frequent isolation and presence of all four hybrids and all parental species suggest that their origin lies in Australia. The association of the sampled riverways with botanical gardens in South Africa containg Australian plants may be a clue to the pathway of introduction.

Promiscuity, fertility and survival of ITS clade 6 hybrids associated with riparian ecosystems in Western Australia

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Over the past few years several large scale *Phytophthora* surveys have been undertaken in Western Australia. In all cases, the ITS region of numerous isolates obtained from water or riparian soil have been unsequencable. These isolates are hybrids, all involving parental species from ITS clade 6, sub-clade II. Parental species are *P. thermophila* (T), *P. fluvialis* (F), *P. litoralis* (L), *P. amnicola* (A) and *P.* taxon stagnum (S). In most cases, two alleles were found for the nuclear genes and a single allele for the mitochondria gene, suggesting that each hybrid is a result of an independent sexual hybridization event involving two parental species with the mitochondria inherited from the maternal parent. To date the following hybrids have been characterised (maternal parent first); A-F, A-S, F-S, L-S, T-A, T-S and S-F. The hybrid isolates all appear to be sterile and readily produce sporangia on soil extract, however, some of them produced unusual or aborted sporangia. The growth and colony pattern produced by the hybrids on three different agar media is similar to that of the maternal parent. These hybrids have predominantly been isolated from natural waterways but some have been isolated from the rhizosphere soil of dying plants. There is no evidence of subsequent hybridization events (back crossing or hybrids crossing with hybrids), but this cannot be ruled out at this stage. The two parental ITS alleles are combined and subsequently recombined through mitotic recombination events creating significant variation between the rDNA subunits. The fact that this occurs suggests that the hybrids are relatively stable and are able to survive without resting structures, probably through continual sporulation within riparian ecosystems. Their role in the environment remains a mystery.

Analysis of the global population structure of *Phythophtora plurivora* using newly developed, polymorphic SSR markers

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Phytophthora species are well known to cause devastating diseases on numerous crops, ornamentals, and native plants. In recent years, their spread has been accelerated by the increasing international trade of woody plants. However, with a few exceptions (e.g. *P. ramorum*, the causal agent of Sudden Oak Death), detailed knowledge on the global population structure and the pathways of spread of forest *Phytophthora* species is still missing. This lack of knowledge is mainly due to the absence of appropriate species-specific molecular markers.

P. plurivora, a member of the *P. citricola* species complex, is involved in widespread beech (*Fagus sylvatica*) and oak (*Quercus* sp.) declines in natural and semi-natural forest ecosystems in Europe (1). Moreover, this species is frequently found in European ornamental nurseries and has been reported in North American nurseries and plantations not long ago.

We recently developed polymorphic SSR markers for *P. plurivora* (2) and used them to analyze the

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