



**Photos. L to R** Mistflower infestation, Royal NP, NSW; Necrotic lesions on upper leaf surface; White sporulating lesions on under leaf surface; Extensive defoliation of mistflower. Photos by L. Morin.

**Disease:** Mistflower blight

**Classification:** K: Eumycota, D: Basidiomycota, C: Exobasidiomycetes, O: Entylomatales, F: Entylomataceae

The white-smut fungus *Entyloma ageratinae* causes severe blight of mistflower (*Ageratina riparia*), a perennial herbaceous alien plant that invades wet habitats, particularly riparian areas and moist cliff faces, in eastern Australia. It was first recorded in Australia in October 2010, near Lamington National Park, Queensland. The pathway of introduction is unknown.

**The Pathogen:** *Entyloma ageratinae* produces angular, reddish-brown lesions with yellow margins on the upper surface of leaves. Heavy sporulation on small lesions on the lower leaf surface gives them a woolly white appearance. As the disease progresses, lesions coalesce and become dark brown, and eventually entire leaves die. The fungus produces three types of spores: resting, thick-walled ustilospores within leaves, mucilage-covered primary acicular spores adapted for splash-dispersal and musiform spores adapted for long-distance, aerial dispersal (Barreto & Evans 1988).

**Impact:** *Entyloma ageratinae* originates from Jamaica and was deliberately introduced to Hawaii (1970s), South Africa (1989) and New Zealand (1998) for the biological control of mistflower (Morin et al. 1997). It is one of the most highly successful biological control agents, significantly reducing mistflower populations (Barton et al. 2007). In Australia, the impact of the disease is currently being monitored along permanent transects established at 11 sites in Queensland and NSW. Within 12-18 months, the percentage cover and biomass of mistflower across all sites was reduced by 62% and 50%, respectively, with a significant increase in the density of other plant species (Morin unpublished).

**Host Range and Distribution:** Of all the plant species tested in previous research overseas (Morin et al. 1997) and more recently in Australia (Morin et al. 2012), only crofton weed (*Ageratina adenophora*), which belongs to the same genus of mistflower, developed some disease symptoms, albeit to a much lesser extent than on mistflower. The fungus however, has not been recorded on crofton weed in the field. Field surveys performed following the discovery of *E. ageratinae* near Brisbane in 2010, confirmed that the fungus was present at 69 sites in south east Queensland and North Coast and Mid-North Coast, NSW. It was not found at the 34 sites surveyed further south in NSW (Morin et al. 2012). It was also not found at sites surveyed in Carnarvon Gorge and Atherton, Queensland. Since then, the fungus has been deliberately redistributed across the range of mistflower and is now widespread and causing severe damage.

**Detection and control:** The first clue that *E. ageratinae* is present is a die-off of the leaves and stems of mistflower, usually starting at the bottom of the plant and moving upwards. On closer inspection the upper surface of leaves have brown spots and some leaves may be brown at the tips. The key trait indicating that the damage is caused by *E. ageratinae* are white patches on the underside of the leaves corresponding to masses of spores.

**Further Reading:** Barreto and Evans (1988) Transactions of the British Mycological Society **91**: 81-97; Barton et al. (2007) Biological Control **40**: 370-385; Morin et al. (1997) Biocontrol News and Information **18**: 77N-88N; Morin et al. (2012) In: Proceedings of the 18th Australasian Weeds Conference, (ed. V Eldershaw), pp. 88-91. Weed Society of Victoria Inc., Melbourne

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