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The types of Italian Flora in the Herbarium Centrale Italicum (FI) in relation to the original collections and their founders

Abstract

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This study furnishes a synthetic picture of the typus material held in the Herbarium centrale Italicum (H. C. I.) and particularly on those of Mediterranean origin collected in Italy. This material has been analysed for rank, geographical distribution, chorological and biological categories. The results have been put in relation with original collections and with their history (chronology, collectors and donors).

Introduction

One necessary, or rather, indispensable factor in the study of taxonomy is knowing the typus material, starting with its localisation in the original collections, i.e. in the appropriate research structures: Herbaria.

This requisite also came to light in Florence, during our attempts to computerise our collections, a task we already began many years ago for the historical collections (H.Webb, H. Micheli etc.). This was particularly true for our most important collection, the Herbarium Centrale Italicum, the fruit of assembling the many collections compiled over a century and a half of Italian botanical history. The task of directly recording all the different specimens, already completed for the older collections, immediately appeared unrealistic and in fact we had to fall back on meta-data methods. We chose for our purpose a model based on a survey of the data written on the covers holding material (exsiccata) belonging to the same taxon. Apart from the results of this work, which I shall not discuss in this paper, our approach proved inadequate for the typus material s.l. already registered. We therefore used fields that specified the rank of the typus, any differences, where applicable, between nomenclature and taxonomy and when known the citation of the typus material. However, even this improvement, although sufficient to localise, organise and manage the material, failed to provide a link between the material (complete with its taxonomy and distribution) and the original collections, and indeed with the people who orig-

inally created them (collectors or donors), i.e. a bridge between scientific fact and the various aspects of its historical reality.

As everybody knows, there are several herbariums in Florence, each full of typus material, for example the l'HWebb (Steinberg 1977), l'H.Beccari (Moggi & al. 1994; Pichi Sermolli 1994), among the Linnean Herbaria (for prelinnean Herbaria see Moggi 1981; Mazzi 1983; Mazzi & Nepi 1998); these herbariums are extremely rich in type content not only because of their history, but also because of the high degree of specialisation of each collection. It was even more complicated to record the same data for the H.C.I., which is the centre of the Florentine collections – especially its phanerogam section, considering its size and the variety of its collections.

The registered material consists of approximately 4,100 types specimens (4,107), obviously of different ranks, of which 3,174 come from abroad and 939 from Italy or floristically related areas. The first group provides some interesting distribution data, especially for Africa, Asia and Oceania, but for the moment let us direct our attention to material concerning the Italian Flora, especially the Mediterranean sector.

The types of Italian Flora

We shall endeavour to give a picture of the situation. Of the 903 Italian Flora, specific and infraspecific taxa, 871 effectively come from the Italian territory; the others (32) refer to closely associated territories, (21) for Corsica and (11) for the Maltese archipelago. The material refers to 244 genera, belonging to 60 families. Naturally not all the material is still held as valid: a check we carried out confirmed that only 51% of the taxa can be held still valid, precisely 34.2% referred to the "Flora d'Italia" by S. Pignatti (Pignatti 1982) and 16.8% were published later; the remainder consists of nomenclature types.

Geographically the specimens can be divided as follows (Fig. 1): North (including Istria): 21.8%, Centre: 26.3%, South: 51.9%. The first group is generally balanced, but Tuscany and Abruzzo stand out in Central Italy, whilst in the South, excluding the Molise, all the regions are well represented with a maximum in the islands (Sardinia and Sicily).

A chorological analysis of the type material underlines the prevalently "Mediterranean" character of the specimens, even for large divisions. About 60% of the type collection consists of endemisms. Considering that 14% of the remaining 40% consists of typically Mediterranean taxa (sensu Arrigoni 1974, 1983) and that 16.5% of specimens cannot be ascribed to this Region (sensu Arrigoni op. cit.), it appears that 38% of the total collection comes from the Mediterranean region, mainly the Italico-Provence, Sardo-Corsican (Tyrrhenian): Apulo-Sicilian dominions and marginally from the North African and Illyrian dominions. The remaining 21.9% can almost all be ascribed to the Medio-European dominion (many of which to the oro-ipsophyle sub-dominion) on account of the presence of a large number of Alpine-Apennine endemisms. Together, the two categories bring the Mediterranean contingent to over 50% (51.5) of the total.

It is also true that one biological spectrum (sensu Pignatti op. cit.) of the endemisms (surveyed when possible on 85% of the samples) does not fit a typically Mediterranean flora; in fact compared to a general spectrum of all the types (Fig. 2), which gave the following values: P- 4.2%; T-15; H-36.4; Ch-30; NP-4.8; G-8.4; I-1.2; the Mediterranean

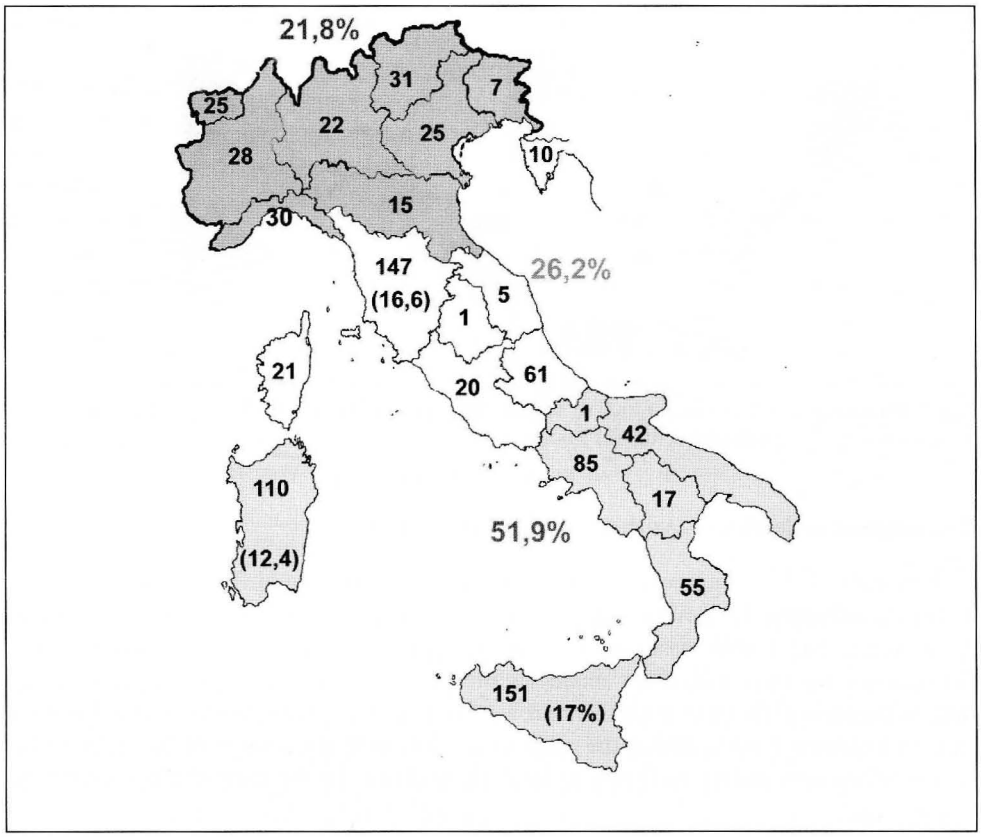

Fig. 1. % Value for N°. of types relative to North, Central and South Italy, respectively. The actual N° of types are shown for each region. The numbers in ( ) represent % values for some regions.

endemisms gave P-3.2; T-6.4; H-19.4; Ch-46.8; NP-7.2; G-16.9. This last biological spectrum, for us the most interesting, only tells us that in spite of the massive occurrence of therophytes, it is very difficult today to identify new taxonomic entities among the annuals in a Mediterranean habitat. However, it is evident that many of the new entities have been described to the chamaephytes, for example the genus *Limonium*, for which recent studies have led to the identification of many new species. It is certainly characteristic of the Mediterranean area, but it is generally found in rocky habitats which are not particularly suitable for the development of therophytes.

The structure of the same recorded material based on typus rank is as follows: **H**olotypes, 119, **L**ectotypes 59, **N**eotypes 4, **I**sotypes 105 (without considering the exsiccata series), **P**aratypes 15, **S**yntypes 18, **T**opotypes 4, generic Types 615. Thus, first grade typus material (**H**+**L**+**N**) equals about one fifth of the total (19.6%). This preliminary numerical arrangement does not claim to be final, indeed much still remains to determined and discovered. From a primary examination of the numerical data, it could seem that the type collection is rather poor, considering the high number of s.l. Types.

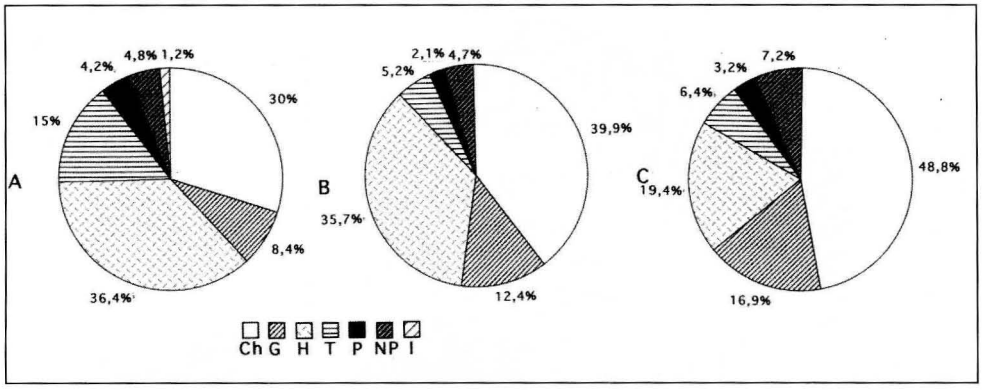

Fig. 2. Biological spectrum of: A) total of Italian types held in the H.C.L.; B) total of Italian Endemisms; C) Mediterranean (Italian) Endemisms.

The original collections – Authors, Collectors, Donors

Personally I do not agree with this assumption, not for the H.C.I. nor for any other botanical collection. I believe that type material (perhaps with a few exceptions for the exsiccata series, but in some cases not even these) is always very important. I should like to substantiate my view with a few examples that illustrate the importance of fundamental data in the identification of such material, i.e. the collectors and donors of the collections in their historical context and at the same time, obviously, the authors of the types themselves (when they differ). In theory at least, these should be the most obvious data to be documented.

The first step is to arrange the material in chronological and historical order. The graph in figure 3 shows the mean increase per decade in the material collected in the Florence herbarium from 1800 to the present (Fig. 3), the fruit of previous studies on the structure of our herbarium (Moggi 1993, 1998; Nepi 1997; Nepi & Cuccuini 1992, 1993; Cuccuini 1993, 1995; Cuccuini & Nepi 1998, 1999; Cuccuini & Pieroni. 1998). By superimposing the graphs for collection times and accession times into the Herbarium Centrale Italicum (H.C.I.) of type material for the same periods over the oprevious graph, it can be seen that there are noticeable discrepancies between the first graph and the other two. In fact, the general increase reached a maximum, with harmonic growth and fall, from 1840 to 1910, during the period that coincided with the compilation of the main Italian Floras of the past and the most important personal (and in part institutional) donations of Italian herbaria to the H. C. I. (Parlatore, Groves, Levier, Beccari, Martelli, Sommier, Fiori to cite the most important). A comparison of the first graph (collection times) with that for typified material (Fig. 4) reveals that the original period corresponds to three peaks: the first from 1810 to all of the 1840's, the second the last decade of the 1800's and the first decade of the 1900's, and the third to the last two decades of the 1900's. These three peaks clearly correspond to particular events. The first relates to all the collections made in various parts of Italy (understood still only in the geographical sense) by the first great Italian Botanists, Parlatore *in primis* but also Tenore, Moris, De Notaris, Tineo and in part Gussone, to men-

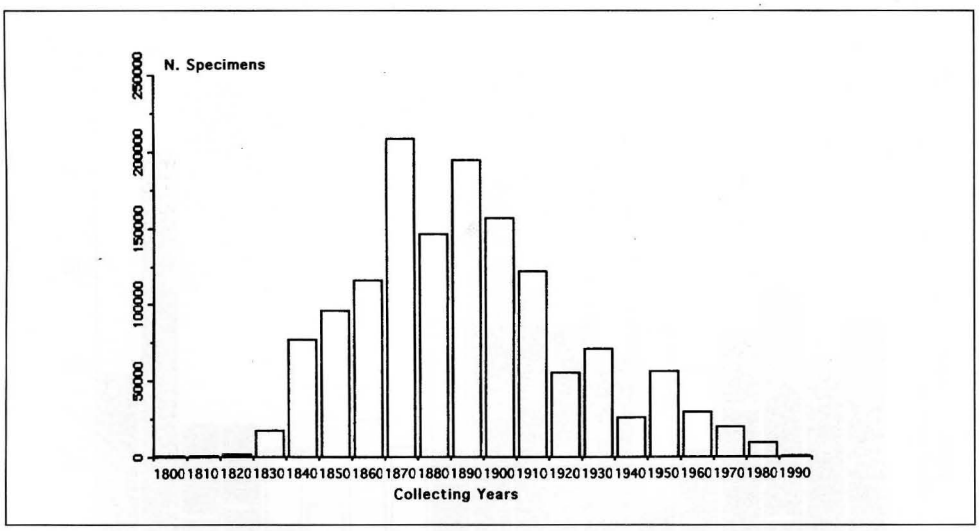

Fig. 3. Mean increases in specimens collected for each decade from 1800 to date.

tion a few, by means of donations to Parlatore on the foundation of the H.C.I.. The second corresponds to revisions which preceded and followed the Floras of Fiori (Fiori & Paoletti 1896-1908; Fiori 1923-1929), the first to truly unify the Flora of the newly founded State. The third mainly corresponds to the work groups of the Department of Plant Biology of Florence, including studies on the Sardinian and Tuscan Flora and revision of some critical groups. Obviously the 3rd graph, relating to the accessions, i.e. material incorporated into the Herbarium, peaks about a decade after the others for each period, except for the first, because the various collectors (often the authors of the taxa) gave their material to Parlatore when the Herbarium Centrale was founded (1842) and in the immediately following years (Cuccuini & Nepi op. cit.).

In my opinion it is interesting to note how, through the authors of new species, the flow of new taxa entering the H.C.I. although minimal after the establishment and expansion of new Herbariums, has never stopped. The three maps for northern (Fig. 6), central (Fig. 7) and southern Italy (Fig. 8), including the islands, show the names of the authors arranged according to the taxa described for the different Italian regions, for all new species (in grey) as well as those pertaining to the historical collections (in blak). I apologise if I have forgotten some of them.

Since it is impossible to describe the dynamics of all these events in this presentation – there are over 300 (314) collectors and about 200 (206) accessions – this study offers a few examples of particular situations which can be considered as representing the situation.

Some examples

I shall consider five examples, obviously starting with Florence, which will take us from north to south Italy, and describe the itineraries the material covered before finally becom-

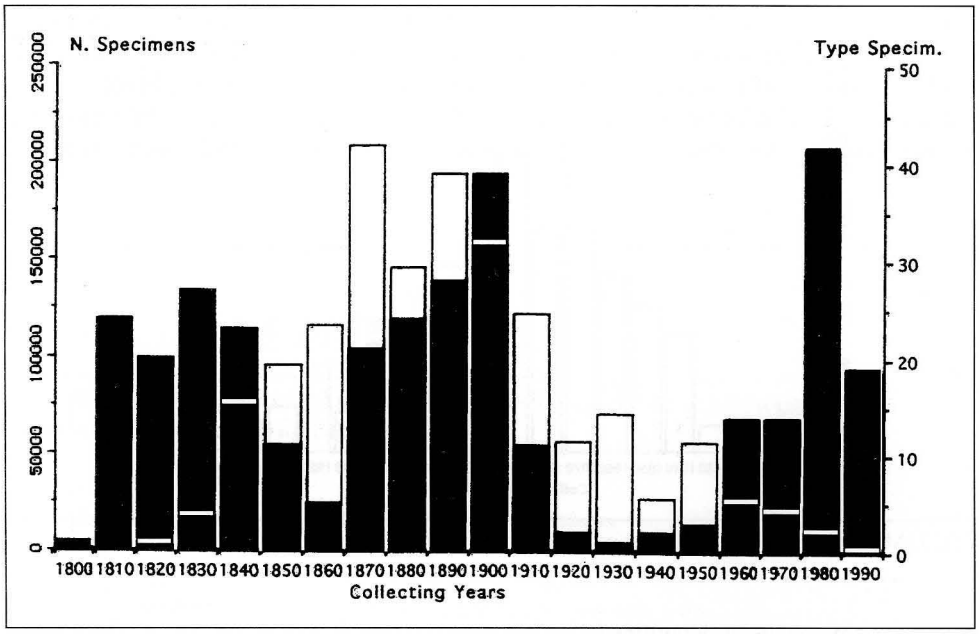

Fig. 4. Increase in typified material (black) collected for each decade from 1800 to date.

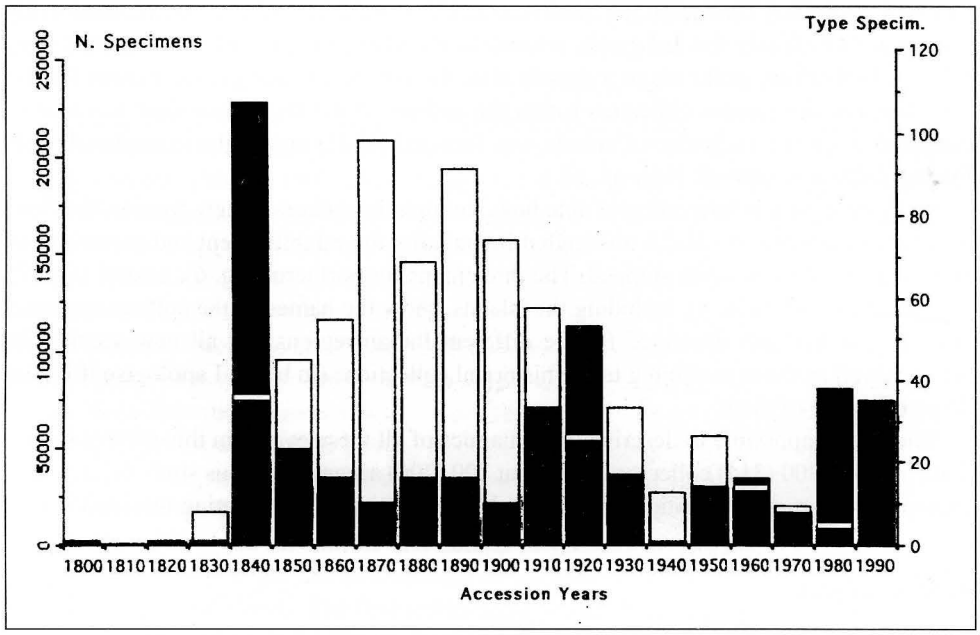

Fig. 5. Increase in typified material and included in the Herbarium (black-accessions) from 1800 to date.

ing part of our collection. Figure 9 illustrates (Fig. 9) the examples of the type material of F. Parlatore, a Sicilian but Tuscan by adoption, as well as the researchers of the Department of Plant Biology of Florence and several experts from all over Italy who in recent times have collaborated with the Department or with the Herbarium and used it as the central reference point for their findings and where to deposit their original collections. Other col-

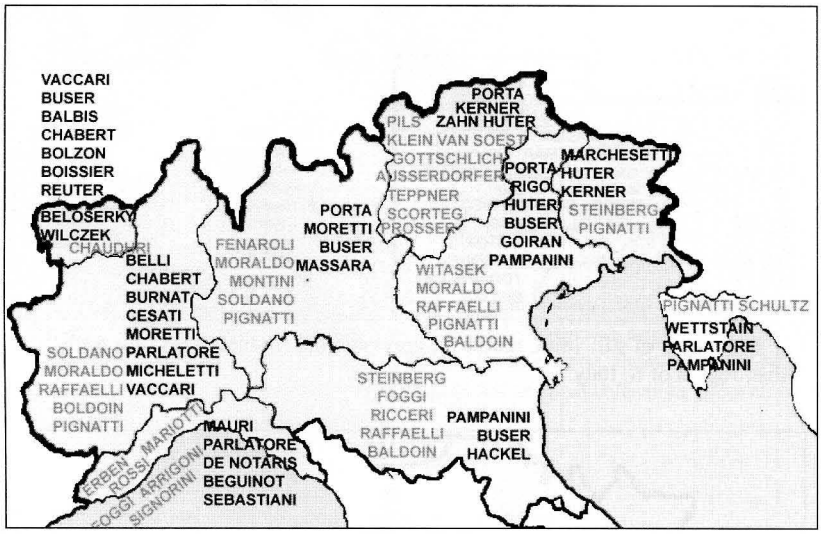

Fig. 6. Authors of still valid, recent (in grey) and old (in black) taxa for each Italian region of N. Italy.

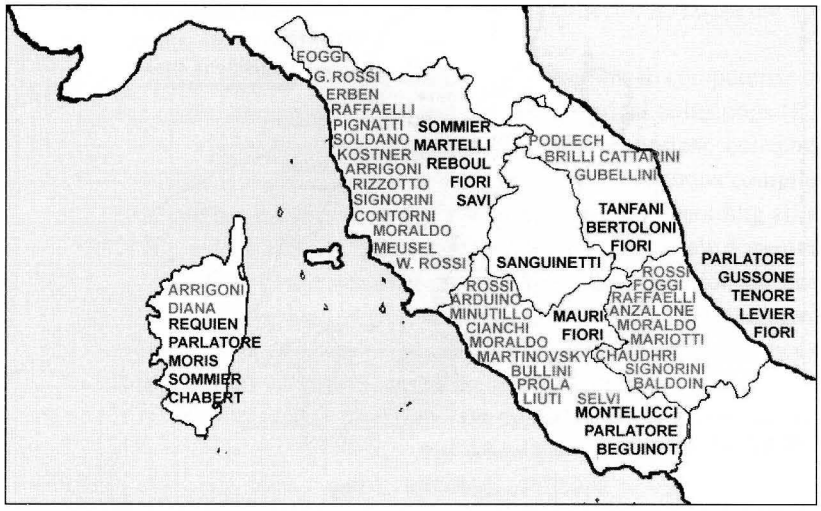

Fig. 7. Authors of still valid, recent (in grey) and old (in black) taxa for each Italian region of C. Italy.

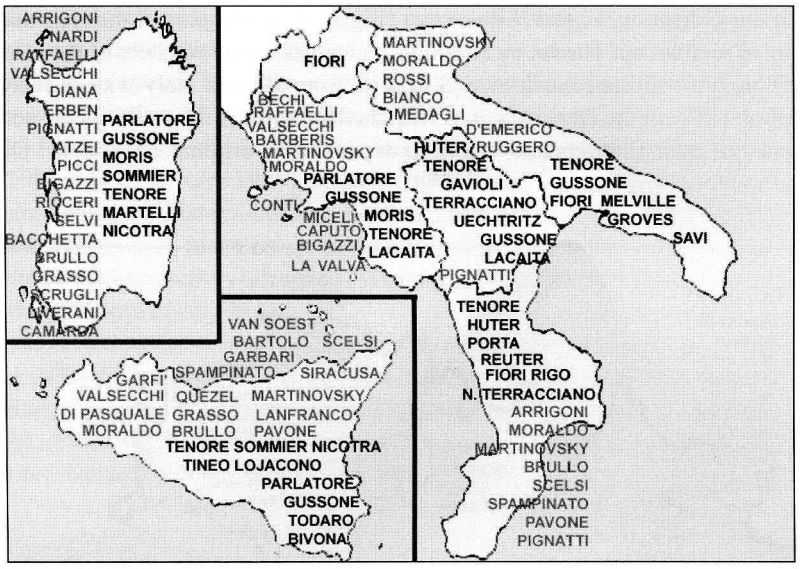

Fig. 8. Authors of still valid, recent (in grey) and old (in black) taxa for each Italian region of S. Italy.

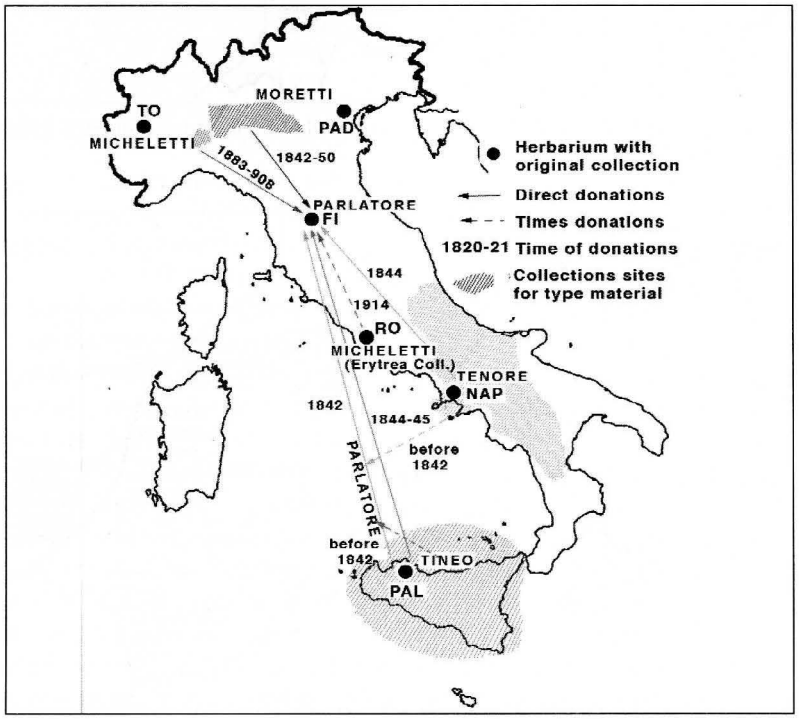

Fig. 9. Itineraries of type materials held in the FI Herbarium of L. Micheletti, G. Moretti, F. Parlatore, M. Tenore and V. Tineo.

lectors (and generally the authors) considered are G. Moretti and L. Micheletti both from Lombardy, M. Tenore from Campania, and V. Tineo from Sicily.

In the case of Filippo Parlatore (1816-1877), it is almost superfluous to say that he brought his original herbarium to Florence when he arrived from Palermo in 1842. His collection was inserted into the general herbarium and all the material, and subsequent additions mentioned in various works, including "Flora Italiana" (Parlatore 1848-1896), is easy to locate. The same applies to the original collection of the researchers of the Department and other scholars who for various reasons were associated with Florence for long periods, for example some researchers from Sardinia and Lazio (the material itineraries are omitted from this paper). In this case there is a high occurrence of "true" types and therefore the documentary records are almost complete. This is probably obvious and no doubt to be expected as a sign of respect to the head seat of Florence.

The second and third examples concern two botanists from Lombardy.

Giuseppe Moretti (1782-1853) was Professor of Botany at Pavia where he also held the role of Prefect of the local Botanical Gardens. His collection sites were concentrated in lowland Lombardy, particularly the Ticino area and the plains north of the River Po in the region of Pavia. Therefore all the material can be referred to the medio-european dominion. His herbarium is not in Florence (FI) but in Padova (PD); it does not consist exclusively of his own collections but also includes a considerable amount of others (Nocca, Bosc) (Saccardo 1895, 1901; Stafleu & Cowan 1981).

From 1842 to 1850, Florence received 304 specimens from him, mostly collected in northern Italy. These include 4 types: 2 crucifers, 1 chariophylacea and 1 rosacea. His material is mentioned as being held in 6 herbariums, 3 of which are abroad (Vegter 1976). Up to now no interesting material had been reported for Florence. In this case we are dealing with an example of fragmentation of the original collection, but not without interest. There are in fact still valid species (2) and types, which were in part defined at the level of rank (2 lectotypes and 1 neotype); in the case of the nomenclature type, this was a synonym recognised as valid until the Floras of Fiori. It was highly unexpected to find this material, especially typus, in Florence. Only after a survey of the material did these specimens come to light and it was possible to use them.

Luigi Micheletti (1844-1912) came from Lombardy and was captain of the Army. In Italy he mostly collected in Piedmont and Lombardy. Micheletti can be called a "botanophile", and his main interest was lichenology (Saccardo 1895; Stafleu & Cowan 1981). His herbarium, which also includes phanerogams, is not in Florence but in Turin (TO), although almost all of his African collections are held in the Tropical Herbarium of Florence (FT). In fact he collected plants in Eritrea where he served in the Italian Colonial Service (Vegter 1976). A total of 631 specimens reached Florence, almost all after his death in 1914, together with all the Colonial Herbarium, which was moved to Florence from Rome (Tardelli 1996). Nobody therefore would think of finding his Italian phanerogam material, especially at the typus level, in our herbarium. But between 1883 and 1908 Micheletti sent material in bouts to Florence, a city to which he was associated due to his role of archivist to the Italian Botanical Society. He sent 116 specimens, almost half of which Lichens. The phanerogams include 6 typus specimens, all referring to infraspecific entities no longer considered valid in the current Flora and mostly generic types. Thus the material could seem to be of scarce interest or even worthless. But considering that the

material was validly published and that it all refers to the *Eryngium campestre* L. group, then its importance is clear in the prospective of an any future revision of the group or the genus for Italy, as well as testifying our lack of knowledge of the variability of the group which is still under discussion today (cfr. Pignatti 1982).

Our next example is the material collected by M. Tenore.

Michele Tenore (1780-1860) was already a famous botanist when he sent his exsiccata to Florence. He despatched his material, almost entirely from Naples in 1844, himself, although it had been preceded by material donated directly to Parlatore. There are 860 recorded specimens, over some hundred (estimated from an examination of the *Herbarium Parlatoreanum*) which arrived together with Parlatore, giving a total of 1,200-1,300 specimens, all Phanerogams.

Considering that his herbarium is in Naples (NAP) and that his phanerogam collections amount to about 14,000 specimens, including numerous specimens received in exchange (from 41 Italian and foreign collectors) (Santangelo & al. 1994, 1995, 1998; Stafleu & Cowan 1986; Vegter 1988) we find that Florence has 10% or more of the original collection. To date, at least 62 type specimens have been found from the various regions that Tenore visited to compile his Flora Napolitana (Tenore 1811-1838) and later (Campania, Basilicata, Calabria , Apulia, Abruzzo).

The collection mostly consists of generic types (of which a few are lectotypes) and they are certainly duplicates of the original collection. Several factors must be considered when discussing the Naples collections. In fact, this collection experienced a series of difficult vicissitudes, after which it was often difficult to link the exsiccata with their relative labels, in spite of diligent re-ordering and filing efforts. Moreover, for exchanges, Tenore tended to give his best exsiccata to his botanical colleagues (Cesati 1879). Thus, historically speaking, the Florence collection is more fortunate and the documentary evidence of its exsiccata can be considered safe. In some cases it is on a privileged plane regarding future typification work.

The final example is Vincenzo Tineo (1791-1856) Sicilian, who also belonged to the official world of botany, as he was Director of the Botanical Gardens of Palermo and Professor of Botany (Tineo 1817, 1827, 1846; Parlatore 1839). Among other things, he was one of the most enthusiastic collaborators of Giovanni Gussone in the collections that led to his writing the work "*Florae Siculae Synopsis*" (Gussone 1842-1844(1845)).

All of his herbarium is part of the Herbarium Mediterraneum of Palermo (Raimondo 1993), which holds several tens of thousands of specimens. To date, apart from Florence, his duplicates have only been recorded in two small herbariums in Italy, Bassano and at the Museo Doria of Genoa (Vegter 1988; Stafleu & Cowan 1986), although others are mentioned abroad (8 herbaria).

Tineo saw to the arrival of almost all of his material himself, during the years immediately following the foundation of the H.C.I. (1843-1848), with a total of 354 specimens, plus, in this case too, material donated or exchanged directly with Parlatore. From surveys of the material of Parlatore, it can be estimated that probably no more than 500 specimens actually reached Florence, thus the collection is important considering the period and the area investigated. It could appear rather insignificant, compared with the original collections, and undoubtedly duplicated even the "rare Sicilian plants", as mentioned in the register of accessions. However, there are at least 13 types, one of which refers to a species described by Nicotra and which came to Florence with the material of Tineo. Although

they are generic types, as they are not correctly referred to in the literature, as often happened even in the recent past, about half of these types refer to taxa still considered valid, and so can definitely be used for a better and definitive hierarchical definition.

These examples show a variety of situations, regarding the ranks of the types, their present taxonomic validity, their chronological order, the geographical areas investigated and the type of collections involved. They all, in my opinion, underline the importance of the material of the original collections and the problems connected with their location and availability.

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References

Arrigoni, P. V. 1974: Le categorie corologiche in Botanica. — Lav. Soc. Ital. Biogeogr., n. s. **4:** 101-110.

— 1983: Aspetti corologici della flora sarda. — Lav. Soc. Ital. Biogeogr., n. s. **8:** 81-109.

Cesati, V. 1879: Alla memoria di sei illustri naturalisti italiani. — Mem. Soc. Ital. Sci., t. **3:** 5-14.

Cuccuini, P. 1993: L'attività degli erbari fiorentini (FI e FT): l'erbario come luogo di studio e di incontro. — Webbia **48:** 97-126.

— 1995: Gli erbari fiorentini (FI e FT) nell'ultimo mezzo secolo (1945-1992). Studiosi e materiali. — Museo Botanico dell'Università di Firenze.

— & Nepi, C. 1998: The Herbarium Centrale Italicum (Phanerogamic section) its history and composition through its collectors. — Pp. 83-88 in: Stuchlik L. (ed.), 1998, Botanical Collections throughout the world. — 2nd Intern. Conference on the preservation of botanical collections, Cracow, June 26-29, 1997.

— & — 1999: Herbarium Centrale Italicum (The Phanerogamic Section): the genesis and structure of a herbarium. The main collections, the collectors, the handwriting samples and the personnel in 150 year history. — Sezione Botanica "F. Parlatore, Museo di storia naturale, Univ. di Firenze.

— & Pieroni 1998a: Primi risultati di indagini tassonomiche, fitogeografiche e sulla storia delle collezioni ricavabili dalla catalogazione informatizzata dell'Herbarium Centrale Italicum. — Inform. Bot. Ital. **30 (1-3):** 100-102.

Fiori, A. 1923-1929: Nuova Flora Analitica d'Italia, **1-2.** — Tip. M. Ricci, Firenze.

— & Paoletti, G. 1896-1908: Flora Analitica d'Italia, **1-4**. — Tip. Seminario, Padova.

Gussone, G. 1842-44 (45): Florae Siculae Synopsis, **I-II**. — Tipografia Tramater, Napoli.

Mazzi, G. 1993: Note sull'Erbario Micheli e suo valore scientifico. — Webbia **48:** 35-60.

— & Nepi, C. 1998: La catalogazione dell'erbario Micheli-Targioni: saggio di analisi critica. — Inform. Bot. Ital. **30 (1-3):** 87-89.

Moggi, G. 1981: Andrea Cesalpino botanico. — Atti Mem. Acc. Petrarca Lett. Arti Sci. **235-249**.

— 1993: Botanical collections in Florence from their origin to the present day. — Webbia **48:** 35-60.

— 1998: Attività di catalogazione informatizzata presso il Museo Botanico di Firenze. — Inform. Bot. Ital. **30 (1-3):** 79-81.

— Maffioli, M. & Sesti, E. 1994: Fotografia e Botanica tra ottocento e novecento. — Alinari, Firenze.

Nepi, C. 1997: The Historical Collections of the Botanical Museum of Florence and their scientific

value. — Intern. Conference on the value and valuation of natural science collections. Manchester, 18-21 April 1995: 250-256.
— & Cuccuini, P. 1992: Collectors and collections in the Herbarium Centrale Italicum (Phanerogamic section). — Museo Botanico dell'Università, Firenze.
— & — 1993: Collectors and collections in the Herbarium Centrale Italicum (Phanerogamic section). — Webbia **48:** 79-84.
Parlatore, F. 1839: Flora panormitana. — Pensante, Palermo.
— 1848-1896: Flora italiana.Vols. **I-X** (Vols. 1 to 5, 1848-1876 edited by F. Parlatore; Vols. 6 to 10, 1884-1896, edited by T. Caruel). — Le Monnier, Firenze.
Pichi Sermolli, R. E. G. 1994: Odoardo Beccari: vita, esplorazioni, raccolte e scritti del grande naturalista fiorentino. Appendice al catalogo della mostra: Fotografia e Botanica tra ottocento e novecento. — Alinari, Firenze.
Pignatti, S. 1982: Flora d'Italia, **1-3.** — Edagricole, Bologna.
Raimondo, F. M. 1993: Processi di formazione dell'Herbarium Mediterraneum in Palermo. — Webbia **48:** 213-218.
Saccardo, P. A. 1895, 1901: La botanica in Italia. — Mem. Real. Ist. Ven. Sci. Lett. Arti **XXV (4):** 110-113 (1895), 75 (1901).
Santangelo, A., La Valva, V. & Caputo G. 1994: La collezione Tenore: primi dati conoscitivi. — Giorn. Bot. Ital. **128 (1):** 383.
— , Caputo, G., & La Valva, V. 1995: L'Herbarium Neapolitanum. — Allionia **33:** 103-120.
— , Nazzaro, R., La Valva, V. & Caputo, G. 1998: L'archiviazione elettronica delle collezioni dell'Herbarium Neapolitanum. — Inform. Bot. Ital. **30 (1-3):** 90-95.
Stafleu, F. A. & Cowan, R. S. 1981: Taxonomic literature, **III**. Lh-O: 464-65, 577-79. (2nd ed.). — Utrecht.
— & — 1986: Taxonomic literature. **VI**, Sti-Vuy: 212-218, 365-66. (2nd ed.). — Utrecht.
Steinberg, C. H. 1977: The collectors and collections in the Herbarium Webb. — Webbia **32 (1):** 1-49.
Tardelli, M. 1996 (1997): The botanical collections in the Tropical Herbarium of Florence. — Museol. sci. **XIII:** 319-344.
Tenore, M. 1811-1838: Flora Napolitana, **1-5**. — Stamperia Reale, Napoli. Tipografia del Giornale Enciclopedico, Napoli. Stamperia Francese, Napoli.
Tineo, V. 1817: Plantarum rariorum Siciliae minus cognitarum pugillus primus. — Typis Regiis, Panormi.
— 1827: Catalogus plantarum horti regii panormitani ad annuum 1827. — Ex regali typographia, Panormi.
— 1846: Plantarum rariorum Siciliae minus cognitarum. Fasciculus **1-3**. — Ex typographia Ph. Barravecchiae, Panormi. Estratto da Ingrassia Giorn. Sci. Medic. Sicil.
Vegter, I. H. 1976: Index Herbariorum part II (4). Collectors "M": 535, 557. — Regnum Veg. **93**.
— 1988: Index Herbariorum part II (7). Collectors "T-Z": 1003, 1025. — Regnum Veg. **117**.

Unpublished Bibliographical References

Registri delle accessioni: Erbario Centrale. Registro Aumenti 1842-1938 (Register of accessions)
Registro dei visitatori: 1843-1877 (Register of visiting Scholars).
Corrispondenza dell'Herbarium Universitatis Florentinae (Letters of H. U. F.)

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