Biodiversity Journal, 2015, 6 (1): 193–196

MONOGRAPH

Diversity in the population of *Brassica incana* Ten. (Cruciferae) in Sicily

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ABSTRACT Phenotipic diversity in Sicilian populations of *Brassica incana* Ten. (Cruciferae) is here analyzed in comparison with the only one known population of *B. raimondoi* Sciandrello et al., taxonomic close species recently described from the coastal relief of eastern Sicily. The analysis of diagnostic characters of these two taxa does not reveal significant differences that justify a treatment at species level of the population of *B. raimondoi*. On this base, the authors deemed to include this taxon in the infraspecific variability of *B. incana* and consider most appropriate the rank of subspecies. Therefore is here proposed the establishment of the trinomial combination *B. incana* subsp. *raimondoi*.

KEY WORDS Mediterranean flora; wild cabbage; Brassicaceae; taxonomy.

Received 02.03.2015; accepted 21.03.2015; printed 30.05.2015
Proceedings of the 2nd International Congress "Speciation and Taxonomy", May 16th-18th 2014, Cefalù-Castelbuono (Italy)

INTRODUCTION

The *Brassica* Sect. *Brassica* (Cruciferae), is a taxon represented by numerous forms described both at specific and infraspecific level. The Sicilian floristic district (sensu Fenaroli & Giacomini, 1968) is considered the diversity center of this group, because its geographical area, including Sicily, its archipelagos and the islands of Malta and Gozo, expresses the greatest biodiversity of this Section seen that 70% of species related to it, not counting the many infraspecific taxa, is concentrated in this district. (Raimondo, 1997; Raimondo 2001). The flora of Sicily includes in this section: *B. macrocarpa* Guss., *B. insularis* Moris, *B. rupestris* Raf., *B. villosa* Biv., *B. trichocarpa* Brullo C. et al. and *B. incana* Ten. To these, recently, has been added *B. raimondoi* Sciandrello et al. (Fig. 1) very close to *B. incana* and described from around Castelmola (Messina), restricted area above the village of Taormina, *locus classicus* of the taxon (Sciandrello et al., 2013), next to one of the most classic coastal localities known of *B. incana* (Capo S. Alessio) (Fig. 2).

As part of the taxonomic review of the different Sicilian populations of Sect. Brassica (Mazzola & Raimondo, 1988; Raimondo et al. 1991; Raimondo & Mazzola, 1997), some taxa - previously considered at specific level as *B. tinei* Lojac., *B. drepanensis* (Caruel) Damanti and *B. bivonana* Mazzola et Raimondo were included in *B. villosa* at subspecific level. Similar treatment was given to some populations of *B. rupestris* differing from the type of the species by phenotypic, ecological and distributive characters; they were directly assigned the rank of subspecies (*B. rupestris* subsp. *hirsuta* Raimondo et Mazzola and *B. rupestris* subsp. *brevisiliqua* Raimondo et Mazzola) (Raimondo & Mazzola, 1997).

Based on these premises, and on the discovery of a new population of *B. incana* s.str. (Tenore,

1812) on the Madonie Mountains (Raimondo in PAL), we wanted to deepen the analysis of the variability of this taxon foreseeing to include in it *B. raimondoi*, taxon for which we propose the rank of subspecies within *B. incana*.

MATERIAL AND METODHS

We studied the topotypical population of *B. incana* Ten. and of *B. raimondoi* (Sciandrello et al., 2013). Diagnostic characters of the two taxa reported in Sciandrello et al. (2013) are analyzed and evalueted. In addition to morphological characters, the spatial distribution in comparison with the Sicilian populations of *B. incana*, in order to exclude possible genetic interferences between the populations, spatially but not orographic close, then, subjected to two different bioclimates.

RESULTS AND DISCUSSION

Based on the analysis and evaluation of morphological characters and the criteria followed in the interpretation of the variability occurring in the other species of the same group previously treated, the distinctive characters of the taxon are not sufficiently discriminating to interspecific level. The color of the petals is not a character that is distributed continuously in *B. incana*. In Sicily, on the Tyrrhenian coast, between Capo d'Orlando and Gioiosa Marea (Messina), there are populations of this species with individuals with yellow or white flowers, respectively (Fig. 3), maintaining constant the other characters. In contrast, the same color of petals and lenght of siliques - given as discriminant of *B. raimondoi* by the authors - on the basis of the study of the topotypical population are not constant. In fact, although the white flowered individuals are prevalent, yellow flowered individuals occur scattered (Figs. 5, 6). The indumentum of flowering pedicel and sepals (Fig. 4), of stem and adult leaf hairless or weakly pubescent, are variable characters in *B. incana* and therefore are not considered stable enough to be discriminating. Also in *Brassica*, the different characters of the siliqua, Mazzola & Raimondo (1988) distinguished *B. bivonana* from *B. villosa*, then reduced to the rank of subspecies of *B. villosa* by the same authors (Raimondo & Mazzola, 1997) [*B. villosa* subsp. *bivonana* (Mazzola & Raimondo) Raimondo & Mazzola].

Similarly, on the same characters and their variability was based the distinction, within *B. rupestris*, of a new subspecies occurring in the western limit of the distribution end of this species including the Tyrrhenian coast between the promontory of Cefalù (Palermo) to the east, the promontory of Macari (Trapani) to the west and the inland of the Madonie and Palermo Mountains, including Rocca Busambra, to the south; it is the case of *B. rupestris* subsp. *brevisiliqua* Mazzola et Raimondo.

In light of the above considerations and of the knowledge of the group, the authors believe that *B. raimondoi* is not sufficiently distinctat specific level and consider the population of *Brassica* of the cliffs of Castelmola (Messina) as part of the variability of *B. incana*, close and spatially overlapping to this taxon, present in the underlying Ionian coast, near Cape S. Alessio. Therefore, we give to it the following arrangement:

Brassica incana Ten. subsp. ***raimondoi*** (Sciandr., C. Brullo, Brullo, Giusso, Miniss. et Salmeri) Raimondo & Spadaro **stat**. & **comb. nov.**

Bas. *Brassica raimondoi* Sciandrello, C. Brullo, Brullo, Giusso, Minissale & Salmeri in Pl. Biosyst. 147(3): 813 (2013).

CHOROLOGICAL AND TAXONOMIC REMARKS

In the Mediterranean Region, among the species of *Brassica* sect. *Brassica*, there are many endemic taxa. Two in particular have a distribution almost specular from north to south. They are *B. insularis* Moris and *B. incana* Ten. The first, to the west, from the French coast, via Sardinia, goes south to Pantelleria and Tunisia; the second extends its distribution throughout the Tyrrhenian and Adriatic coasts to Sicily, includingin this trajectory the eastern and western sides of the Italian peninsula to Sicily where *B. incana* occupies the eastern sector; the Madonie Mountains represent the southern-western limit.

In the south-eastern part of the distribution of this species, an isolated population of the Ionian coastal sector of the Island, described sub *B.*

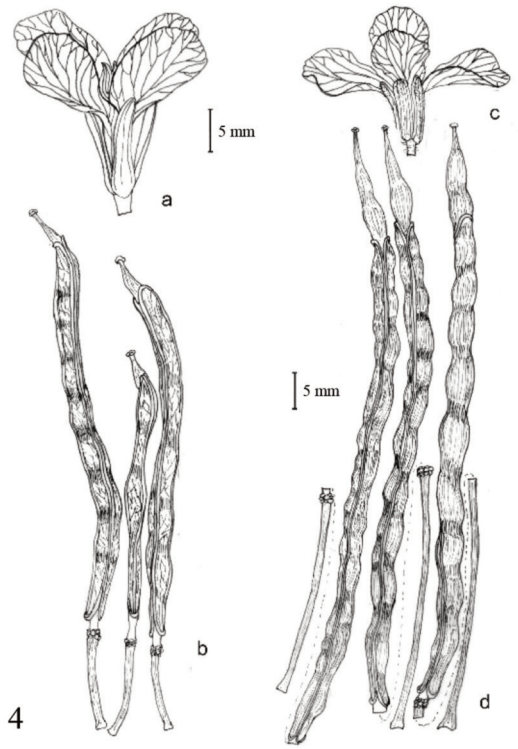

Figure 1. *Brassica raimondoi* in flower (white): *locus classicus*, Castelmola, Jonian coast of Sicily. Figure 2. *Brassica incana* in flower (yellow): Capo S. Alessio, Taormina, Jonian coast of Sicily. Figure 3. *Brassica incana* at S. Gregorio, Capo d'Orlando, Tyrrenian coast of Sicily: plants with yellow and white flowers respectively. Figure 4. Comparison between *Brassica raimondoi* and *B. incana* s.str.: a (flower) and b (siliquae) of *B. raimondoi*; c (flower) and d (siliquae) of *B. incana* (recomposed from Sciandrello et al., 2013).

Figure 5. *Brassica raimondoi*, rarely with yellow flowers, in his locus classicus (Castelmola).
Figure 6. *Brassica raimondoi* in the *locus classicus* (Castelmola): plants with white and yellow flowers respectively.

raimondoi, has not significantly discriminant phenotypic characters which suggest to include the taxon within *B. incana*. For the small size of the population and the spatial isolation of the population of *B. raimondoi* remains taxonomically distinct and still subject to subspecific level.

ACKNOWLEDGMENTS

Study carried out as part of a project funded by the University of Palermo with the financial support of the Fondazione internazionale pro Herbario mediterraneo.

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