



HELLENIC REPUBLIC
**National and Kapodistrian
University of Athens**
— EST. 1837 —

Royal
Botanic
Gardens **Kew**

NKUA
Seed
Bank



MILLENNIUM
SEED BANK
PARTNERSHIP

Conserving the Flora of the Balkans: Native Plants of Greece

Report for the Millennium Seed Bank Project Partnership, Royal Botanic Gardens, Kew

Project Period Covered By This Report

Year: (1)

From: 20/02/2022 – 19/08/2022

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Prepared by:

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1.0 Project Overview

1.1 The NKUA Team

Costas A. Thanos, Professor Emeritus	Team Leader
Aikaterina Stefi, Biologist BSc, PhD, Research Associate	Lab Manager
Aikaterini Koutsovoulou, Biologist BSc, PhD, Researcher	Leader of Germination & Storage
Apostolos Kaltsis, Biologist BSc, MSc, Researcher	Leader of Seed Collecting & Data
Spyridon Oikonomidis, Biologist BSc, PhD Cand., Res Assoc	Senior Collector, Student Researcher
Aikaterini Goula, Biologist BSc, PhD Candidate	Taxonomist
Konstantina Mitsigiorgi, Biologist BSc, PhD Student	Field and Lab associate
Sofoklis Mouratidis, Biologist BSc, MSc Student	Field and Lab associate
Anna Maranti, Biologist BSc	Field and Lab associate
Nikolaos Katsikis, Biology Student	Field and Lab associate
Konstantinos Maramathas, Biology Student	Field and Lab associate
Maria Chalikiopoulou, Biology Student	Field and Lab associate
Anna Boziki, Biology Student	Field and Lab associate
Fermele Bashari, Biology Student	Field and Lab associate

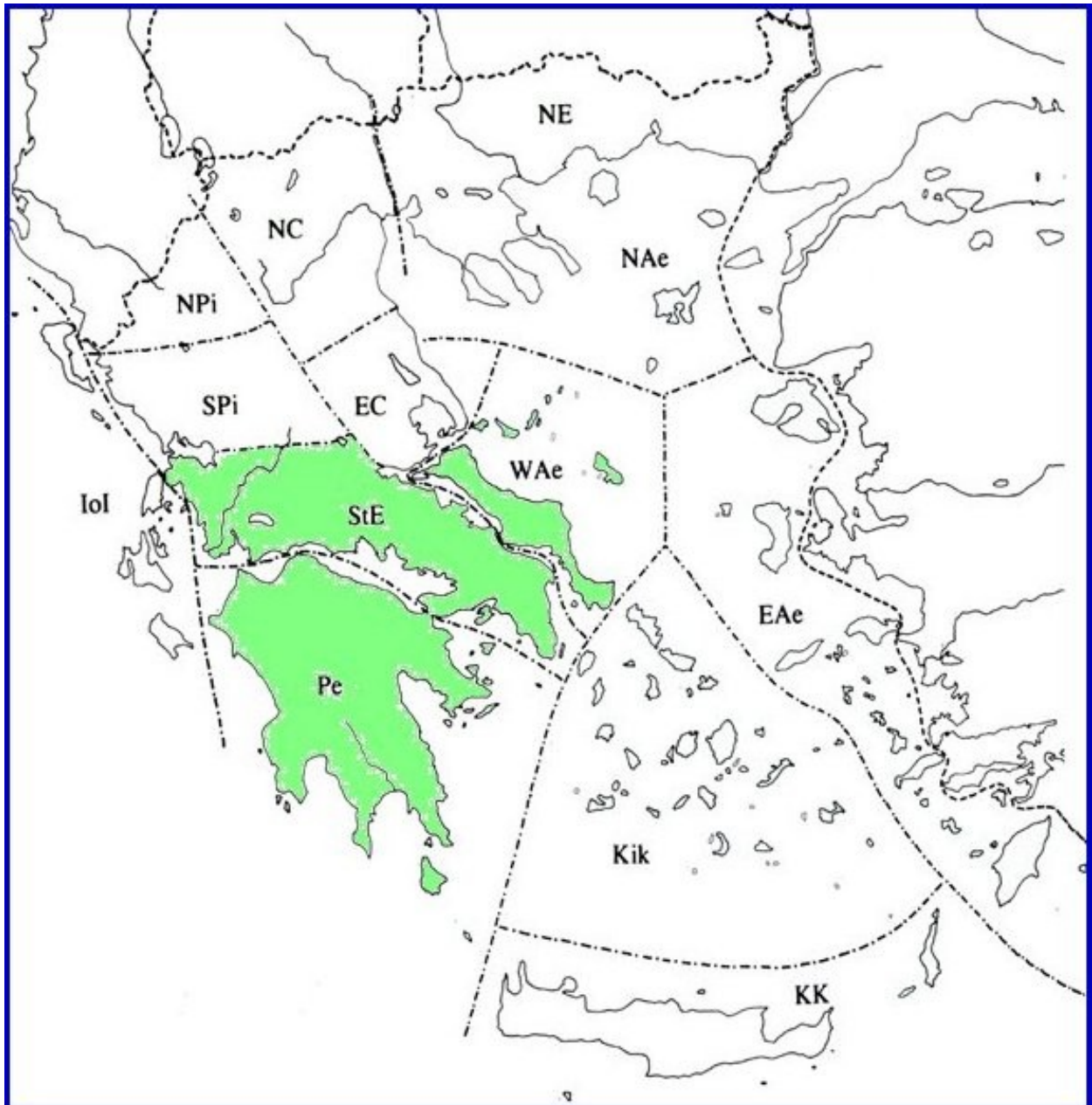
1.2 The main goals of the Project

The Project is a collaboration of the Millennium Seed Bank of RBG Kew and the NKUA Seed Bank within the framework of MSB Partnership and with the highly appreciated funding from several sponsors (The A.G. Leventis Foundation, Players of People's Postcode Lottery, Linde, The Steel Charitable Trust & Navarino).

The main goals of the Project are:

- 1. Ex situ Conservation.** Seed collections of 160 species from mainland Greece including a third of all accessible ENSCONET Consortium target species in southern mainland Greece (30% of the species). At least 25% of the collected species will be Greek endemics. All collections will be duplicated to the MSB, associated vouchers will be lodged at Kew's herbarium, and the data will be made available through MSBP Data Warehouse.
- 2. Training and capacity building for NKUA** staff and students in seed collecting, processing and banking. In addition, research training in germination testing to MSB standards will be provided to the visiting PhD student at the MSB.
- 3. Research into germination** of collected species to support ex situ and in situ conservation of 160 native plant species from Greece's mainland. Research will be undertaken by a PhD student to investigate storage and germination of Greek Orchidaceae species. Methodology will follow ENSCONET guidelines.
- 4. Sharing and dissemination of project learning.** Seed collection data and germination protocols accessible through MSBP Data Warehouse and made public after publication by NKUA or within three years of project end. Opportunities sought to disseminate project learning through the ENSCONET Consortium, regional conferences, MSBP's Samara newsletter, and Kew's social networks. Seedlings supplied to Kew's nursery

staff to support future dissemination work through planting beds and public engagement signs.



Map 1. The 13 floristic regions of Greece. Shown with green colour: Peloponnese (Pe), Central Greece (Sterea Ellas, StE) and West Aegean Islands (WeA); these are the three regions where seed collections are taking place during the first year of the Project.

2.0 Achievements

2.1. Seed Collections

During the first 6-mo period we have collected seeds from 134 taxa and we are confident that we will fulfil the first year target (seed accessions from 160 plant species).

Table 1. Collections realised till Aug.19, 2022.

Collections	Actual <i>(collections made up to reporting date)</i>	Target <i>(this year)</i>	Total Actual <i>(cumulative)</i>	Total Target <i>(for the length of the project – if funded for 3 years)</i>
Number of Collections	134	160	134	500
Number of Species	134	160	134	500
Number of Species New to MSB	95/75 (Greece/Global)	130 (flexible target)	95/75 (Greece/Global)	400 (flexible)
Number of Greek endemics	41	41	41	125
ENSCONET Priority Species	5	9	5	All accessible targets (30)

The full list of the taxa collected (mostly under the guidance of the senior collectors Mr Apostolos Kaltsis and Mr Spyros Oikonomidis) is given in **Appendix 1**.

The list of field trips (a total of 45 till Aug. 19, 2022) is shown in **Appendix 2**.

2.2. Significant taxa collected

- *Fritillaria obliqua* subsp. *obliqua*: Endemic species of Greece, currently characterised as EN by the IUCN. Its populations are observed to be declining, mostly due to urbanisation and grazing. The species is also present in the ENSCONET priority list and in the annex IV of the Directive 92/43/EEC.
- *Ophrys argolica* subsp. *argolica*: Endemic of Greece, currently characterised as VU by the IUCN. Its populations are small and scattered. The species is mainly threatened by agricultural activities and urbanisation occurring in its sites. *Ophrys argolica* is also a priority species in the ENSCONET list and in the annex IV of the Directive 92/43/EEC.
- *Galanthus ikariae*: Endemic of Greece, currently characterised as VU by the IUCN. Its populations are small and fragmented. The species is mainly threatened by low scale illegal collections and probably by climate change which is affecting its life cycle. *Galanthus ikariae* is also a priority species according to the ENSCONET list.
- *Saponaria jagelii*: Endemic of Greece, currently characterised as CR by the IUCN. It is growing only in two small populations on the island of Elafonisos, very close to the

southeastern coast of Peloponnese (but it has recently been reported as growing in Lemnos Island, in northeastern Aegean). An annual species with a sandy beach habitat; its populations are under imminent danger by tourism activities on the island and also by the destruction of its habitat for construction purposes.

- *Campanula celsii* subsp. *parnesia*: Endemic of Greece, found only on Mt. Parnitha. It grows on cliffs and rocky areas usually hard to be accessed.
- *Sideritis raeseri* subsp. *attica*: Endemic species of Greece which can be found in Central Greece and more specifically in Attica. It has been described as vulnerable in the Red Data Book of the rare and threatened plant species of Greece. It faces significant pressure mainly due to over collection (it is used as a ‘tea’) but also as a result of the destruction of its habitat.

2.3 Herbarium vouchers

A total of 14 plant specimens have been collected and are currently under preparation as herbarium vouchers (see **Appendix 3**). As it has been explained it is very difficult to obtain proper herbarium vouchers from the majority of the taxa collected as this would mean almost doubling the field trips, which under the circumstances is not feasible, on the basis of both human resources and logistics. The accurate identification of the taxa collected will be certified by our taxonomist (Ms Katerina Goula) with the use of all relevant plant material and information available.

2.4 Handling of Seed Accessions

A total of 62 seed accessions (out of the 134) have already been dried, cleaned and weighed (under the guidance of Dr Katerina Stefi), so we have an estimate of the total number of seeds collected per accession (see **Appendix 4**).

2.5 Training the next generation of seed conservation scientists

The Workshop ‘Seed Conservation Techniques Course’ took place in our lab premises from 6 to 10 June, 2022 was a big success. It was organised jointly by RBG Kew and NKUA and the lectures/practicals were taught by RBG Kew personnel (Dr A. Faruk, Ms H. Oldfield, Ms F. Stanley and Mr I. Willey). Among the 14 trainees (some of them already quite experienced in several aspects of ex situ plant conservation) the junior ones (8 in total) were either close to or near after the completion of their studies for the Biology Diploma (BSc). Consequently, all of them were actively involved in the implementation of the Project as field and/or lab associates. We are optimistic that at least some of them will keep on working or researching in the field of Plant Conservation.

2.5 Preparation of the Project Website

The development of the website has been assigned to our junior colleagues Mr Spyros Oikonomidis and Mr Sofoklis Mouratidis who are quite qualified for this task. Currently, we

have almost decided about the hosting formalities and the overall design of the site and we believe that we will launch it by October or November 2022, at the latest.

2.6 Preparations for Seed Viability/Germination Assessments and Long-Term Storage

Protocols and procedures for the assessment of seed viability and germinability for all seed accessions (to be collected within the Project implementation) have already been agreed and elaborated, under the guidance of Dr Katerina Koutsovoulou. Similarly, we are preparing for the final stage, i.e. seed packaging, of placing the seed accessions under long-term storage.

2.7 Research on Orchid Seeds and Preparations for the visit of the PhD student to MSB

Mr Spyros Oikonomidis is now in the third year of his PhD Thesis; he is quite active in pursuing his research on seed biology of the Greek orchids. Some preliminary preparations are presently carried out for the organization of his visit to the MSB (by the end of 2022) and we look forward to successful research collaboration.

2.8 Equipment procured, or in progress

The purchase of a seed aspirator/cleaner (Agricukex, CB-1 Small Column Cleaner – Acrylic Trash Catcher) was made by mid June and we had the opportunity to use this very helpful instrument in the cleaning process of our collections.

Currently, we have placed an order to buy a number of precision sieves (to be included in our existing set) as well as numerous air- and water-proof glass jars of various sizes for the long term storage of seeds.

3.0 Images with Captions



Figure 1. Selection #I of plants collected. From top to bottom and left to right: 1) *Ophrys argolica* subsp. *argolica* 2) *Limodorum abortivum* 3) *Fritillaria obliqua* subsp. *obliqua* 4) *Campanula andrewsii* 5) *Anacamptis pyramidalis* 6) *Anacamptis coriophora* subsp. *fragrans* 7) *Allium hymettium* 8) *Alkanna graeca* 9) *Aethionema saxatile* subsp. *graecum*.



Figure 2. Selection #II of plants collected. From top to bottom and left to right: 1) *Orchis simia* subsp. *simia* 2) *Parentucellia latifolia* 3) *Saponaria jagelii* 4) *Silene behen* 5) *Silene gigantea* subsp. *hellenica* 6) *Silene sedoides* 7) *Stachys swainsonii* 8) *Tulipa goulimyi* 9) *Veronica glauca*.



Figure 3. Selection #III of plants collected. From top to bottom and left to right: 1) *Cistus salviifolius* 2) *Ebenus sibthorpii* 3) *Fritillaria graeca* 4) *Hypopitys monotropa* subsp. *hypophagea* 5) *Lomelosia hymettia* 6) *Minuartia parnonia* 7) *Myosotis ramossisima* 8) *Nigella damascena* 9) *Orchis italica*.



Figure 4. Selection #IV of plants collected. From top to bottom and left to right: 1) *Centaurea nervosa* subsp. *promota* 2) *Nepeta argolica* subsp. *argolica* 3) *Nigella arvensis* subsp. *aristata* 4) *Polygala helenae* 5) *Clypeola jonthlaspi* 6) *Asperula pulvinaris* 7) *Dianthus serratifolius* subsp. *serratifolius* 8) *Centaurea attica* 9) *Centaurea achaia* subsp. *achaia*.



Figure 5. Selection #V of plants collected. From top to bottom and left to right: 1) *Dactylorhiza saccifera* 2) *Epipactis helleborine* subsp. *helleborine* 3) *Dianthus tymphresteus* 4) *Centaurea pichleri* 5) *Allium hymettium* 6) *Campanula celsii* subsp. *parnesia* 7) *Neottia nidus-avis* 8) *Potentilla pedata* 9) *Muscari comosum*.



Figure 6. Project fieldwork: Locating, identifying and photographic target plants; collecting seeds and plant specimens for herbarium vouchers.



Figure 7. Seed drying. Above: A panoramic picture of the drying room kept at a quite constant temperature of 16-17 °C and a relative humidity between 40 and 50%. Middle row: The plexiglass drying chamber (left) and one of the 5 Heraeus chambers which served as germinators and have been currently reassigned as insulated drying chambers. With the help of desiccant (silica gel) the relative humidity in all 6 chambers is between 15 and 25%. Bottom right: A Rotronic HydroPalm portable instrument for highly accurate measurements of the equilibrated relative humidity over seed samples; these measurements provide relatively accurate estimates of the water content of a seed sample and, as a result, help us decide when seeds are sufficiently dry to be transferred into air- and water-proof vessels for long term storage at -20 °C.

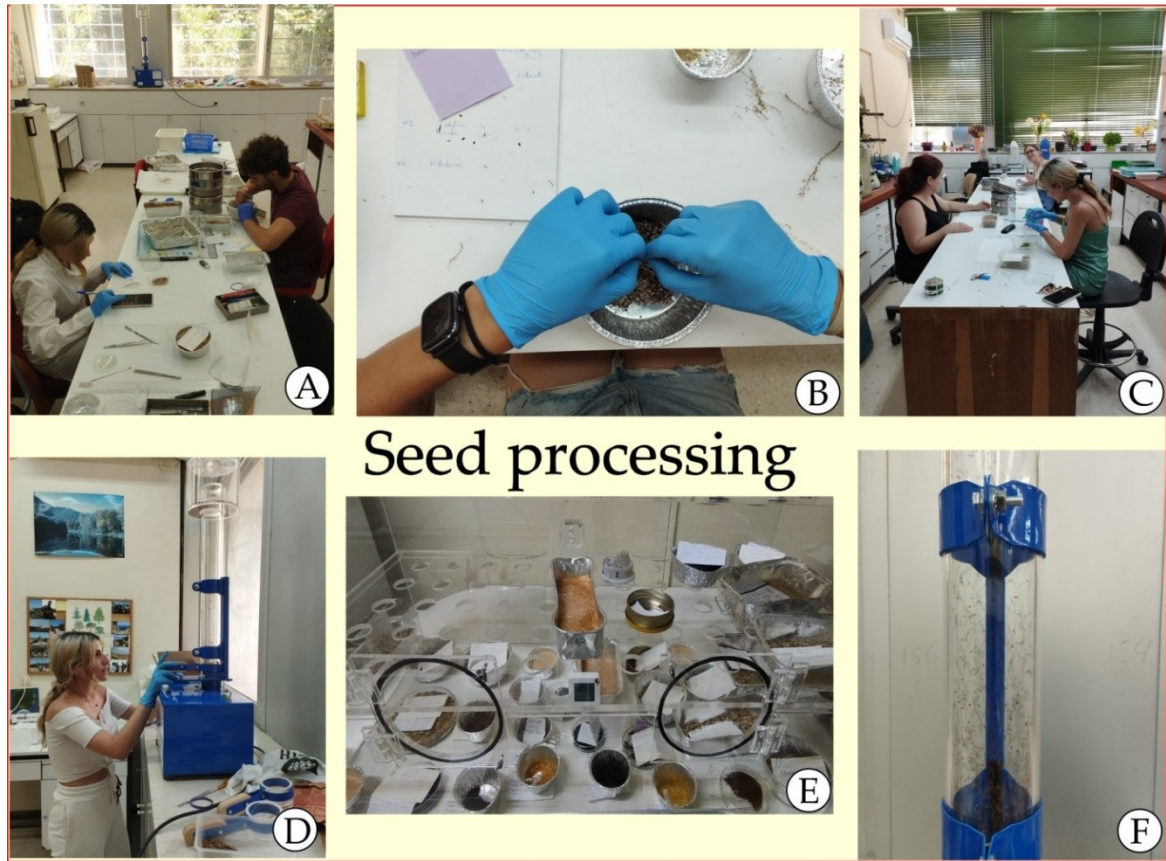


Figure 8. Seed cleaning, manually and with the use of the aspirator (Agriculex, D & F).

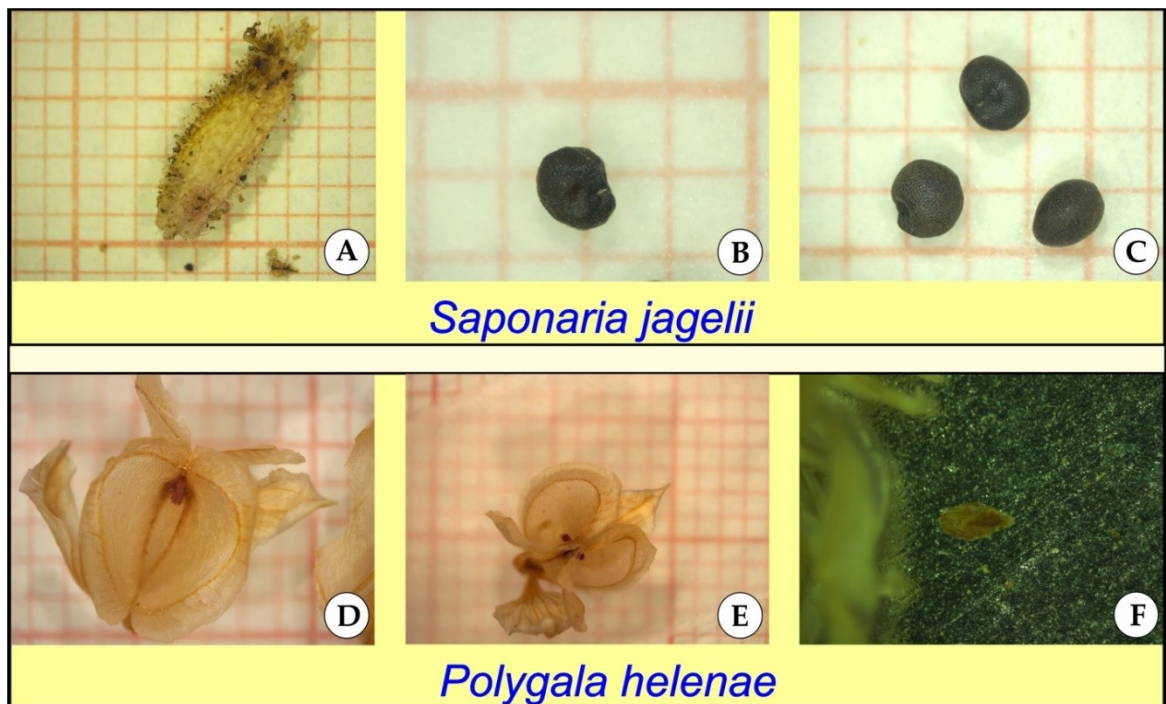


Figure 9. Stereomicrographs of: The fruit of *Saponaria jagelii* (A); B, C: Seeds of *S. jagelii*; D, E: The fruit of *Polygala helenae*. Seeds are displayed in the middle; F: Seed of *P. helenae*.

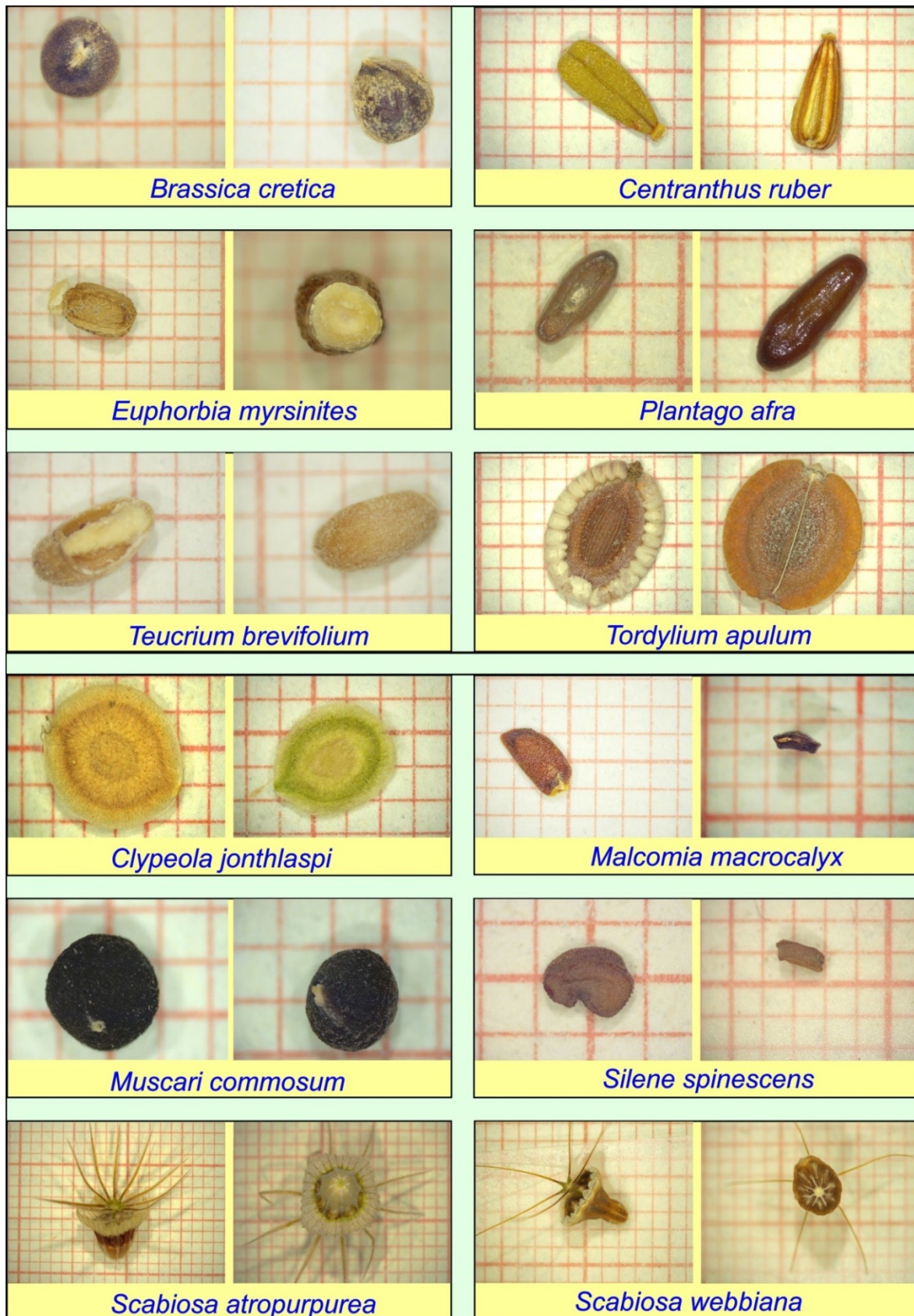


Figure 10. Stereomicrographs (over millimetre paper) of dried and cleaned seeds from various plant taxa. Seeds are displayed both sides.

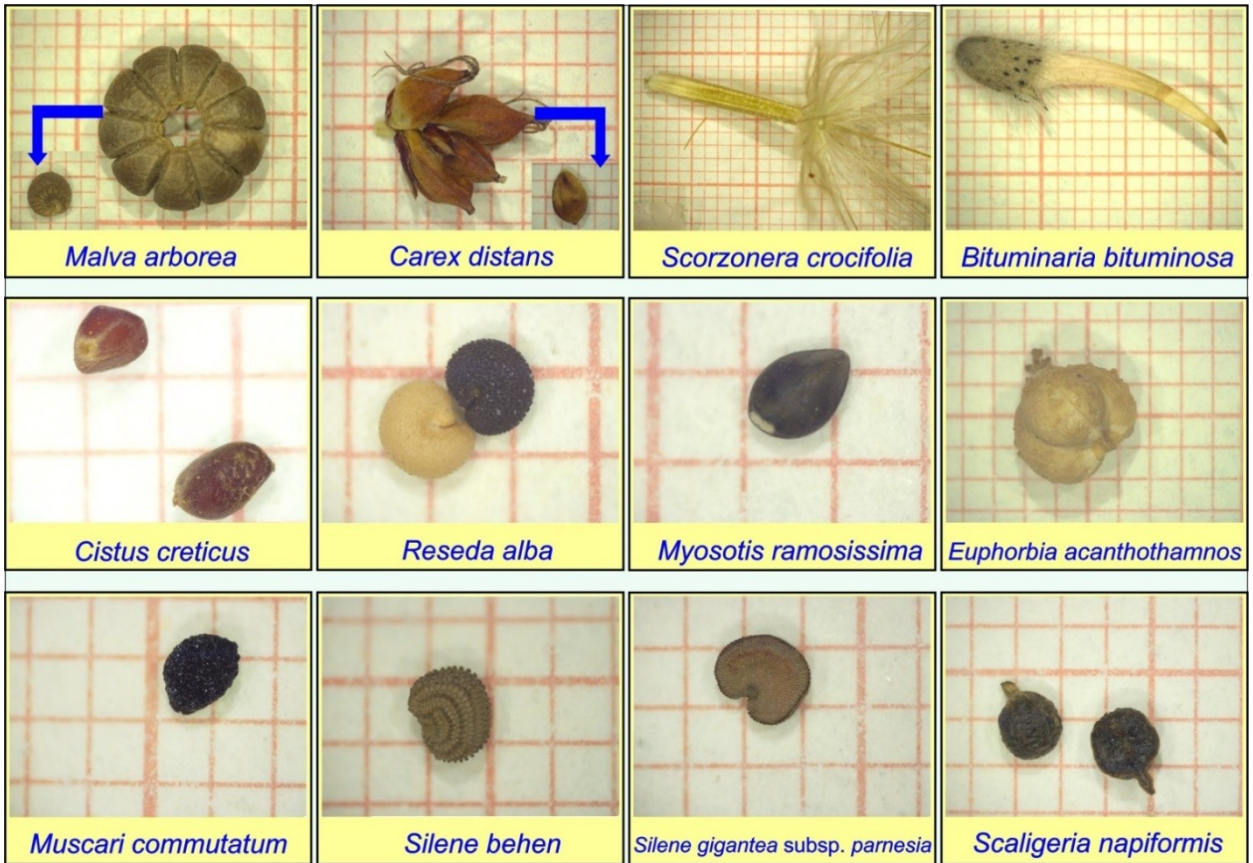


Figure 11. Stereomicrographs (over millimetre paper) of dried and cleaned seeds from various plant taxa.

4.0 Project Challenges

Overall, the Project implementation has been relatively smooth on all scientific, administrative and financial grounds. However, we have faced a number of difficulties and challenges, which we briefly present below.

1. The start of the project was considerably delayed (Feb. 20 instead of Jan. 1) mainly due to the extensive red tape and paper work required but also due to the decreased efficiency of NKUA administration due to COVID-19 restrictions. This delay (in combination to #4) resulted in significantly limiting our seed collecting programme.
2. Pandemic restrictions were imposed (to a lesser or larger extent) until the end of May and this acted as an additional delaying factor.
3. Further restrictions to movement – in particular within non urban areas with natural vegetation and as a consequence of an extended, early drought (starting from mid May) – were taken to prevent forest fires.
4. The need to train our younger colleagues (through the very successful Workshop of early June) did not allow our team to collect as many early maturing taxa (end of spring) as we would like.
5. Furthermore, the untimely and extended drought (and the hot spells as well) did not permit accurate predictions of seed collection dates and obstructed the collection of a number of target taxa.
6. Finally, the skyrocketing of energy prices has resulted in a 2-digit inflation rate in Greece and has increased costs of travel and accommodation as well as of all goods. For the time being this increase does not seem to affect significantly the implementation of the Project and we hope that this will eventually prove true by the end of the first year as well.

6.0 Appendices

APPENDIX 1

Detailed List of Seed Collections (till Aug. 19, 2022)

Taxon Scientific Name	ENSCONE T Priority Species	Endemi c to Greece	New to the MSBP (Greece)	New to the MSBP (Global)
<i>Achillea holosericea</i>			NO	NO
<i>Achillea millefolium</i>			NO	YES
<i>Aethionema retsina</i>	YES		NO	NO
<i>Aethionema saxatile</i> subsp. <i>graecum</i>			YES	YES
<i>Alkanna graeca</i> subsp. <i>graeca</i>		YES	NO	NO
<i>Allium hymettium</i>		YES	NO	NO
<i>Allium subhirsutum</i>			YES	YES
<i>Alyssum chalcidicum</i>			NO	NO
<i>Alyssum montanum</i> subsp. <i>montanum</i>			NO	YES
<i>Anacamptis coriophora</i>			NO	NO
<i>Anacamptis pyramidalis</i>			NO	NO
<i>Anagyris foetida</i>			NO	YES
<i>Anthemis cotula</i>			NO	YES
<i>Anthemis pindicola</i>			NO	NO
<i>Anthemis tinctoria</i> subsp. <i>parnassica</i>			YES	YES
<i>Anthemis tomentosa</i> subsp. <i>tomentosa</i>			NO	YES
<i>Anthylis vulneraria</i> subsp. <i>rubriflora</i>			YES	YES
<i>Armeria canescens</i>			NO	NO
<i>Asperula pulvinaris</i>		YES	NO	NO
<i>Asphodeline lutea</i>			YES	YES
<i>Ballota acetabulosa</i>			YES	YES
<i>Biscutella didyma</i> subsp. <i>apula</i>			NO	NO
<i>Bituminaria bituminosa</i>			NO	NO
<i>Bubon macedonicum</i>			NO	NO
<i>Campanula andrewsii</i> subsp. <i>andrewsii</i>		YES	YES	NO
<i>Campanula celsii</i> subsp. <i>parnesia</i>		YES	NO	NO
<i>Campanula cymaea</i>		YES	NO	NO
<i>Campanula spatulata</i> subsp. <i>spruneriana</i>			YES	YES
<i>Campanula topaliana</i>		YES	NO	NO
<i>Capsella bursa-pastoris</i>			NO	YES
<i>Carex distans</i>			NO	YES
<i>Centaurea achaia</i> subsp. <i>achaia</i>		YES	NO	NO
<i>Centaurea attica</i> subsp. <i>attica</i>		YES	NO	NO
<i>Centaurea nervosa</i> subsp. <i>promota</i>		YES	NO	NO
<i>Centaurea pichleri</i> subsp. <i>pichleri</i>			NO	NO
<i>Centranthus ruber</i> subsp. <i>sibthorpii</i>			NO	NO
<i>Cephalanthera damasonium</i>			NO	NO
<i>Cerastium candidissimum</i>		YES	YES	NO

<i>Cistus creticus</i> subsp. <i>creticus</i>			YES	YES
<i>Cistus salviifolius</i>			NO	YES
<i>Clypeola jonthlaspi</i> subsp. <i>jonthlaspi</i>			NO	YES
<i>Conium maculatum</i>			NO	YES
<i>Dactylorhiza saccifera</i>			NO	NO
<i>Dianthus serratifolius</i> subsp. <i>serratifolius</i>		YES	NO	NO
<i>Dianthus tymphreustus</i>		YES	NO	NO
<i>Dianthus viscidus</i>			NO	NO
<i>Ebenus sibthorpii</i>		YES	NO	NO
<i>Eleocharis palustris</i>			NO	YES
<i>Epipactis helleborine</i> subsp. <i>helleborine</i>			NO	YES
<i>Epipactis microphylla</i>			NO	YES
<i>Erica manipuliflora</i>			NO	NO
<i>Euphorbia acanthothamnos</i>			NO	NO
<i>Euphorbia myrsinites</i>			NO	NO
<i>Fibigia clypeata</i>			YES	YES
<i>Fritillaria graeca</i>			NO	NO
<i>Fritillaria obliqua</i> subsp. <i>obliqua</i>	YES	YES	NO	NO
<i>Galanthus ikariae</i>	YES	YES	NO	NO
<i>Galium setaceum</i>			NO	YES
<i>Galium thymifolium</i>		YES	NO	NO
<i>Globularia alypum</i>			NO	NO
<i>Hypericum empetrifolium</i> subsp. <i>empetrifolium</i>			YES	YES
<i>Hypopitys monotropa</i> subsp. <i>monotropa</i>			NO	YES
<i>Johrenia distans</i>		YES	NO	NO
<i>Lavandula stoechas</i> subsp. <i>stoechas</i>			YES	YES
<i>Limodorum abortivum</i>			NO	NO
<i>Linum leucanthum</i>		YES	NO	NO
<i>Lomelosia hymettia</i>		YES	NO	NO
<i>Lotus ornithopodioides</i>			YES	YES
<i>Malabaila involucrata</i>			YES	YES
<i>Malcolmia macrocalyx</i> subsp. <i>scyria</i>		YES	NO	NO
<i>Malva arborea</i>			NO	NO
<i>Melica ciliata</i>			YES	YES
<i>Micromeria Juliana</i>			NO	YES
<i>Minuartia attica</i> subsp. <i>attica</i>			YES	YES
<i>Minuartia parnonia</i>		YES	NO	NO
<i>Muscari commutatum</i>			NO	NO
<i>Muscari comosum</i>			YES	YES
<i>Myosotis ramosissima</i> subsp. <i>ramosissima</i>			NO	YES
<i>Neotinea maculata</i>			NO	NO
<i>Neottia nidus-avis</i>			NO	YES
<i>Nepeta argolica</i> subsp. <i>argolica</i>		YES	YES	YES
<i>Nepeta nuda</i>			YES	YES
<i>Nigella arvensis</i> subsp. <i>aristata</i>		YES	YES	YES
<i>Nigella damascena</i>			YES	YES
<i>Onosma stridii</i>		YES	NO	NO
<i>Ophrys argolica</i> subsp. <i>argolica</i>	YES	YES	NO	NO

<i>Orchis italica</i>			NO	NO
<i>Orchis simia</i> subsp. <i>simia</i>			NO	NO
<i>Orobanche alba</i>			NO	YES
<i>Paronychia albanica</i> subsp. <i>graeca</i>		YES	NO	NO
<i>Paronychia macrosepala</i>			NO	NO
<i>Petrorhagia dubia</i>			YES	YES
<i>Petrorhagia obcordata</i>			NO	NO
<i>Petrorhagia thesalla</i>			NO	NO
<i>Phagnalon rupestre</i> subsp. <i>graecum</i>			NO	NO
<i>Phlomis fruticosa</i>			NO	YES
<i>Plantago afra</i>			NO	YES
<i>Potentilla pedata</i>			YES	YES
<i>Pterocephalus perennis</i> subsp. <i>perennis</i>		YES	NO	NO
<i>Ptilostemon chamaepeuce</i>			YES	YES
<i>Ranunculus sprunerianus</i>			NO	YES
<i>Reseda alba</i> subsp. <i>alba</i>			NO	YES
<i>Rhinanthus pubescens</i>		YES	YES	NO
<i>Rumex kernerii</i>			NO	NO
<i>Salvia verbenaca</i>			NO	YES
<i>Saponaria jagelii</i>	YES	YES	NO	NO
<i>Scabiosa atropurpurea</i>			YES	YES
<i>Scabiosa ochroleuca</i>			YES	YES
<i>Scabiosa webbiana</i>			NO	NO
<i>Scorzonera crocifolia</i>			NO	NO
<i>Sideritis raeseri</i> subsp. <i>attica</i>		YES	NO	NO
<i>Silene ammophila</i>		YES	NO	NO
<i>Silene behen</i>			YES	YES
<i>Silene conica</i>			YES	YES
<i>Silene gigantea</i> subsp. <i>hellenica</i>		YES	NO	NO
<i>Silene multicaulis</i> subsp. <i>sporadum</i>		YES	YES	NO
<i>Silene parnassica</i>		YES	NO	NO
<i>Silene roemerii</i>			NO	YES
<i>Silene sedoides</i>			YES	YES
<i>Silene spinescens</i>		YES	NO	NO
<i>Smyrniium perfoliatum</i> subsp. <i>rotundifolium</i>			YES	YES
<i>Stachys spruneri</i>			NO	NO
<i>Stachys swainsonii</i>		YES	NO	NO
<i>Teucrium brevifolium</i>			NO	NO
<i>Teucrium flavum</i> subsp. <i>hellenicum</i>		YES	YES	NO
<i>Thymus longicaulis</i>			YES	YES
<i>Tordylium apulum</i>			YES	YES
<i>Tragopogon crocifolius</i>			NO	YES
<i>Trifolium stellatum</i>			YES	YES
<i>Tulipa goulimyii</i>		YES	NO	NO
<i>Umbilicus rupestris</i>			NO	YES
<i>Verbascum spesiosum</i> subsp. <i>megaflomos</i>		YES	NO	NO
<i>Verbascum undulatum</i>		YES	YES	NO
<i>Veronica glauca</i> subsp. <i>chaubardii</i>		YES	NO	NO

APPENDIX 2

List of field trips made till Aug. 19, 2022

no	<u>Departure date</u>	<u>Return date</u>	<u>Participants</u>	<u>Areas of study</u>
1	2022 03 31	2022 03 21	Spyridon Oikonomidis, Nikos Katsikis, Emily Bashari	StE Poikilo
2	2022 04 02	2022 04 04	Stefi Aikaterina, Spyridon Oikonomidis, Sofoklis Mouratidis, Nikolaos Katsikis	Pe Elafonissos
3	2022 05 04	2022 05 04	Apostolos Kaltsis	StE Hymettus
4	2022 04 19	2022 04 19	Spyridon Oikonomidis, Sofoklis Mouratidis, Nikolaos Katsikis, Konstantinos Maramathas	Pe Megalopoli
5	2022 04 23	2022 04 23	Apostolos Kaltsis	StE Psatha Megaron
6	2022 04 28	2022 04 28	Spyridon Oikonomidis, Nikolaos Katsikis, Konstantinos Maramathas, Emily Bashari	StE Poikilo - Chrysoupoli
7	2022 04 29	2022 04 29	Spyridon Oikonomidis, Apostolos Kaltsis, Sofoklis Mouratidis, Nikolaos Katsikis	Pe Loutraki, Akrocorinth, Ano Trikala, Zireia
8	2022 04 25	2022 04 25	Apostolos Kaltsis	StE Lavrio
9	2022 05 10	2022 05 10	Spyridon Oikonomidis, Nikolaos Katsikis, Maria Chalikiopoulou, Konstantinos Maramathas	StE Hymettus
10	2022 05 11	2022 05 11	Stefi Aikaterina, Spyridon Oikonomidis, Sofoklis Mouratidis, Konstantinos Maramathas	StE Parnitha
11	2022 05 14	2022 05 14	Apostolos Kaltsis	StE Parnassos (Delphi, Livadi, Polydrossos),
12	2022 05 15	2022 05 15	Spyridon Oikonomidis, Sofoklis Mouratidis, Maria Chalikiopoulou, Anna Maranti	StE Cithaeron
13	2022 05 19	2022 05 19	Apostolos Kaltsis, Maria Chalikiopoulou, Anna Boziki	StE Lavrio
14	2022 05 19	2022 05 19	Apostolos Kaltsis	StE Hymettus
15	2022 05 19	2022 05 19	Sofoklis Mouratidis, Nikolaos Katsikis	StE Panepistimiopolis
16	2022 05 25	2022 05 29	Stefi Aikaterina, Spyridon Oikonomidis, Sofoklis Mouratidis, Nikolaos Katsikis	Pe Elafonissos, Kythera
17	2022 05 26	2022 05 26	Apostolos Kaltsis	StE Hymettus
18	2022 05 28	2022 05 29	Apostolos Kaltsis, Maria Chalikiopoulou, Konstantinos Maramathas	WAe Skyros

19	2022 05 30	2022 05 30	Apostolos Kaltsis	WAe Kymi, Chiliadou, Xerovouni
20	2022 06 05	2022 06 05	Spyridon Oikonomidis	StE Tourkovounia
21	2022 06 08	2022 06 08	WORKSHOP	StE Parnitha
22	2022 06 09	2022 06 09	Sofoklis Mouratidis, Konstantinos Maramathas	StE Panepistimiopolis
23	2022 06 10	2022 06 10	Sofoklis Mouratidis, Konstantinos Maramathas	StE Panepistimiopolis
24	2022 06 12	2022 06 13	Sofoklis Mouratidis	Pe Nafplio, Argos
25	2022 06 13	2022 06 13	Apostolos Kaltsis	WAe Kymi
26	2022 06 15	2022 06 15	Spyridon Oikonomidis	Pe Arcadia
27	2022 06 17	2022 06 17	Spyridon Oikonomidis	Pe Arcadia
28	2022 06 18	2022 06 18	Apostolos Kaltsis	StE Hymettus
29	2022 06 18	2022 06 18	Spyridon Oikonomidis, Sofoklis Mouratidis, Evangelia Daskalakou	Pe Arcadia
30	2022 06 20	2022 06 20	Spyridon Oikonomidis	StE Egaleo
31	2022 06 24	2022 06 26	Aikaterina Stefi	Pe Kythera (Vroulea)
32	2022 06 28	2022 06 28	Aikaterina Stefi, Spyridon Oikonomidis, Konstantina Mitsigiorgi, Sofoklis Mouratidis	StE Hymettus
33	2022 06 30	2022 06 30	Anna Boziki, Spyridon Oikonomidis	StE Hymettus, Panepistimiopolis
34	2022 07 01	2022 07 01	Spyridon Oikonomidis	StE Poikilo - Chrysoupoli
35	2022 07 03	2022 07 03	Spyridon Oikonomidis, Apostolos Kaltsis	Pe Corinthia
36	2022 07 06	2022 07 06	Spyridon Oikonomidis, Sofoklis Mouratidis, Maria Chalikiopoulou	StE Parntitha
37	2022 07 10	2022 07 10	Apostolos Kaltsis, Sofoklis Mouratidis, Anna Maranti	StE Parnassos, Cithaeron
38	2022 07 13	2022 07 13	Spyridon Oikonomidis, Sofoklis Mouratidis, Anna Boziki, Maria Chalikiopoulou	StE Cithaeron
39	2022 07 13	2022 07 13	Nikolaos Katsikis, Konstantinos Maramathas	StE Kessariani
40	2022 07 16	2022 07 16	Spyridon Oikonomidis, Sofoklis Mouratidis, Nikolaos Katsikis, Konstantinos Maramathas	EC Litochoro, Olympus

41	2022 07 22	2022 07 22	Apostolos Kaltsis, Konstantinos Maramathas	StE Parnitha - Kira
42	2022 07 26	2022 07 26	Apostolos Kaltsis, Sofoklis Mouratidis	WAe Evoia - Xerovouni - Dirfi
43	2022 07 28	2022 07 28	Spyridon Oikonomidis	StE Poikilo - Keraies
44	2022 08 03	2022 08 03	Apostolos Kaltsis, Spyridon Oikonomidis, Sofoklis Mouratidis, Lydia Aggelou	StE Oeta
45	2022 08 09	2022 08 09	Spyridon Oikonomidis	StE Parnitha - Mpafi - Mola

APPENDIX 3

List of Herbarium Vouchers under preparation.

	Taxon	Locality
1	<i>Aethionema saxatile</i> subsp. <i>graecum</i>	Mt Parnitha - Parko Psychon
2	<i>Allium hymettium</i>	Mt Hymettus - Panepistimiopolis
3	<i>Alyssum chalcidicum</i>	Loutraki fields
4	<i>Anthemis tomentosa</i> subsp. <i>tomentosa</i>	Pounta beach
5	<i>Centranthus ruber</i> subsp. <i>sibthorpii</i>	Kareas monastery
6	<i>Clypeola jonthlaspi</i> subsp. <i>jonthlaspi</i>	Ziria Mt
7	<i>Erica manipuliflora</i>	Petrokorakas hill, Mt. Hymettus
8	<i>Nigella arvensis</i> subsp. <i>aristata</i>	Mt Hymettus - Panepistimiopolis
9	<i>Saponaria jagelii</i>	Elafonisos Island
10	<i>Scorzonera crocifolia</i>	Agios Nikolaos Peninsula (Thoriko)
11	<i>Silene behen</i>	Kareas Monastery
12	<i>Stachys swainsonii</i>	Nafplion
13	<i>Teucrium brevifolium</i>	Agios Nikolaos Peninsula (Thoriko)
14	<i>Teucrium flavum</i> subsp. <i>hellenicum</i>	Kimi - Xiliadou

APPENDIX 4

List of seed accessions which have been dried and cleaned; in most cases, the total seed number has been estimated on the basis of the weight of total seeds collected (Weight in g) and 100 seeds (not shown).

Taxon Scientific Name	COLLECTION	CLEANING	Weight (g)	SEEDS (est.)
<i>Capsella bursa-pastoris</i>	31 March 2022	04 August 2022	1.5890	13,817
<i>Erica manipuliflora</i>	05 April 2022	12 July 2022		
<i>Biscutella didyma</i> subsp. <i>apula</i>	28 April 2022	03 August 2022	2.6640	3,505
<i>Muscari commutatum</i>	28 April 2022	28 July 2022	7.8720	4,630
<i>Tordylium apulum</i>	28 April 2022	03 August 2022		
<i>Scabiosa atropurpurea</i>	28 April 2022	03 August 2022	4.4530	377
<i>Trifolium stellatum</i>	28 April 2022	03 August 2022	3.2600	1,590
<i>Clypeola jonthlaspi</i> subsp. <i>jonthlaspi</i>	29 April 2022	03 August 2022	3.7950	7,745
<i>Myosotis ramosissima</i> subsp. <i>ramosissima</i>	10 May 2022	03 August 2022	0.1920	872
<i>Veronica glauca</i> subsp. <i>chaubardii</i>	10 May 2022	04 August 2022	1.3450	2,319
<i>Plantago afra</i>	14 May 2022	04 August 2022	2.7010	2,904
<i>Euphorbia myrsinites</i>	15 May 2022	03 August 2022	13.3940	1,493
<i>Reseda alba</i> subsp. <i>alba</i>	19 May 2022	28 July 2022	1.9650	4,912
<i>Scorzonera crocifolia</i>	19 May 2022	04 August 2022	68.2260	4,863
<i>Teucrium brevifolium</i>	19 May 2022	05 August 2022	8.6480	3,405
<i>Silene behen</i>	19 May 2022	02 August 2022	9.2770	6,718
<i>Muscari comosum</i>	25 May 2022	25 July 2022	29.9320	6,142
<i>Saponaria jagelii</i>	25 May 2022	21 July 2022	1.6920	1,900
<i>Sedum litoreum</i>	25 May 2022	09 August 2022	0.4021	11,826
<i>Anthemis tomentosa</i> subsp. <i>tomentosa</i>	26 May 2022	04 August 2022		
<i>Phagnalon rupestre</i> subsp. <i>graecum</i>	26 May 2022	20 July 2022	8.7161	229,000
<i>Centranthus ruber</i> subsp. <i>sibthorpii</i>	26 May 2022	02 August 2022	25.5315	9,819
<i>Tulipa goulimyi</i>	27 May 2022	08 August 2022	0.0436	2,642
<i>Silene sedoides</i>	28 May 2022	09 August 2022	0.2870	8,441
<i>Galanthus ikariae</i>	29 May 2022	04 August 2022	14.3650	631
<i>Malcolmia macrocalyx</i> subsp. <i>scyria</i>	29 May 2022	04 August 2022	6.6220	6,454
<i>Fritillaria obliqua</i> subsp. <i>obliqua</i>	05 June 2022	04 August 2022	3.4080	750
<i>Lotus ornithopodioides</i>	06 June 2022	22 July 2022	3.4892	2,326
<i>Aethionema saxatile</i> subsp. <i>graecum</i>	08 June 2022	05 August 2022	0.9414	3,487
<i>Asphodeline lutea</i>	08 June 2022	27 July 2022	101.4280	8,114
<i>Bituminaria bituminosa</i>	09 June 2022	03 August 2022	61.0191	3,180
<i>Malva arborea</i>	10 June 2022	22 July 2022	109.5930	13,365
<i>Stachys swainsonii</i>	12 June 2022	08 August 2022	3.9190	2,620
<i>Campanula andrewsii</i> subsp. <i>andrewsii</i>	13 June 2022	09 August 2022	1.3964	55,856
<i>Silene gigantea</i> subsp. <i>hellenica</i>	15 June 2022	22 July 2022	20.2890	6,910
<i>Carex distans</i>	18 June 2022	25 July 2022	9.9620	4,487
<i>Umbilicus rupestris</i>	18 June 2022	09 August 2022	0.4225	52,812
<i>Scaligeria napiformis</i>	18 June 2022	03 August 2022	21.5552	18,113
<i>Silene spinescens</i>	20 June 2022	25 July 2022	1.6350	2,920
<i>Brassica cretica</i> subsp. <i>aegeae</i>	25 June 2022	03 August 2022	17.5800	3,420
<i>Inula verbascifolia</i>	25 June 2022	02 August 2022	13.6193	15,8350
<i>Centaurea attica</i> subsp. <i>attica</i>	28 June 2022	08 August 2022	3.6706	1,886

<i>Fritillaria graeca</i>	28 June 2022	04 August 2022	8.6910	3,292
<i>Minuartia attica</i> subsp. <i>attica</i>	28 June 2022	04 August 2022		
<i>Scabiosa webbiana</i>	28 June 2022	04 August 2022	13.2760	8,922
<i>Allium subhirsutum</i>	28 June 2022	03 August 2022	9.0358	9,054
<i>Galium setaceum</i>	28 June 2022	11 August 2022	0.6533	780
<i>Nigella damascena</i>	01 July 2022	02 August 2022	7.7105	4,004
<i>Salvia verbenaca</i>	01 July 2022	09 August 2022	3.6410	1,701
<i>Cistus creticus</i> subsp. <i>creticus</i>	03 July 2022	02 August 2022	10.7700	14,653
<i>Cistus salvifolius</i>	03 July 2022	05 August 2022	28.7403	24,600
<i>Smyrniium perfoliatum</i> subsp. <i>rotundifolium</i>	03 July 2022	05 August 2022	33.1340	7,530
<i>Cerastium candidissimum</i>	06 July 2022	04 August 2022	21.3860	34,493
<i>Ptilostemon chamaepeuce</i>	06 July 2022	03 August 2022		5,363
<i>Onosma stridii</i>	10 July 2022	05 August 2022	1.6060	892
<i>Petrorhagia obcordata</i>	10 July 2022	11 August 2022	6.6428	10,220
<i>Anagyris foetida</i>	10 July 2022	03 August 2022	16.4702	2,807
<i>Euphorbia acanthothamnus</i>	13 July 2022	04 August 2022	5.9840	1,980
<i>Linum leucanthum</i>	13 July 2022	08 August 2022	10.9190	8,584
<i>Nepeta argolica</i> subsp. <i>argolica</i>	13 July 2022	05 August 2022	11.9330	28,616
<i>Phlomis fruticosa</i>	13 July 2022	05 August 2022	6.1110	11,840
<i>Tragopogon crocifolius</i>	13 July 2022	09 August 2022	9.6370	