

plant disease

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First Report of an Armillaria Root Disease Pathogen, *Armillaria gallica*, Associated with Several New Hosts in Hawaii

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The loss and decline of native tree species caused by invasive plant pathogens is a major threat to the endangered endemic forests of the Hawaiian Islands (3). Thus, it is critical to characterize existing pathogens to evaluate potential invasiveness. In August 2005, rhizomorphs and mycelial bark fans of genet HI-4 were collected from dead/declining, mature trees of introduced Monterey pine (*Pinus radiata*) on the southern flank of Mauna Kea, Hawaii (approximately 19°42'55"N, 155°26'48"W, elevation 2,175 m). In March of 2008, three additional genets (HI-11, HI-13, and HI-16) were collected as rhizomorphs at a site named Pu'u La'au (west slope of the Mauna Kea Forest Reserve area, approximately 19°50'00"N, 155°35'35"W, elevation 2,275 to 2,550 m), approximately 20 km west-northwest of the HI-4 collection. These genets were collected from apparently healthy loblolly pine (*Pinus taeda*) that were introduced, apparently healthy māmane (*Sophora chrysophylla*; an endemic tree species of Hawaii), dead and dying māmane, and apparently healthy Methley plum (*Prunus cerasifera* × *Prunus salicina*) that was planted. All isolates were determined to have identical sequences in the intergenic spacer-1 rDNA region (GenBank Accession No. DQ995357). On the basis of somatic pairing tests against North American *Armillaria* tester strains and 99% nucleotide sequence identities to GenBank Accession Nos. AY190245 and AY190246, these isolates were identified as *Armillaria gallica*. Past surveys have noted *A. mellea* sensu lato and *A. nabsnona* on numerous hosts in Hawaii, including māmane (3,4). However, to our knowledge, this is the first confirmed report of *A. gallica* in Hawaii, where it was found on māmane, Monterey pine, loblolly pine, and Methley plum. *A. gallica* has been widely categorized as a beneficial saprophyte, an opportunistic pathogen, or an aggressive pathogen (2). A recent study suggests that *A. gallica* can be highly pathogenic in some areas of the eastern United States and it is an important component of forest decline (2), especially under increasing stressors such as climate change. The isolation of *A. gallica* from declining stands on both introduced and endemic hosts under drought conditions suggests this pathogen is a contributing factor to forest decline on the island of Hawaii. Because the māmane tree is an important component of the native forest stands and essential to the endangered palila bird (*Loxioides bailleui*), which feeds almost exclusively on its green seeds (1), continued monitoring of *Armillaria* root disease is warranted.

References: (1) P. C. Banko et al. *J. Chem. Ecol.* 28:1393, 2002. (2) N. J. Brazee and R. L. Wick. *For. Ecol. Manage.* 258:1605, 2009. (3) R. E. Burgan and R. E. Nelson. *USDA For. Serv. Tech. Rep. PSW-3*, 1972. (4) J. W. Hanna et al. *Plant Dis.* 91:634, 2007.