Insights into the biogeography and global diversity of *Phytophthora*.

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Between 2013 and 2019, within the frame of several projects aiming at unravelling global diversity and biogeography of the genus *Phytophthora*, surveys were performed in natural ecosystems of Japan, Taiwan, Vietnam, Indonesia (Borneo, Java, Sulavesi and Sumatra), Chile, Nicaragua, Panama, Curacao, Egypt and eight countries in Europe. In total 320 forest sites, 410 forest streams, 9 mangrove forests, 6 lagoons and 5 other marine sites were sampled. Baiting assays and direct plating of necrotic plant tissues were used for isolating *Phytophthora* species from forest streams, forest soils and woody plants. Isolates were identified using both classical identification and sequence analysis of ITS, *cox1* and, if necessary, further gene regions. Overall, 13242 isolates were obtained which could be assigned to 65 known and 101 previously unknown species of *Phytophthora* belonging to 11 of the 12 known phylogenetic clades. In addition, an array of interspecific hybrids from *Phytophthora* Clades 6 and 8, 3 known and 24 novel *Halophytophthora* species and 9 species from the novel genus *Nothophytophthora* have been isolated. These surveys contributed to pin down the origin of several invasive aggressive *Phytophthora* pathogens, including *P. cinnamomi*, *P.* ×*cambivora*, *P. lateralis*, *P. ramorum* and the *P. citricola* complex. Together with records from previous *Phytophthora* surveys conducted by the authors and other researchers in natural ecosystems of Australia, Africa, Europe, the Americas and Asia, population genetic studies, and pathogenicity data this study provides insights into the global diversity and biogeography of the different clades and subclades of *Phytophthora* which will be discussed.