

## ***Pythium*-related mortality recorded in an emblematic fynbos biome genus**

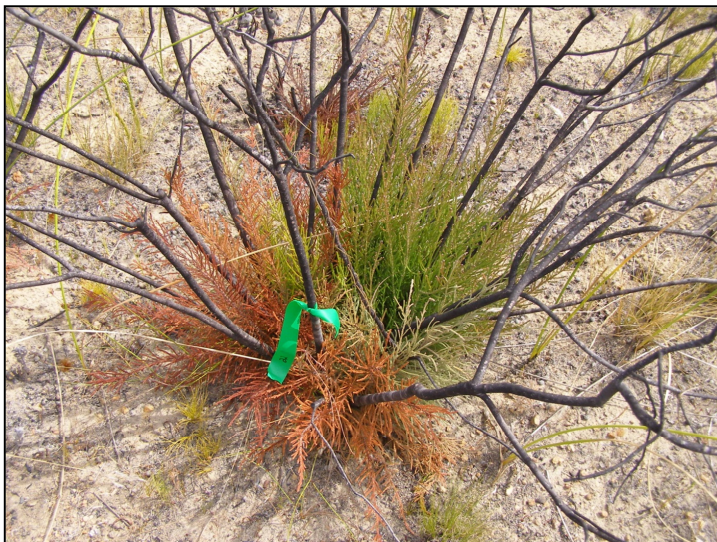
*Prepared by Anna Jacobsen (California State University, Bakersfield) in collaboration with Francois Roets and Karen Esler (CTHB).*

Globally, the frequency and intensity of plant mortality is expected to amplify due to changes in climate and increased movement of biological organisms. In many different types of ecosystems and communities, extensive dieback and mortality has been recorded and thought to be due to the introduction of devastating plant pathogens such as *Phytophthora*. In 2009, we observed extensive signs of stress, dieback and mortality in a stand of adult *Brunia noduliflora* (family Bruniaceae), which is endemic to the fynbos biome of South Africa.

Plant stress and mortality were monitored over a two-year period to determine if the threat was climatically or biologically induced. With the support of researchers at the CTHB, a previously undescribed *Pythium* species was isolated from the root tissue of stressed plants, but not from healthy plants. We concluded that the cause of stress was likely due to the presence of this species, which ultimately causes extreme water stress and death of the plants. Although *Pythium* species are cosmopolitan in distribution, the high levels of mortality experienced by these large, well-established and likely very old resprouting plants suggests that the organism may have been introduced to the area. Pathogenicity tests and taxonomic classification of the species represent the next logical steps. Also, the Paarl Mountain Nature Reserve managers need guidance on the potential risks associated with such mortality and how to contain its spread.

This work appears as an early online publication:

JACOBSEN, A., ROETS, F., JACOBS, S.M, ESLER, K.J., PRATT, R.B. (2011) Dieback and mortality of South African fynbos shrubs is likely driven by a novel pathogen and pathogen-induced hydraulic failure. *Austral Ecology*. doi:10.1111/j.1442-9993.2011.02268.x



***Bunia noduliflora* from a site located within the Paarl Mountain Nature Reserve (Western Cape Province, South Africa) infected with *Pythium*.** The plant shown in this photo displays differential stress and dieback. Individuals of *B. noduliflora* within the site ranged from healthy, to showing signs of stress with reddening and yellowing leaves, to partial canopy dieback, and complete crown death.