

PONTE Project



Identification, diversity and population structure of *Phytophthora* infecting forestry in Europe

- A specific part of the PONTE Project was dedicated to pathogens affecting woodland trees. Among those plant pests, the identification and isolation of *Phytophthora* damaging broadleaf (for instance, beech and oak) and conifer trees (for example, larch) raised particular interest. The fungus-like organisms belonging to this family are known for their destructive impact on many plant species.
- Thanks to an extensive sampling activity and new generation tools in DNA sequencing, the **PONTE Project** researchers collected information concerning *Phytophthora* species in some European countries (Austria, Germany, Norway, Serbia and the UK), in Southeast Asia and South America.

Phytophthora

Phytophthora (Greek for 'plant destroyer') species are primary plant pathogens and can cause important losses in agriculture, horticulture and forestry. One of them, *Phytophthora infestans* affecting potatoes, was among the causes of the Great Irish Famine of the nineteenth century. Being a fungus-like organism, *Phytophthora* usually spreads in soil but can also be airborne.

PONTE Project

The EU Horizon 2020 financed PONTE Project started in 2015 and concluded in 2019. PONTE gathered 25 organizations and 120 researchers from 10 EU and three non-EU countries to foster and share knowledge for the prevention, detection, control, and management of a group of plant pests threatening crops, biodiversity, and the economy in Europe.



- Different ecosystems were surveyed in Austria, Norway and Serbia
- The investigation in the UK aimed to determine which *Phytophthora* species were present in both natural sites (with very little disturbance) and in 'disturbed' sites (with frequent introduction of plants, soil movement and frequently visited by the public), to understand the role of this pathogen that can quietly coexist with plants in some environments while in others it can have a devastating impact.
- Since Southeast Asia is a supposed center of diversity of the genus *Phytophthora*, many invasive *Phytophthora* pathogens of forest trees in Europe are supposed to be of Asian origin. As part of this project, samples were included in the performed studies.
- The combination of various state-of-the-art testing methodologies allowed the detection of up to 34 *Phytophthora* species.

New findings, new questions

Within the POnTE project, different *Phytophthora* species have been identified associated with specific tree declines in Europe.

- The abundance and high diversity of both known and new *Phytophthora* species discovered thanks to the POnTE project are an alarm ring for European forests, agriculture and horticulture. Furthermore, these studies have shown that Southeast Asia is the center of origin of highly invasive wide-host-range *Phytophthora* species like *P. cinnamomi* and *P. ramorum* which cause currently devastating forest epidemics in Europe and North America. This suggests that extensive host-range testing among European forest tree and horticultural crop species is urgently required to assess the potential threat posed by the import of living plants from Southeast Asia.
- The results of this deliverable have shown that surveys of natural ecosystems, as well as disturbed ecosystems in Europe, are likely to unravel the presence of previously unknown *Phytophthora* species. Thus, additional research is needed to better understand the biological and epidemiological significance of these findings and the potential impact of the *Phytophthora* species on European forests.

