



THE SEARCH OF *PHYTOPHTHORA* CENTRES OF ORIGIN: *PHYTOPHTHORA* SPECIES IN MOUNTAIN ECOSYSTEMS IN NEPAL

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Asia is a centre of diversity for many plant genera that are hosts of invasive *Phytophthora* species in other parts of the world. Examples of prominent invasives include *P. ramorum* and *P. kernoviae*, recently spreading in Europe and North America. One hypothesis is that these pathogens originated in a specific geographic area of in Asia, such as Yunnan or the Himalayas, and were then transferred via commercial movement of plants to other parts of the world. To investigate the presence of Phytophthoras in Himalayan forest ecosystems a preliminary expedition was undertaken in October 2005 to the forests of Western Nepal. During this expedition forty-seven soil samples were collected between Kolti (1396m) and Rara Lake (3500m) in the Bajura district. The samples came from three distinct ecological zones: the temperate forest, sub-tropical forest and sub-tropical zones; and from the rhizosphere of 17 target broadleaved and coniferous trees and shrubs. A total of 39 *Pythium* and 89 *Phytophthora* isolates were obtained through soil baiting. *P. citricola* was the most frequently isolated species, and was confined to the soil around temperate forest trees including *Acer*, *Aesculus*, *Juglans*, *Ulmus* and *Viburnum* species. A *Phytophthora*, with some morphological similarities to *P. meadii*, but also many differences, was associated with sub-tropical forest vegetation including *Lithocarpus*, *Cupressus*, *Cornus*, *Carpinus* and *Castanopsis* species. This taxon has been informally labelled '*P. meadii*-like' while its properties are being investigated and may be a previously undescribed species. A third species, *P. nicotianae*, was found only in the sub-tropical agricultural zone around *Ficus*, *Persea* and *Olea* species. The distinct zoning of the two possibly endemic Himalayan forest Phytophthoras, *P. citricola* and *P. meadii*-like, may lead to further understanding of the role of the genus in forest ecosystems. Whether *P. meadii*-like presents a threat to forest ecosystems in other parts of the world has yet to be determined. The discovery of *P. nicotianae* in association with native *Olea cuspidata* trees in Nepal may have significance for proposed commercial cultivation of European olive, *O. europaea*, in this region.