VIRTUAL MOBILITY (VM) GRANT
REPORT TEMPLATE

This report is submitted by the VM grantee to VNS Manager, who will coordinate the approval on behalf of the Action MC.

Action number: CA18201

VM grant title: Looking for bottleneck in the life cycle of species living on cliffs and rocky slopes

VM grant start and end date: 20/07/2021 to 10/10/2021

Grantee name: Giovanna Aronne

Description of the outcomes and achieved outputs (including any specific Action objective and deliverables, or publications resulting from the Virtual Mobility).

(max. 500 words)

Activities of this VM grant were in the framework of the WG1: Improving knowledge in plant biology for appropriate in situ conservation, specifically of Task (1.1) - Evaluation of species-based approaches aimed at providing plant conservation actions. Final goals of the grant were a) to produce a database on bottlenecks in the life cycle of endangered species living on cliffs and rocky slopes of countries throughout Europe and b) to analyse data in order to highlight possible gaps in the knowledge and management approach of threatened species between different countries. Both goals have been fully reached.

A total number of 20 researchers from 9 Countries got involved and contributed by sending requested information and discussing on preliminary results .

For each Country we referred to the threatened species of the habitat as described in the EU Habitat Directive (8210, 8220): Calcareous and Siliceous Rocky slopes with chasmophytes (vegetation of cliff fissures, in the Mediterranean region and in the euro-siberian plain to alpine levels). More specifically, we referred to the Annexes II, IV and V of the Habitat Directive (92/43) and focused on the species with unfavourable conservation status (U1, U2) reported in the Annexes of the Directive. For the Countries in which this criterium was not applicable, we selected the species from IUCN Red Lists.

All data were merged in a final database. Per each of the total 81 species, information on knowledge of the main four stages of their lifecycle and type of information source were gathered and reported in the database. All data were subsequently analysed applying methods of descriptive statistic, inferential statistic and multivariate analysis.

Results clearly showed that the knowledge on the biology/ecology of the threatened species living on cliffs and rocky slopes throughout Europe is not uniform. Regardless of the country, the most available knowledge regards studies on flowering and seed production while information on seedling recruitment and possible vegetative propagation is significantly less available.

Results on the type of data source showed that most of the scientific publications regarded the flowering and/or the seed production while information on seedling recruitment and vegetative propagation was mainly obtained from technical reports or personal knowledge.

Multivariate analysis of the data showed that (with one outlier) all species equally distributed in two main groups. The first gathers the species for which there is more information and that produce seeds and seedlings. The second brings together the species with few/no information on their life cycle.

Finally, we elaborated the data aimed at evaluating the efficiency of the available information in identifying the critical phase of the lifecycle of the species. Data showed that for 83,7% of the information on the species is considered as not sufficient or not effective to identify the bottleneck responsible of the species threat. Results also highlighted that even for the most studied species, the available knowledge does not allow to identify biological/ecological criticality that specifically breakdown the efficiency of the generation turnover.

Results of this activity will be further discussed in the next WG1 meeting, reported in technical meeting on plant conservation managing, and used for a scientific opinion publication in addition to dissemination articles.

Description of the benefits to the COST Action Strategy (what and how).

(max. 500 words)

The VM grant activity on Looking for bottleneck in the life cycle of species living on cliffs and rocky slopes involved researchers representative of countries geographically spread in the whole Europe.

The team consisted of members in different stages of their career. Many of them are senior and skilled scientists and others are Early Career Investigators. The open discussions organized at different stages of the activity circulated the knowledge on methodological approach among experienced researchers and transfered it to ECI.

The overall analysis of the gathered data contributed to identify relevant gaps in dealing with threatened plant species so far existing among different countries involved in the COST Action.

More specifically, the results of this activity showed that, for the great majority of the species, information was not sufficient or effective to identify the criticalities that are specificly responsible for the species threat. Additionally, results pointed out the impossibility to identify the bottleneck in the species lifecycle even for the species whose lifecycle is best studied. In such cases, it was highlighted that the studies on single species biology/ecology were aimed to reach specific scientific goals and not to identify the bottpleneck determining the species threat.

Overall, results of this grant activities are fully in step with the aims of the Conserve Plants COST Action. They will furnish new insights for plant conservation managers and pratictioners.

Description of the virtual collaboration (including constructive reflection on activities undertaken, identified successful practices and lessons learned).

(max.500 words)

The whole work was conducted organizing online meetings either with all team members or with a restricted number of them. All team members were involved at the stage of defining specific methods and targets of the activity as well as to discuss preliminary results and decide on the next steps. Once all data were collected, numerous online meetings were held with a restricted number of researchers. They were aimed at a) the overall evaluation of the data, b) the planning of the statistical analyses, c) the evaluation of the statistical results, and d) preliminary interpretation of the overall results.

The long and constructive briefings on the data gathered from different countries allowed to identify several gaps in the knowledge of the threatened species. Moreover, results highlighted that for the great majority of the analysed species the available information is not sufficient to identify which is the bottleneck in their lifecycle. Therefore, it was learnt that to ensure the single species conservation it is necessary to claim for further specific research work.

The overall approach for this grant activities was all based on virtual exchanges and online meetings. Results showed that this system was successful and that virtual mobility can be considered a good practice especially when several research teams (geographically distant) are involved. The whole team agrees that when no laboratory o field work is necessary, the scientific community can benefit of this approach. Hopefully, virtual mobility grants could be further adopted as alternative or in combination to the in-person ones.