

SHORT TERM SCIENTIFIC MISSION (STSM)

Scientific Report

Improvement tools for the volunteers to combat invasive *Phytophthora* spp.

by Dr. Diana Marčiulyrienė

Action Number:

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STSM Title:

Improvement tools for the volunteers to combat invasive *Phytophthora* spp.

STSM start and end date:

12/11/2018 to 02/12/2018

Host

Dr. Michelle Cleary,

Host Institution:

Swedish University of Agricultural Sciences (SLU), Alnarp (SE), Sweden -
Faculty of Forest Sciences, Southern Swedish Forest Research Centre

Brief Summary

Purpose of the STSM:

Phytophthora is one of the world's most destructive genera of plant pathogens. They cause wide scale economic losses in horticulture and in the ornamental, forestry and pastoral industries. The invasive behavior of these pathogens, and their ability to adapt to different conditions result in a forest disease problem that has a potential to affect European forestry and forest ecosystems more profoundly than any other forest disease in modern history.

Public contributions can invigorate scientific research and stubborn problems and routine research tasks can become opportunities by harnessing the energy and creativity of the crowd. In developing a Citizen Science platform, we anticipate being able to target under-sampled habitat within urban areas and along the forest-urban interface at a much greater pace, and over larger geographic distances. However, education and the provision of the necessary knowledge are essential to the well-functioning of the platform.

The overall aim of this STSM project was to create clear and publicly understandable protocols that will familiarize with the objectives of the project, its importance and enable volunteers and other public to recognize symptoms of *Phytophthora* diseases.

The main results obtained:

1. Systematized and categorized information on *Phytophthora* spp., in order to provide clear, understandable and informative information to citizens.
2. A protocol for the observation, detection, sampling, and reporting of *Phytophthora* diseases was prepared.
3. Brochure and flyers about the project "*Phytophthora* - Citizen science" are prepared and send for printing.
4. Constantly updated project website can be found here: <http://phytophthora.se/en/>
5. One popular science article is under preparation.

STSM Report

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Description of the work carried out during the STSM

The STSM project has been involved by creation of the information tools for citizen scientists (volunteers) by increasing science literacy and providing volunteers with skills needed to excel in science. During this STSM I was working on these specific questions:

1. **Grouping and systematization of information on *Phytophthora* spp.**
One of our goals was to provide reliable tools (protocols) for citizens for the detection and identification of different *Phytophthora* species and their related diseases. Therefore, we compiled information on *Phytophthora*-induced diseases, host plants, and the main symptoms. Systemized information will be use to improve such tools as website, identification guide, protocols, signage, flyers, brochures and other.
2. **Develop a standardized protocol for volunteers.**
The purpose of this protocol is to provide instruction to citizens (volunteers) with respect to the observation, detection, sampling and reporting of *Phytophthora* diseases. The protocol consists of two parts, respectively designed for volunteers and specialist volunteers. All specialist volunteers will be trained annually by the Citizen Science Coordinators at SLU to be able to correctly identify symptoms and signs of *Phytophthora* diseases and to collect bark and soil. Meanwhile a 'simple' volunteers can join this project with observations of symptomatic trees by taking a picture and reporting their findings to project coordinator. The protocol can be found at <http://phytophthora.se/en/> (navigation name – Participate). I would like to emphasize that the protocol will be improved later on with pictures, graphic elements and videos to make it as high quality and more understandable to the volunteers. A printable protocol version will be prepared later.
3. **Develop an informative signage.**
The idea was to create a signage such as flyers, stands, brochures in parks, botanical gardens etc. to introduce people to citizen science, and that anyone, anywhere could participate in citizen science research combating *Phytophthora* diseases. During my visit we created a new, informative version of brochure as well as flyers in order to disseminate



information on citizen science research to a broader community. Brochures and flyers are being prepared for printing or publishing online.

4. Further development of the website.

By analyzing and studying different citizen science related websites/platforms we were trying to understand the main aspects which attract people to join such projects. After discussions with project leaders, we decided to re-organize the website by providing specific, concise, interestingly shaped information. Work is ongoing.

5. Writing on popular science article.

One popular science article is under preparation.

Description of the main results obtained

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3. Brochure and flyers about the project "Phytophthora - Citizen science" are prepared and send for printing.
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Future collaborations (if applicable)

Continued collaboration with the host institution is planned in the future.