leaf blade of *Hieracium pignattianum*.

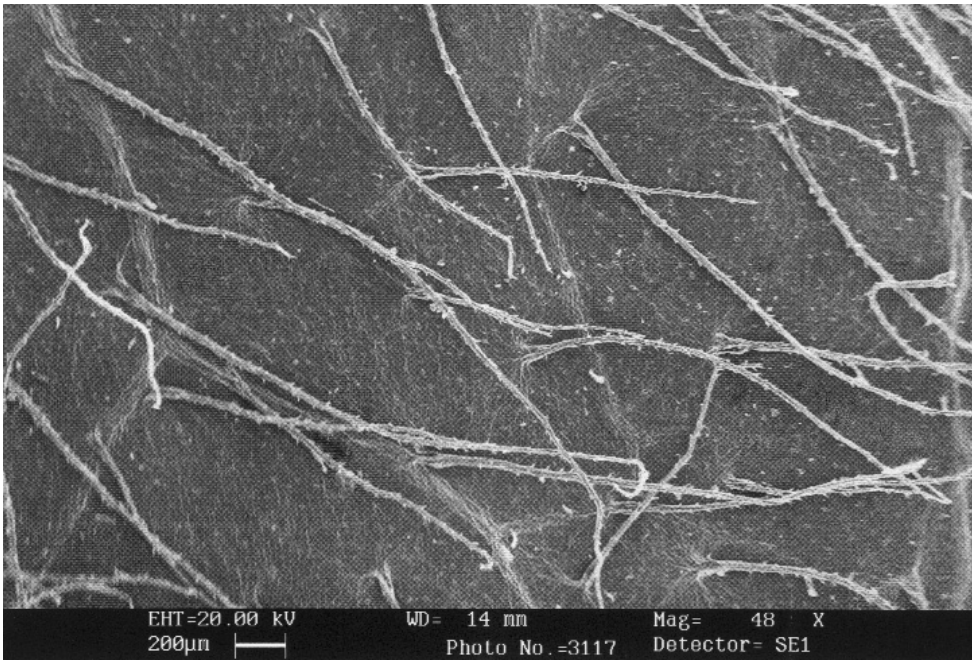

Fig. 7. SEM micrograph of the lower leaf blade of *Hieracium crinitum*.

Table 1 – Comparative characters within the *H. racemosum* group.

Taxa	Stem	Leaves	Peduncles	Bracts	Achenes
H. barbatum	40-60 cm, with sparse or numerous eglandular dentate hairs, mixed with sparse stellate hairs	elliptical-lanceolate, ovate-lanceolate, denticulate, acute, attenuate, wing petioled, with sparse or numerous eglandular dentate hairs	with numerous stellate hairs and sparse eglandular dentate hairs	green, (7-) 9-10-12 mm, obtuse, subglabrous or with sparse eglandular dentate hairs and rare microglands	yellowish or yellowish brown
H. crinitum	40-80 cm, with dense or numerous patent eglandular dentate hairs and numerous or dense stellate hairs	elliptical, elliptical-lanceolate, oblong-lanceolate, ovate in young individuals, from dentate to serrate-dentate, acute or acuminate, attenuate, wing-petioled, with dense or numerous eglandular dentate hairs and few minute glandular hairs especially on edge	with dense stellate hairs, numerous or dense eglandular dentate hairs and few or numerous glandular hairs	green, 9-12 (-16) mm, linear-lanceolate, obtuse, with dense long glandular hairs, some eglandular dentate hairs and some stellate hairs	brownish yellow
H. italicum	(15-) 20-50 cm, with numerous stellate hairs and sparse eglandular dentate hairs	ovate, oblong-ovate, dentate or little dentate, acuminate, round at base or subcordate, with lamina slightly running down petiole, with sparse eglandular dentate hairs	with numerous or dense stellate hairs and some eglandular dentate hairs	green, 8-9 mm, obtuse, hairless or with some stellate hairs and some small eglandular dentate hairs	greyish white or brownish yellow
H. limbarae	20-40 cm, with numerous stellate hairs	lanceolate, weakly dentate, acute, subsessile or wing-petioled, with rare and short eglandular dentate hairs and numerous stellate hairs	with dense stellate hairs	Dark green on surface and green on edge, 8-9 mm, linear-lanceolate, obtuse, with stellate hairs and short eglandular dentate hairs on edge	beige-brown
H. moesiacum	40-60 cm, with few or numerous eglandular dentate hairs	elliptical, oblong-lanceolate, sinuate-dentate, acute, attenuate, with sparse eglandular dentate hairs	with dense stellate hairs, numerous small glandular hairs and sparse eglandular hairs	dark green on surface and green on edge, 11-12 mm, obtuse, with numerous microglands and with sparse eglandular hairs and stellate hairs	reddish brown or blackish

Table 1 – continued.

Taxa	Stem	Leaves	Peduncles	Bracts	Achenes
H. oliastrae	10-40 cm, with dense stellate hairs and numerous long eglandular dentate hairs	ovate-lanceolate, entire or with slightly hinted teeth, acute, slightly attenuate, with numerous long eglandular dentate hairs	with dense stellate hairs and numerous long eglandular dentate hairs	deep green on surface, light green on edge, 8-10 mm, linear-lanceolate, with sparse long eglandular dentate hairs and stellate hairs; some microglands on edge	light brown
H. pignattianum	10-25 cm, with numerous or dense stellate hairs and sparse eglandular dentate hairs	ovate, ovate-lanceolate, entire or with slightly hinted teeth, acute or acuminate, slightly attenuated at base, often round or subcordate, with petiole distinguished from lamina and sparse or numerous stellate hairs on both surfaces mixed with few eglandular dentate hairs, numerous only along the lower midrib and along petiole, and some small glandular hairs especially on edge	with dense stellate hairs, sparse eglandular dentate hairs and some small glandular hairs	green, 7-9 (-10) mm, linear-lanceolate, acute or obtuse, with numerous glandular hairs and some stellate hairs	brownish yellow
H. racemosum	40-60 (-100) cm, often pluricaulis, with few or numerous or dense eglandular dentate hairs and few or numerous stellate hairs	elliptical, oblong-lanceolate, serrate-dentate, dentate or subdentate, acute, attenuate, with numerous or dense long eglandular dentate hairs and sparse stellate hairs	with dense stellate hairs and some eglandular dentate hairs	dark green on surface and green on edge, sometimes totally green, 11-13 mm, linear-lanceolate, obtuse, with few or numerous stellate hairs, some short eglandular hairs and sparse microglands	reddish brown
H. virgaurea	25-40 cm, with numerous stellate hairs mixed with sparse or numerous eglandular dentate hairs	ovate, ovate-lanceolate, dentate, acuminate, slightly attenuate, often round or subcordate at base and with petiole distinguished from lamina, with numerous stellate hairs mixed with sparse or numerous eglandular dentate hairs	with numerous or dense stellate hairs and some eglandular dentate hairs	green or dark green at apex, (7-) 9 (-11-12-14) mm, linear-lanceolate, subacute, with few or numerous stellate hairs and some eglandular dentate hairs; rare microglands	greyish white or brownish yellow

Key to the *Hieracium racemosum* group

1 - Bracts dark green to blackish with green margin, sometimes ± totally green; achenes brown to blackish **2**

- Bracts green, sometimes dark green on surface and at the apex; achenes greyish white, yellow or brownish yellow **3**

2 - Bracts with numerous microglands and with eglandular dentate and sparse stellate hairs . . . . . ***H. moesiacum***

- Bracts with sparse microglands, subglabrous or with stellate hairs, and some short eglandular dentate hairs . . . . . ***H. racemosum***

- Bracts only with stellate hairs on surface and short eglandular hairs on edge . . . . . ***H. limbarae***

3 - Bracts with numerous or dense glandular hairs **4**

- Bracts without glandular hairs or with some microglands **5**

4 - Very hairy plant, with dense eglandular dentate 2-10 mm hairs; basal leaves with dense or numerous long eglandular dentate hairs; bracts 9-16 mm . . . ***H. crinitum***

- Not very hairy plant, with sparse eglandular dentate 1-4 mm hairs; basal leaves with numerous stellate hairs on both surfaces mixed with few eglandular dentate hairs; bracts 7–10 mm . . . . . ***H. pignattianum***

5 - Very hairy plant, with eglandular dentate 2-8 mm hairs; bracts with long eglandular dentate and stellate hairs. . . . . ***H. oliastrae***

- Not very hairy plant, with sparse eglandular dentate 1-4 mm hairs; bracts subglabrous or with sparse short eglandular dentate and stellate hairs **6**

6 - Basal leaves attenuate, petiole often winged . . . . . ***H. barbatum***

- Basal leaves slightly attenuate, rounded or subcordate, petiole distinct **7**

7 - Bracts with few or numerous stellate hairs and some eglandular hairs . . . . . ***H. virgaurea***

- Bracts often subglabrous or with few eglandular or stellate hairs . . . . ***H. italicum***

Specimina visa

Hieracium barbatum, Toscana, Apennino Pistoricus, Alta Valle del Sestajone, 08. 1882, *Levier* (FI); ***H. crinitum***, Sicilia, Madonie, S. Guglielmo, nei castagneti, 07. 1843, *Minà* (PAL); Sicilia, Mirto, ad rupes inumbrosis, septembri, *Todaro* (PAL); Sicilia, Mirto, in sylvaticis montosis, *Todaro* (FI); Sicilia, Salina, in ericeti sul monte, 21. 04. 1877, *Lojacono* (PAL); Sicilia, Madonie, Stretto Canna, 08. 1877, *Lojacono & Failla* (PAL); Toscana, *Levier* (FI); Abruzzo, M. Morrone, *Groves* (FI); Campania, Ischia, in silvaticis della Falanga supra Forio, solo siliceo, 12. 09. 1907, *Pellanda* (FI); Sicilia, Mirto, 10. 06. 1990, *Raimondo & al.,* 1931 (PAL); Sicilia, adiacenze di Mirto, 13. 09. 2000, *Di Gristina*, *Schimmenti*, *Scafidi* (PAL); Sicilia, adiacenze di Longi, 13. 09. 2000, *Di Gristina*, *Schimmenti*, *Scafidi* (PAL); Sicilia, adiacenze di Tortorici, 19. 09. 2000, *Di Gristina* (PAL); Sicilia, Peloritani,

Colle S. Rizzo (Castanea), 13. 10. 2001, *Di Gristina & Ilardi* (PAL); Sicilia, Peloritani, Portella Castanea, 13. 10. 2001, *Di Gristina & Ilardi* (PAL); Sicilia, Etna, M. Zoccolaro, 31. 07. 2002, *Di Gristina & Domina* (PAL); Calabria, S. Sosti (Cs), lungo il sentiero che porta al santuario della Madonna del Pettoruto, 29. 09. 2002, *Di Gristina & Domina* (PAL); Sicilia, Salina, Monte Rivi (Malfa), 13. 11. 2002, *Di Gristina & Domina* (PAL); ***H. italicum***, Toscana, Vallombrosa, in silvis abietinis vetustis, maxime umbrosis, frequens, solo humoso-siliceo, 31. 08. 1908, *Fiori* (FI); Campania, Monte Alburno, da C. Sierro a C. Aresta, 14. 08. 1936, *De Philippis* (FI); Emilia, Monte Calvario, 05. 09. 1936, *Lunardi* (FI); ***H. limbarae***, Sardegna, Tempio Pausania, M.te Limbara, lungo la strada asfaltata che sale da Valliciola alle antenne TV; alla base del Vallone di Coddu finosu, 13. 09. 1985, *Arrigoni & Corrias* (FI); ***H. oliastrae***, Sardegna, Gairo, Pareti NW del Pizzo di Sa Pranedda, 24. 08. 1965, *Arrigoni* (FI); Sardegna, Seui, Foresta Montarbu, vallecole sopra la Caserma Forestale, 07. 07. 1969, *Arrigoni* (FI); Sardegna, Seui, margini della Foresta Montarbu sopra la strada Arquerì–Lago del Flumendosa, 28. 09. 1977, *Arrigoni & Di Tommaso* (FI); Sardegna, Lanusei, 2 km. sopra il paese, sulla strada per Bivio Carmine, suolo granitico a margine di lecceta, 17. 09. 1985, *Arrigoni & Camarda* (FI); ***H. pignattianum***, Sicilia, Madonie, Passo della Botte, 08. 06. 1990, *Raimondo & al.,* 1369 (PAL); Sicilia, Madonie, Passo della Botte, 29. 08. 2001, *Raimondo & Di Gristina* (PAL); Sicilia, Madonie, Rocca di Mele, 29. 08. 2001, *Raimondo & Di Gristina* (PAL); Sicilia, Madonie, Quacella, 03. 09. 2001, *Raimondo & Di Gristina* (PAL); Sicilia, Madonie, pendici di Monte Mufara, 10. 10. 2001, *Raimondo & Di Gristina* (PAL); Sicilia, Madonie, pendici di Monte Daino, 10. 10. 2001, *Raimondo & Di Gristina* (PAL); ***H. racemosum***, Toscana, Lido di Camaiore, 08. 1940, *Chiarugi* (FI); Toscana, La Verna, fascia boschiva esterna del Perimetro basale (versante nord e nord-ovest), 12. 08. 1960, *Tosi* (FI); Sardegna, Desulo, meno di 1 km a monte di Aratu sulla strada per Tascusì, 17. 09. 1985, *Arrigoni & Camarda* (FI); Sardegna, Aritzo, margini di castagneto sulla strada che dal paese va a Cossatzu, 17. 09. 1985*, Arrigoni & Camarda* (FI); Toscana, Monte Argentario, Convento dei Padri Passionisti, margini di castagneto, 04. 10. 1993, *Aldobrandi & Baldini* (FI); ***H. virgaurea***, Emilia, Monte Fiorito, in castanetis, 07. 1933, *Mori* (FI); Toscana, Monte Senario (Firenze), in silva mixta prope crucem in declivibus ad septentrionem vergentibus, 28. 08. 1958, *Benini* (FI); Piemonte, Colle di Nava, Val Tanarello, frequente nei castagnati, 09. 09. 1987, *Pichi Sermolli* (FI).

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Address of the authors:
Prof. Francesco M. Raimondo, Dr. Emilio Di Gristina, Università degli Studi di Palermo, Dipartimento di Scienze Botaniche, Via Archirafi, 28, I-90123, Palermo (Italy).