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THE NEGLECTED HERBARIUM OF EMANUELE TARANTO ROSSO (SICILY, 1801-1887)

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THE NEGLECTED HERBARIUM OF EMANUELE TARANTO ROSSO (SICILY, 1801-1887)

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Abstract – *The neglected Herbarium of Emanuele Taranto Rosso (Sicily, 1801-1887).* Emanuele Taranto Rosso, eclectic naturalist of the XIX Century, founded a scientific and didactic centre of Natural History and Archaeology in Caltagirone, one of the towns in the province of Catania in eastern Sicily (southern Italy). In this paper, we report and evaluate the size of his herbarium donated to the centre. According to the published catalogue, originally the Herbarium of Taranto Rosso comprised 776 specimens, which included wild and cultivated plants collected by this skillful researcher in the surroundings of Caltagirone. In addition, the Herbarium contained several specimens purchased or exchanged with other Sicilian naturalists. Currently this collection includes only 393 *exsiccata*. The revision of these specimens, since long forgotten, for a long time, in the Lyceum "Bonaventura Secusio" of Caltagirone, gives useful information in order to evaluate the contribution of Taranto Rosso to the knowledge of the Sicilian flora. Our study includes also the list of the taxa and the analysis of the most significant specimens.

Keywords - floristics – herbaria – South Sicily – History of botany

Riassunto – *L'Erbario dimenticato di Emanuele Taranto Rosso (Sicilia, (1801-1887)*. Emanuele Taranto Rosso, eclettico naturalista del XIX secolo, fondò un Gabinetto scientifico e didattico di Scienze Naturali ed Archeologia a Caltagirone, cittadina in provincia di Catania nella Sicilia orientale (Italia meridionale). In questo contributo, viene riportata e valutata la consistenza del suo erbario donato al Gabinetto. Secondo il catalogo pubblicato, la consistenza originale dell'Erbario di Taranto Rosso era di 776 campioni, che includevano piante spontanee e coltivate raccolte nei dintorni di Caltagirone da questo qualificato studioso. In aggiunta questo Erbario conteneva ulteriori campioni comprati o scambiati con altri naturalisti siciliani. Ad oggi la collezione include soltanto 393 campioni. La revisione di questi campioni da lungo tempo dimenticati, custoditi presso il Liceo "Bonaventura Secusio" di Caltagirone, fornisce utili informazioni per valutare il contributo di Taranto Rosso alla conoscenza the flora Siciliana. Questo studio include la lista completa dei *taxa* e la disanima dei reperti più significativi.

Parole chiave - floristica – erbari – Sicilia meridinale – Storia della botanica

INTRODUCTION

Short biography

Emanuele Taranto Rosso (Caltagirone, 8 June 1801–29 June 1887) was the second-born of the Baron Giuseppe Taranto and Gerolama Rosso. There is no precise knowledge of the years of his formation, certainly classical. In 1829, he was professor of experimental physics at the Royal Academy of Studies of Caltagirone (province of Catania, eastern Sicily), and in 1831 he became director of this Academy (Castagna, 2000).

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At the Academy, he gave substance to the idea of setting up a scientific and didactic centre of Natural History and Archaeology ("Gabinetto di Storia Naturale e Archeologia"). E. Taranto Rosso donated to the Academy his own floristic, ornithological, mineralogical and malacological collections as well as his personal library. The centre was opened in 1843 with a solemn inaugural ceremony followed by a published report. The event had regional importance and collected consensus and donations from many Sicilians naturalists such as Pietro Calcara, Giuseppe Bianca, and Andrea Aradas (Impresario, 1997; Fassari, 2000). Again in 1843, Taranto Rosso donated to the centre his Herbarium that included wild and cultivated plants, all collected in the territory of Caltagirone (Taranto Rosso, 1844). Two years later, together with the Catholic bishop Saverio Gerbino (Caltagirone, 23 February 1814–16 March 1898) he published a floristic catalogue of Caltagirone and surroundings (Taranto Rosso & Gerbino, 1845).

The herbarium and its catalogue

This herbarium catalogue contains a list of 776 taxa, including Pteridophytes and Spermatophytes (Gymnosperms and Angiosperms), classified according to the Linnaeus sexual system (Linnaeus, 1753). Subsequently, most of the collections and scientific instruments of the centre of Physics, Natural History and Archaeology of the Royal Academy of Caltagirone, including the precious Herbarium, was transferred to the Lyceum "Bonaventura Secusio" of Caltagirone, founded by Taranto Rosso himself in 1864 (Di Stefano, 2013). From this moment on, the *exsiccata* from the territory of Caltagirone were mixed with numerous other *exsiccata* also donated to the centre but coming from other parts of Italy. The latter, in part, had been purchased, between September and October 1844, by the Bishop Saverio Gerbino at the Royal Gardens of Naples and Palermo thanks to the good relationships with the naturalists Giovanni Gussone, Vincenzo Tineo and, Pietro Calcara that sent specimens collected in Sicily, in the surrounding islands, and in south Italy.

Figure 1. Original rigid folder of E. Taranto Rosso's herbarium recycled to host the specimens prepared by the students.

After a first review of the Herbarium it has been possible to estimate that from the day of the transfer to the Lyceum "Bonaventura Secusio" until today, 411 *exsiccata* corresponding to the catalogue have been lost or destroyed, as well as many labels written by Taranto Rosso himself and some original rigid folders.

One of the stiff folders, for example, has been emptied, freed from the original herbarium sheets and recycled to contain herbarium samples set up by former high school pupils (Fig. 1).

These herbarium sheets are certainly more recent given the different preparation of the samples. Taranto Rosso in fact left the sample free on the herbarium sheet avoiding ligatures and gluing (Fig. 2), while the students of the high school mounted plants on herbarium sheets with small bands of paper, pins of stainless steel or with cotton thread (Fig. 3).

It is assumed that these have been included in the collection after the donation to the centre, hypothesis confirmed by the fact that some of

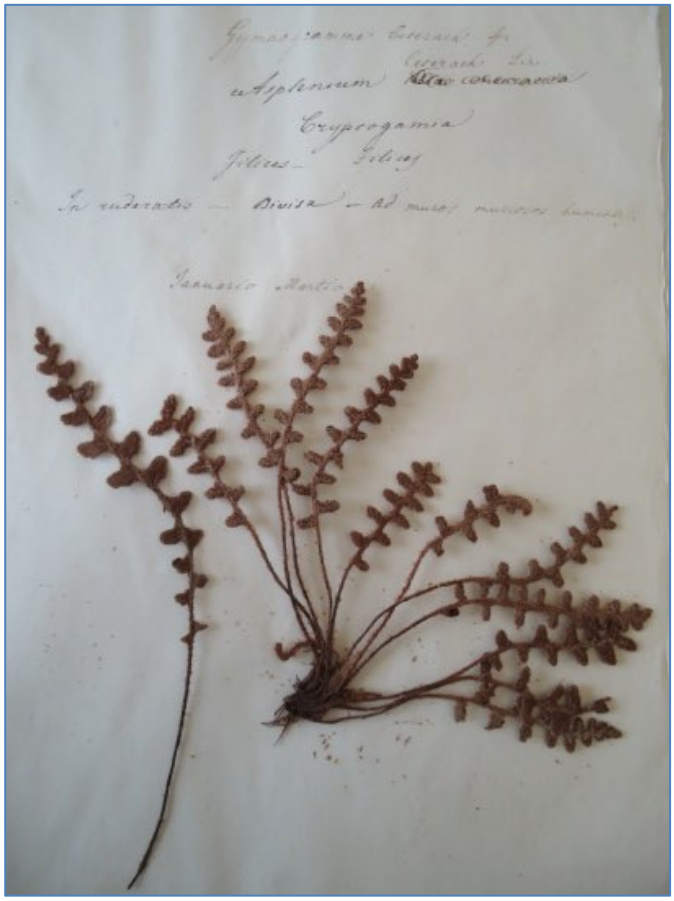

Figure 2. Specimen from E. Taranto Rosso's herbarium with autograph annotations.

them (e.g., 2 *exsiccata* of mushrooms and one of algae), even if included in the section "Cryptogamia", do not have any label, perhaps because they waited for classification by Taranto Rosso.

During the years of conservation at the Lyceum "Bonaventura Secusio" of Caltagirone, the historical Herbarium of Taranto Rosso has been deeply altered with the consequent loss of information, thus compromising the scientific significance of the collection itself. However, its historical value has remained intact since the first substantial collection of vascular plants and cryptogams, exclusive to the territory of Caltagirone, is still included in the Herbarium. Today, thanks to the interest and sensitivity of the School Leader, Prof. Concetta Mancuso, procedures have been activated in order to preserve and protect the collection and therefore the remaining specimens.

The historical herbarium of Taranto Rosso today is made up of a collection of 393 *exsiccata* of plants all belonging to the territory of Caltagirone, of which 365 corresponding to the Catalogue and certainly related to the studies of Taranto Rosso (Annex 1) and 28 collected later but also attributable with certainty to Taranto Rosso (Tab. 1). However, we cannot exclude that the number may vary following a new and careful review of the herbarium, which would allow the identification of other species of Taranto Rosso among those that are currently of doubtful attribution.

Figure 3. The samples made by the students of the Lyceum mounted on the herbarium sheets with small bands of paper (a), pins of stainless steel (b) or with cotton thread (c).

Table 1. List of taxa collected by E. Taranto Rosso not included in the Catalogus Plantarum in Agro Calata-Hieronensi Collectarum with name up-to-date according to Bartolucci et al.(2018) and Galsso et al.(2018).

ORDER	SUBORDER	SCIENTIFIC NAME (IN THE CATALOGUE)	SCIENTIFIC NAME (UP-TO-DATE)	FAMILY
DIADELPHIA	**Decandria**	*Lathyrus latifolius* Steud.	*Lathyrus latifolius* L.	Fabaceae
		Biserrula pelecinus L.	*Astragalus pelecinus* (L.) Barneby	
	Polyadelphia	*Hypericum ciliatum* Lam.	*Hypericum perfoliatum* L.	Clusiaceae
	Aequalis	*Helminthia echioides* Willd. var. a	*Helminthotheca echioides* (L.) Holub	
		Helminthia echioides Willd. var. b	*Helminthotheca echioides* (L.) Holub	
		Helminthia echioides Willd. var. c	*Helminthotheca echioides* (L.) Holub	
		Filago pyramidata L.	*Filago pyramidata* L.	
		Helichrysum caespitosum D. C.	*Helichrysum stoechas* subsp. *barrelieri* (Ten.) Nyman	
		Senecio gallicus Vill.	*Senecio gallicus* Vill.	
		Erigeron canadense L.	*Erigeron canadensis* L.	
	Superflua	*Conyza saxatilis* var. b. *bocconi* Guss.	*Phagnalon saxatile* (L.) Cass.	
		Conyza tenorii Spr.	*Phagnalon rupestre* subsp. *illyricum* (H.Lindb.) Ginzb.	
SYNGENESIA		*Pulicaria dysenterica* Gaert.	*Pulicaria dysenterica* (L.) Bernh. subsp. *dysenterica*	Asteraceae
		Pulicaria dentata D. C.	*Pulicaria dysenterica* subsp. *uliginosa* Nyman	
		Bellis perennis	*Bellis perennis* L.	
	Frustranea	*Centaurea schowii* D. C.	*Centaurea solstitialis* subsp. *schouwii* (DC.) Gugler	
		Centaurea crupina L.	*Crupina crupinastrum* (Moris) Vis.	
		Centaurea crupina L.	*Crupina crupinastrum* (Moris) Vis.	
		Helianthus tuberosus L.	*Helianthus tuberosus* L.	
	Necessaria	*Calendula fulgida* Raf.	*Calendula suffruticosa* subsp. *fulgida* (Raf.) Guadagno	
		Calendula officinalis Desf.	*Calendula officinalis* L.	
		Calendula bicolor Raf.	*Calendula arvensis* (Vaill.) L.	
MONOECIA	**Triandria**	*Carex hispida* Willd.	*Carex hispida* Willd.	Cyperaceae
CRYPTOGAMIA	**Filices**	*Grammitis leptophylla* Swartz	*Anogramma leptophylla* (L.) Link	Pteridaceae
		Licopodium denticulatum L.	*Selaginella denticulata* (L.) Spring	Selaginellaceae
			Morchella sp. Dill. ex Pers	Morchellaceae
			Schizophyllum commune Fr.	Schizophyllaceae
			Padina pavonica L.	Dictyotaceae

MATERIALS AND METHODS

We first proceeded to digitize the original copy of the "*Catalogus Plantarum in Agro Calata-Hieronensi Collectarum*" kept in the Municipal Library "Emmanuele Taranto" of Caltagirone. The digitization of this volume had a twofold objective: facilitate access and conservation.

Then we performed a revision of herbarium specimens after a preliminary analysis and cataloguing to verify their consistency. In addition, we carried out a nomenclatural update of the floristic list in the *Catalogus Plantarum in Agro Calata-Hieronensi Collectarum* according to Bartolucci *et al.* (2018) and Galasso *et al.* (2018) (Annex 1, available online).

The entire collection of vascular plants and cryptogams, after a preliminary cleaning of dust, insects and excrement of various animals, it has been kept for the time being inside a metal cabinet and a repellent treatment with camphor has been suggested to the School Leader of the Lyceum "Bonaventura Secusio" (Fig. 4).

Therefore the herbarium was rearranged according to the systematic order used in the catalogue

(Taranto Rosso & Gerbino, 1845) extrapolating from each folder the samples added successively.

Results and Discussion

The 776 taxa included in the catalogue of Taranto Rosso and collected in the territory of Caltagirone, according to the modern nomenclature and delimitation, are included in 91 families (Annex 1). Currently, the number of families included in the Herbarium are only 51 and within this, the number of species has significantly decreased, while 40 families have been completely lost (Annex 1). This represents a significant loss of historical material and information on the biodiversity of the territory of Caltagirone at the time. Moreover, today, as highlighted in the Annex 1, some scientific names have fallen into synonymy and therefore the total number of species is further reduced.

Figure 4. Metal cabinet containing part of the original collection donated to the Lyceum "Bonaventura Secusio" from the centre of Physics, Natural History and Archaeology of the Royal Academy of Caltagirone.

For five species, *Leontodon taraxacum*, *Helichrysum rupestre*, *Illecebrum tenuiflora*, *I. ramosissima*, and *Portulaca oleracea,* in the absence of the herbarium sample, it was not possible to update the nomenclature because the name used in the catalogue could be referred to different species.

One of the peculiarities of this collection was the specimen of *Muscari cupanianum* Tarant. & Gerb. described from Belardia (Caltagirone). This specimen is not present in the Herbarium of Taranto Rosso, but in the Herbarium of the University “Federico II” in Naples (international acronym NAP) there is a duplicate (Mazzola & Mineo, 2000). The name *Muscari cupanianum* was published in the same year by Taranto Rosso & Gerbino (1845) and Gussone (1845) who received by Taranto Rosso one herbarium specimen and the manuscript of his catalogue. From the dates of publication of the two volumes, the name by Taranto Rosso and Gerbino has priority over the name by Gussone because published four months earlier (Mazzola & Mineo, 2000). The same Taranto Rosso did not find this species afterwards, probably because it was described on some malformed individuals of another species. After several taxonomic interpretations (Mazzola & Mineo, 2000) *Muscari cupanianum* has been placed in synonymy with *Muscari gussonei* (Parl.) Nyman that still occurs near the Lake Biviere of Gela about 30 kilometres southward.

The catalogue and the Herbarium of Taranto Rosso have particular importance also from the biogeographical point of view as early source of data for Sicily. *Humulus lupulus* was collected near Caltagirone and it is now considered extinct in Siciliy (Giardina *et al.,* 2007) and not confirmed by Bartolucci *et al.* (2018). *Asplenium sagittatum*

was collected in the cave Cunsaria, near Caltagirone, where now is extinct and in the rest of Sicily this species is in danger of extinction (Giardina *et al.,* 2007).
Finally, three alien species included in the catalogue are reported from the first time to Sicily: *Amaranthus albus*, *Lepidium didymum*, and *Erigeron bonariensis*.

Conclusions

The importance of Taranto Rosso as all-round naturalist is given by the field research he did in central-southern Sicily and the network he established with the most important researchers of his time. This was a typical condition of the Sicilian collectors of the 19th and 20th centuries who established close relations of exchange of letters and plants with colleagues throughout Italy and often throughout Europe (Domina *et al.,* 2014).
This contribution allows only a first evaluation of the scientific collection of E. Taranto Rosso. The Herbarium, consisting of plants already attacked by moths and other insects, requires periodic disinfestation, to avoid further damage. In fact, although the Herbarium is badly reduced, the plants are in a state to be recognizable for the most part. The smallest are intact, except for the root or the other hypogeous parts; the larger ones have only the upper part with flowers or fruits. Some specimens, however, mostly arboreal, lack flowers and fruits.
A revision and determination of the *exsiccata* of doubtful provenance or non-pertinence with the Herbarium of Taranto Rosso should be labelled arranged according to actual nomenclature.
The hope is therefore that, through a specific project funded, the important collection of E. Taranto Rosso can be fully restored and placed in suitable cabinets, thus returning to the science the wealth of information on the biodiversity of the territory of Caltagirone that derive from this heritage of priceless value.

References

Bartolucci F., Peruzzi L., Galasso G., Albano A., Alessandrini A., Ardenghi N. G. M., Astuti G., Bacchetta G., Ballelli S., Banfi E., Barberis G., Bernardo L., Bouvet D., Bovio M., Cecchi L., Di Pietro R., Domina G., Fascetti S., Fenu G., Festi F., Foggi B., Gallo L., Gottschlich G., Gubellini L., Iamonico D., Iberite M., Jiménez-Mejías P., Lattanzi E., Marchetti D., Martinetto E., Masin R. R., Medagli P., Passalacqua N. G., Peccenini S., Pennesi R., Pierini B., Poldini L., Prosser F., Raimondo F. M., Roma-Marzio F., Rosati L., Santangelo A., Scoppola A., Scortegagna S., Selvaggi A., Selvi F., Soldano A., Stinca A., Wagensommer R. P., Wilhalm T., Conti F., 2018. An updated checklist of the vascular flora native to Italy. *Plant Biosystems* 152(2): 179-303. doi: 10.1080/11263504.2017.1419996.

Castagna A., 2000. Scienza, fede e patria in Emmanuele Taranto Rosso. *Bollettino della Società Calatina di Storia Patria e Cultura* 7-9: 7-21.

Di Stefano S., 2013. *Il liceo "Secusio" di Caltagirone 150 anni dopo l'Unità d'Italia*. Tipolitografia Messina, Caltagirone, 36 pp.

Domina G., Greuter W., Mazzola P., Raimondo F.M., 2014. Names of Italian vascular plants published by Michele Lojacono Pojero. *Flora Mediterranea* 24: 215-232. doi: 10.7320/FlMedit24.215.

Fassari G., 2000. Sul Gabinetto di Storia naturale fondato da E. Taranto Rosso. Precisazioni e smentite. *Bollettino della Società Calatina di Storia Patria e Cultura* 7-9: 331-332.

Galasso G., Conti F., Peruzzi L., Ardenghi N.M.G., Banfi E., Celesti-Grapow L., Albano A., Alessandrini A., Bacchetta G., Ballelli S., Bandini Mazzanti M., Barberis G.,

Bernardo L., Blasi C., Bouvet D., Bovio M., Cecchi L., Del Guacchio E., Domina G., Fascetti S., Gallo L., Gubellini L. Guiggi A., Iamonico D., Iberite M., Jiménez-Mejías P., Lattanzi E., Marchetti D., Martinetto E., Masin R. R., Medagli P., Passalacqua N. G., Peccenini S., Pennesi R., Pierini B., Podda L., Poldini L., Prosser F., Raimondo F. M., Roma-Marzio F., Rosati L., Santangelo A., Scoppola A., Scortegagna S., Selvaggi A., Selvi F., Soldano A., Stinca A., Wagensommer R. P., Wilhalm T., Bartolucci F., 2018. An updated checklist of the vascular flora alien to Italy. *Plant Biosystems* 152: 556-592. doi: 10.1080/11263504.2018.1441197.

Giardina G., Spadaro V., Raimondo F. M., 2007: A catalogue of the plants growing in Sicily. *Bocconea* 20: 5-582.

Gussone G., 1845. *Florae siculae synopsis addenda et emendanda*. Tramater, Napoli, 400 pp.

Impresario S. 1997. Il Gabinetto di Storia naturale e di Archeologia di Caltagirone. Inventario delle fonti archivistiche. *Bollettino della Società Calatina di Storia Patria e Cultura* 5-6: 117-166.

Linnaues C., 1753. *Species Plantarum. Exhibentes plantas rite cognitas, ad genera relatas, cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum systema sexuale digestas, 1° ed*. L. Salvio, Stoccolma, pp. 1200, + XXXI.

Mazzola P., Mineo C., 2000. Lettere botaniche a Emanuele Taranto rosso. 1842-1866. Il *Naturalista Siciliano, s .4,* 24(Suppl.): 147-194.

Taranto Rosso E., 1844. *Per la inaugurazione del Gabinetto di Storia naturale, e Archeologia della Reale Accademia degli Studi di Caltagirone*. Musumeci Papale, Catania, 101 pp.

Taranto Rosso E., Gerbino X., 1845. *Catalogus Plantarum in Agro Calata-Hieronensi Collectarum*. Musumeci Papale, Catania, 50 pp.