Phaenoglyphis villosa (Hartig 1841) (Hymenoptera: Figitidae: Charipinae): a complex of species or a single but very variable species?

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Abstract. The status of Phaenoglyphis villosa (Hartig 1841), the only species in this genus with the radial cell partially open along the wing margin, is discussed. A complete synonymy list, redescription, morphological variability and some biological peculiarities of P. villosa are given. After studying numerous specimens from different countries from all continents, we concluded that this species is either very variable or might be a complex of sibling species. Auloxysta tarsata Belizin 1973, is a new synonym of P. villosa and P. dolichocera (Cameron 1889) was re-established as a valid species.

Résumé. Phaenoglyphis villosa (Hartig 1841) (Hymenoptera : Figitidae : Charipinae) : un complexe d’espèces ou une seule espèce très variable ? Le statut de Phaenoglyphis villosa (Hartig 1841), seule espèce du genre dont la cellule radiale est ouverte le long de la marge de l’aile, est discutée. Une synonymie complète, une redescription et la variabilité morphologique sont présentées ici, de même que certaines particularités de l’espèce. Après avoir étudié de nombreux spécimens de différents pays de tous les continents, nous arrivons à la conclusion que ce taxon peut être constitué d’une seule espèce très variable ou d’un complexe de plusieurs espèces jumelles. Auloxysta tarsata Belizin 1973 est un nouveau synonyme de Phaenoglyphis villosa. Phaenoglyphis dolichocera (Cameron 1889) est rétabli comme une espèce valide.

Keywords: Phaenoglyphis, Phaenoglyphis villosa, Hymenoptera, Figitidae, Charipinae.

The genus Phaenoglyphis Förster 1869 belongs to the Charipinae (Hymenoptera: Cynipoidea: Figitidae), which includes minute-sized hyperparasitoids in Hemiptera. Representatives of Phaenoglyphis are secondary-solitary obligate endoparasitoids in Aphidiinae (Hymenoptera: Braconidae) and Aphelinus Dalman (Hymenoptera: Aphelinidae), which are primary endoparasitoids in aphids (Hemiptera: Aphididae) (Andrews 1978; Carver 1992; many others). Thus, Phaenoglyphis economically is important in reducing the effectiveness of primary aphid parasitoids.

Phaenoglyphis can be easily distinguished from all other genera of Charipinae by the presence of a transverse mesopleural furrow on the mesopleuron (Fig. 1.f) (Andrews 1978; Fergusson 1986; Pujade-Villar & Paretas-Martínez 2006). The taxonomy of Phaenoglyphis species is very complicated because of (1) a very small size (0.9–1.5 mm); (2) a very weak, indistinct surface body sculpture and an apparent lack of interspecific variability, resulting in a description of a large number of chromatic species; (3) a single sex and/or many singleton species descriptions, given without sufficient diagnosis for differentiation from already described species; (4) descriptions are not homogeneous, incomplete, and often lacking important diagnostic characters; (5) since Dalla Torre & Kieffer (1910) monographic work, no revision has been made and, thus, currently the taxonomic chaos in this genus is enormous. Since 1910, some authors tried to clarify the status of several Phaenoglyphis species (Hellén 1963; Quinlan 1974; Andrews 1978; Evenhuis 1973, 1978; Evenhuis & Barbotin 1977, 1987; Quinlan & Evenhuis 1980; Menke & Evenhuis 1991; Fergusson 1986; Pujade-Villar et al. 2002; Pujade-Villar & Paretas-Martínez 2006). According to our examination no more than 20 species should be included in this genus. In addition, in the recent
phylogenetic study of the Charipinae (Paretas-Martínez et al. 2007), *Phaenoglyphis* is shown as a paraphyletic genus, which needs an urgent world revision.

*Phaenoglyphis villosa* is a very disputed cosmopolitan species collected on all continents. The list of synonyms and name compositions is very long and the diagnosis of the species established by previous authors is incorrect and incomplete. However, Evenhuis & Barbotin (1977) and Menke & Evenhuis (1991) partially resolved the taxonomic problems in this species.

On the other hand, this is the first species of Charipinae that is so variable in most of the characters

![Figure 1](http://morphbank.ebc.uu.se)

Figure 1
Morphological aspects of *Phaenoglyphis villosa* typical form. (a) Head in frontal view, (b) head in dorsal view, (c) mesosoma in dorsal view, (d) antenna of male (e) antenna of female, (f) mesosoma in lateral view, (g) pronotum in frontal view, (h) propodeum, (i) forewing. Figures (a, d-f) Liljeblad & Ronquist copyright (http://morphbank.ebc.uu.se).
that are usually used to define the species within this subfamily. So, the objective of this paper is to put in evidence the morphological variability of *P. villosa*, a variability not studied or considered by most authors in the last century, and the taxonomic problems that are derived from this variability.

**Material and Methods**

Type series and other material examined were loaned from the following institutions: The Natural History Museum (British Museum, NHML), London, England (S. Lewis); Zoological Institute of the Russian Academy of Sciences (ZMAS), Saint Petersburg, Russia (Dr. S. Belokobylskij); Hungarian Natural History Museum (HNHNM), Budapest, Hungary (Dr. S. Csösz); the collection of Dr. J. Pujade-Villar at the University of Barcelona (UB), Spain; Systematic Parasitoid Laboratory (SPL), Köszeg, Hungary (Dr. G. Melika); Canadian National Collection of Insects (CNCl), Ottawa, Canada (Dr. G. Gibson); Museo de la Plata (MLP), Argentina (Dr. N. B. Díaz).

A large number of specimens (several hundreds) from Andorra (new record), Argentina, Belgium, Canada (Ontario, New Brunswick, Manitoba, Quebec, new records), Chile, China (new record), France, Germany (new record), Greece (new record), Hungary (new record), Ukraine (new record), Iran (new record), Japan (new record), Morocco (new record), the Netherlands, Norway (new record), Romania, Russia (new record), Spain (including Mallorca and Canary Islands, new records), Sweden, Taiwan (new record) and USA (Colorado, Alaska, Illinois, new records), were examined. Holotype of *Auloxysta tarsata* Belizin, 1973, deposited in ZMAS, and labelled as “Nature Reserve “Kuluja”, Israel 23 V. V.Trajipitzin 1965” (white label), “Holotypus Auloxysta tarsata female V. Belizin det” (red label), “Phaenoglyphis villosa (Hartig, 1840), female, J. P-V. det 2005” (white label), was also examined.

We follow the current terminology of morphological structures (Gibson 1985; Ronquist & Nordlander 1989) and surface sculpturing according Harris (1979). Abbreviations for fore wing venation follow Ronquist & Nordlander (1989). Measurements and abbreviations used here include: F1–F12, 1st and subsequent flagellomeres; POD (post-ocellar distance) is the distance between the inner margins of the posterior ocelli; OOL (ocellar-ocular distance) is the distance from the outer edge of a posterior ocellus to the inner margin of the compound eye; LOL, the distance between lateral and frontal ocellus. The SEM pictures were taken with Stereoscan Leica-360 by Palmira Ros-Farré at a low voltage (700V) and without coating, in order to preserve the specimens.

**Results**

*Phaenoglyphis villosa* (Hartig 1841)

_Xystus villosus_ Hartig 1841: 353, ♀


*Allotria villosa* (Hartig): Taschenberg 1866: 130.


*Allotria villosa*: Dalla Torre 1893: 36.


*Dylita (Auloxysta) viltoria* (Hartig): Kieffer 1900: 114.


*Allotria (Bothrioxysta) piciceps* Thomson: Kieffer 1902b: 40 (missspelling).

*Allotya (Alloxysta) perplexa* Cameron: Kieffer 1902b: 41.

*Charips (Charips) recticornis* recticornis (Kieffer): Dalla Torre & Kieffer 1910: 278.

*Allotria (Allotria) collina* Cameron: Kieffer 1902b: 63.


*Charips (Bothrioxysta) foveigera* (Kieffer): Dalla Torre & Kieffer 1910: 168 (missspelling).

*Allotria (Alloxysta) subaperta* Kieffer: Dalla Torre & Kieffer 1910: 263.

*Allotria (Alloxysta) campyla* Kieffer: Dalla Torre & Kieffer 1910: 263.


*Charips (Bothrioxysta) piciceps* (Thomson): Dalla Torre & Kieffer 1910: 268.

*Charips (Bothrioxysta) curvatus* (Kieffer): Dalla Torre & Kieffer 1910: 278.

*Charips (Charips) recticornis* (Kieffer): Dalla Torre & Kieffer 1910: 280.


*Andoxysta tarsata* Belizin 1973: 38, ♀♀. _n. syn._


**Redescription**

**Length.** Female 0.9–1.5 mm; male 0.7–1.3 mm.
Figure 2
Variations in the pedicellum and first flagellomeres of females of *Phaenoglyphis villosa*. Specimens from (a) Turkey (P. tarsata, type material), (b) Norway, (c) Canada (Ontario), (d) Canada (Ontario), (e) France, (f) Norway, (g) Canada (Ontario), (h) Norway, (i) China. Comments in the text.
Female

Colour. Head (except mouthparts), mesosoma and metasoma dark brown to blackish-brown, rarely yellow to amber or yellowish chestnut; mouthparts (except for the reddish tooth of mandibles) pale lemon yellow. Compound eyes silvery. Antennae with scapus, pedicelum, F1-F2 and sometimes F3 yellow to light brown (sometimes darker dorsally); subsequent flagellomeres dark, reddish-brown; rarely all antennomeres completely yellow to amber. Legs, including all coxae, yellow to light brown; sometimes the middle of femora darker. Wing veins yellowish to brownish.

Head (figs. 1a-b). Slightly broader than long (10.6:9.3) and as wide as mesosoma. Face with dense, long and procumbent setae; frons glabrous; vertex, gena and occiput with scattered, long, curvate, procumbent setae. Head smooth and shining except coriaceous area along both sides of malar sulus. Transfacial line longer than height of eye (9:7). Malar space slightly less than 0.5 times as high as height of compound eye. Head in dorsal view around 1.6 times as long as broad. POD 1.5 times as long as OOL; OOL 1.3 times OOL; OOL 2.0 times as long as diameter of lateral ocellus; ocelli very small.

Antennae (figs 1e, 2a-i). 13-segmented, as long as body length. All segments with semierect setae. Scapus slightly longer than pedicelum; pedicelum 1.5-1.8 times as long as broad. Flagellomeres variable in length but always 2.0–3.0 as long as broad; F4 to F10 usually subequal in length, F1-F3 variable, usually shorter than F4-F10; F1 variable, as long as pedicelum or slightly longer, usually as long as F2 and shorter than F3. F3 to F11 broader and with placodela sensilla which located on elevated ridges; sometimes F3 is not broader and the ridges with placodela sensilla hardly traceable; F4 is always broader and with elevated ridges.

Mesosoma (figs. 1f-h, 5). Smooth and shining, longer than high (20:15) in lateral view. Pronotum with sparse setae; pronotal carinae present, almost complete but weak. Mesoscutum circular, without notauli, glabrous with very few scattered decumbent setae anteriorly. Scutellum rounded, anteriorly with two deep oval foveae more or less separated by a carina or completely fused, dorsally with sparse long setae, glabrous anteriorly. Mesopleuron divided by a distinct transverse mesopleural furrow; mesopleural triangle covered with dense short setae. Propodeum with dense long setae; propodeal carinae complete, arcuated and uniformly broadened; central propodeal area with long setae anteriorly and laterally, medio-posteriorly setae absent.

Wings (figs. 1i, 4). Pubescent and ciliate; apex and basal part of forewing with long marginal cilia. Forewing to body length as 55:40. Radial cell always partially open along wing margin, 2.1-2.7 times as long as broad; R1 incomplete, never close the radial cell; 2r nearly straight or slightly arcuated, Rs slightly curved, length of R1 to margin short (1/3 of 2r vein, rarely longer) and R1 along wing margin reach to 1/3 of radial cell length. Areolet absent. Rs+M vein absent. Medial vein (M) distinct, visible.

Metasoma. Lanceolate. Equal in length to mesosoma, visible tergites without punctures, smooth, shiny; first tergite visible, with a collar of white setae and 2.0 times as long as second along middorsal line. Ventral part of hypopygium not projecting into a spine.

Male

Similar to female except 14-segmented antenna (figs 1d, 3a-d), which is slightly longer than body (around 1.2 times); usually F1 subequal to F2 and slightly shorter than F3; F3-F12 slightly broader, with placodela sensilla located on elevated ridges. F1 longer than pedicelum, faintly but distinctly curved, usually slightly inflated apically; F2 usually with ridges which in some specimens hardly traceable.

Diagnosis. Phaenoglyphis villosa is the only species in this genus with partially open radial cell; all other species have radial cell entirely closed along wing margin. Characters which earlier were referred as diagnostic for this species: ratios of flagellomeres, body colour, shape of scutellar foveae and the length of the radial cell strongly vary and are of no species diagnostic value.

Biological. Phaenoglyphis villosa is deuteroetokous in Australia (Carver 1992), North America (Andrews 1978) and South America (Pujade-Villar et al. 2002; collected females were erroneously mentioned as males in that paper); males are very rare and Carver (1992) affirmed that under laboratory conditions virgin females produced only females. In Europe, P. villosa is arthropetokous, both males and females are present (Menke & Evenhuis 1991). This behaviour is also known from Cynipidae (Pujade-Villar 1998; Pujade-Villar & Díaz 2001). Moreover, sympatric and allopatric occurrence of species with both, sexually reproducing and parthenogenetic populations are also known in some other groups of Hymenoptera. According to Carver (1984, 1989, 1992) chances for initial establishment in a new region of adventive species with parthenogenetic reproduction are presumably higher than those for sexually reproducing species.

Phaenoglyphis villosa was reared and trophically associated with numerous hosts. It is a secondary parasitoid of Aphidinae (Hemiptera) from Aphidiinae (Hymenoptera, Braconidae). The trophic-chains “P. villosa - primary parasitoid - aphid - food plant” are very different and are given in details in Evenhuis & Barbotin (1977) from France and the Netherlands, Andrews (1978) from North America and Carver (1992) from Australia. According to these authors, P. villosa has some preferences for certain combinations of aphids and primary parasitoids but they are different on different continents.

Distribution. Cosmopolitan. According to Evenhuis & Barbotin (1977) P. villosa has been introduced onto different continents together with aphids on their food plants and with the primary parasitoids. Gaston et al. (2003) mentioned this species as an introduced one onto some oceanic islands. Carver (1992) also proposed that P. villosa originates from Palaearctic and accidentally was introduced from Europe to America and Australia. Before this study, the species was recorded from Algeria (Kieffer 1909), Argentina (Pujade-Villar et al. 2002), Australia (Carver 1992; Milne 1999), Belgium (Crevecoeur 1933), Canada (Andrews 1978), Chile (Pujade-Villar et al. 2002), Finland (Hellén 1958), France (Kieffer 1902a; Kieffer 1904 in [1902b-1905]; Dessart 1969; Evenhuis & Barbotin 1977; Andrews 1978), Great Britain (Cameron 1889; Fergusson 1986), Moldavia (Belizin 1966; Talickij & Kuslickij 1990), the Netherlands (Evenhuis & Barbotin 1977), New Zealand (Evenhuis & Barbotin 1977), Romania (Ionescu 1963), Spain (Torras-Casals 1996;
Menorca Island: Pujade-Villar et al. 2001), Sweden (Thomson 1862) and USA (Ashmead 1897; Kieffer 1909; Andrews 1978; Halbert 2001). On the basis of the material we examined, *P. villosa* is also present in Andorra, Canada (Ontario, New Brunswick, Manitoba, Quebec), China, Germany, Greece, Hungary, Iran, Japan, Morocco, Norway, Russia, Spain (including Mallorca and Canary Islands), Taiwan, Ukraine, and USA (Colorado, Alaska, Illinois).

**Taxonomic Comments.** *Phaenoglyphis villosa* was a very conflictive species until Evenhuis & Barbotin (1977) work (see for example, the long list of different denominations). Evenhuis & Barbotin (1977) concluded that all the *Phaenoglyphis* without notauli, with scutellar foveae and large open (or partially open) radial cell are the same species, *P. villosa*; nine synonyms were established by them.

Kieffer (1902b: 59) described from the Carpentier’s collection a male he named as *P. recticornis* var. *atra* and which was later considered as a subspecies (Dalla Torre & Kieffer 1910: 278). Evenhuis & Barbotin (1977: 187) studied the type series of *P. recticornis*, without involving the males from the Carpentier’s collection which were lost, and correctly concluded that *P. recticornis* (females) is a synonym of *P. villosa*. Without the examination of the type material of *P. recticornis* *atra* we cannot be sure about the status of this subspecies, so we consider *P. recticornis* *atra* as a nomen dubium.

*Phaenoglyphis dolichocera* (Cameron 1889) was incorrectly synonymized with *P. villosa* (Evenhuis & Barbotin 1977: 184, 186), which was also mentioned by Fergusson (1986: 20). Detailed examination of the type material of *P. dolichocera* showed that this species has the radial cell closed and the scutellar foveae are absent in contrast to *P. villosa*, and, thus, *Phaenoglyphis dolichocera* is a valid species.

Finally, *Auloxysta tarsata* Belizin 1973 has a mesopleural furrow, and thus belong to the *Phaenoglyphis* genus. All other characters are similar to those defining *P. villosa* (see them all above). This species represented by a single female holotype, collected in Israel (figs 2a, 4a). Placodeal sensilla present from F4 only (fig. 2a), like in *P. ambrosiae* (Andrews 1978), synonym of *P. villosa* (Menke & Evenhuis 1991). After the examination of large series of *P. villosa* (= *ambrosiae*) from North America, we observed that in most specimens placodeal sensilla are present from F3 (fig. 2c) and only a few specimens lacked them on F3 and sensilla were found only from F4 (fig. 2d). This variation has been also observed in specimen series collected in Hungary. Thus, we concluded that in the case of *P. villosa*, presence of placodeal sensilla on F3 also varies. For all this, after the study of the type material of *Auloxysta tarsata* Belizin 1973, we conclude that this species is a n. syn of *P. villosa*.

**Discussion**

*Phaenoglyphis villosa* was defined by Evenhuis & Barbotin (1977), later by Andrews (1978) and Carver

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**Figure 3**

Variations in the pedicellum and first flagellomeres of males of *Phaenoglyphis villosa*. Specimens from (a) Norway (dorsal view), (b) France, (c) China, (d) Hungary. Comments in the text.
An analysis of some morphological characters is given below.

**Colour.** Usually the head and mesosoma are dark brown to blackish-brown as the above mentioned authors affirmed, however, in some European and North-American specimens the colour predominantly is yellowish chestnut; series from China are amber, some specimens from Taiwan and Japan have the pronotum amber. Usually F1-F3 are lighter (rarely F4 too) than the rest of flagellomeres but in some specimens only F1-F2 are lighter and/or rarely all flagellomeres are yellowish. Forewing veins are very pale to brownish.

**Antenna.** The ratios of the first flagellomeres in

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**Figure 4**

Some models of radial cells in *Phaenoglyphis villosa*. Specimens from: (a) Turkey (*P. villosa = tarnata*), (b-c) France, (d) Hungary, (e) Canada, (f-g) Norway, (h) Japan. Comments in the text.
Figure 5
Variations of the scutellar foveae of *Phaenoglyphis villosa*. Specimens from (a) France, (b) Canada (Ontario), (c) China, (d) Hungary, (e) Norway, (f) China, (g) Sweden, (h) same of "c" in other vision (China), (i) Canada. Comments in the text.
the female antenna are very variable. F1 can be slightly longer than F2 (figs. 2a, h) or subequal (figs. 2b-g); F1 usually longer than pedicellum (fig. 2a-c, e-h) but in some specimens they are subequal (figs. 2d, e-h). F3 usually with distinct placodeal sensilla (fig. 2b-c, e-i) but sometimes hardly traceable or even absent (figs. 2a, d); in some specimens F3 is similar in shape to F2 (figs. 2a, d, h) but is sometimes clearly broader (figs. 2e-g). These variations in the first antennomeres were observed within the same series, collected at the same time at the same locality (specimens figured as 2b, 2f, 2h are from Norway and those figured as 2c, 2d and 2g are from Canada). In all mentioned cases the length of the female antenna was equal to the body length. In male, antennomeres variations are also present. F1 is curved and emarginated apically (fig. 3c-d) or less curved and emarginated (fig. 3b). The ratio between F1 and F2 is also variable: F1 subequal or longer than F2 (fig. 3); the same is true for the ration of pedicellum and F1 (fig. 3). Placodeal sensilla present from F2 (fig. 3a, c-d) but they are very indistinct and usually visible only under proper light orientation (fig. 3a) (in dorsal or ventral view, but not laterally). F3 always broader than F1 (figs. 3b-d) but sometimes F2 and F3 are the same in shape (figs. 3b, d).

**Forewing.** The radial cell is also variable in length, 2.1-2.7 times as long as broad, and in the shape but is open (partially open) along the margin in all the cases; in general we can observe three models of radial cell: long (fig. 4a-b, c) from Canada, Turkey, Hungary, France, Japan, others, medium (fig. 4c-d, g) from Hungary, Canada, USA, Australia, France, Sweden, others, and short (fig. 4f, h) from Canada, Taiwan, USA, Japan, Chile, Norway, Sweden, others. The differences are coming from the curvature of Rs, which can be almost straight, slightly curved or arcuated (fig. 4). So, all three types of radial cell were observed in the material coming from different continents and there is no trend in the shape and size of the radial cell of the forewing in different *P. villosa* series which are geographically separated and thus, this character variation suppose to be an intraspecific one.

**Notauli** always absent. Evenhuis & Barbotin (1977) observed some specimens with notauli, “indicated as very short grooves”. In the large examined material we never observed them. This is probably due to a light stereomicroscope effect (Pujade-Villar *et al.* 2002).

**Scutellar foveae.** According to the preceding authors, *P. villosa* has been defined as a species with scutellar foveae well-delimited (fig. 5a). However, in our analysis we observe quite different scutellar foveae models in the series from America, Europe and Asia. All the examined specimens have the radial cell open or partially open and we can see in different series a gradation in the impression of the scutellar foveae: from a typical shape (complete, well-delimited around, well-impressed and separated by a median carina) to fused and indistinctly defined (figs. 5a-i). There are specimens with a median carina between scutellar foveae that is thin and complete (fig. 5a), broad and superficial (fig. 5b), thin and superficial (fig. 5c, h), or thin and incomplete (fig. 5d); specimens without median carina, with foveae fused but delimited anteriorly, laterally and posteriorly (fig. 5e), fused but not delimited posteriorly (fig. 5f); in one specimen the median carina was broad but superficial; in some other specimens this reduction could produce a basal carinae (fig. 5c); in another specimen foveae have a very superficially sculptured carina (fig. 5i). It is impossible to assign all these models (including many other, intermediate variations, not commented and figured here) to different distinct species, because a continuity of this character variation can be observed and no limits, no distinct states can be established for this character. No doubts, it is an intraspecific variability.

Moreover, all the above-mentioned 5 character variations are mixed in different specimens from different continents. For example, there are specimens with interfoveal carina present (fig. 5a), with F1 in females long (figs 2a, b, e) or short (figs 2c, h) and with radial cell long to short (fig. 4), or specimens with foveae more or less fused (figs. 5b-f), with different antennal models (figs 2b-d, f-g, i), with all models of radial cell, and so on. We were unable to distinguish independent, distinct morphological groups because the variations mentioned above are continuous within large series, collected at the same time and locality. Extremes of the variability are quite strong: from amber body, with antennae figured in figs 2g, j, fused scutellar foveae (fig. 5f), and short radial cell (fig. 4g) in a short series from China and, for example, specimens from France (see fig. 1). There are series and specimens with many intermediate states. In spite of mixed character states, we can observe also some trends, for example, in specimens with fused or partially fused scutellar foveae, F1 shorter than in specimens with completely separated scutellar foveae. It is possible that change of one character can influence the change of other one. Anyway, *Phaenoglyphis villosa* is a very variable cosmopolitan species. It is possible, that different hosts and different climatic conditions in the wide-range of its geographical distribution can strongly influence the mentioned variability of morphological characters. Thus, *Phaenoglyphis villosa* is the only species in the genus that has the radial cell open or partially open (never closed!), notauli are absent and scutellar foveae present.
We cannot discard also the possibility that *P. villosa* can be a complex of sibling species that cannot be separated morphologically. In this case, this problem can be solved by using DNA analysis. The intention of our study is not to carry out a DNA analysis but that it can be solved in the future by geneticists or ecologists (with a RNA analysis or a SMRS study).

Furthermore, a SMRS study could solve the problem, but this would require a very long-term project, whereas the objective of this paper is to put in evidence a problem, which has been undetected by most authors in the last century, with a cosmopolitan and very important species. Our intention with this work is to show this problem to the scientific community, so that it can be solved in the future by geneticists or ecologists (with a RNA analysis or a SMRS study).

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Review of *Phaenoglyphis villosa*


