Impact Assessment Record

Scientific name: *Mecurialis annua* L. Common Name: annual mercury, mercury weed

QUESTION	COMMENTS	RATING	CONFIDENCE
Social			
1. Restrict human access?	Annual herb 10 – 40 cm high. In Western Australia, it is recorded to reach a height of 60cm (Hussey *et al.* 1997). Negligible impact on human access	**L**	**H**
2. Reduce tourism?	An introduced species to North America, it is known in San Francisco in open, disturbed areas, fields and roadsides. Where it occurs north east of Melbourne (Victoria), it is most commonly associated with a creek corridor in a nature reserve, but is also known to be present in local gardens. Infestations likely to be undetectable to the average visitor.	**L**	**L**
3. Injurious to people?	Vallverdu *et al.* (1997) demonstrated a high level (46.4%) of sensitisation to pollen of *M. annua* in subjects with a known sensitivity to other pollens. Lisci *et al.* (1994) records that *M. annua* is a wind-pollinated plant and produces pollen throughout the year in central and southern Italy. Rossof (2002) reinforces the allergenicity of this plant in Italy where, he states, its aeroallergens have caused rhinitis, bronchial asthma, and/or hypersensitivity pneumonitis in humans. "Use of it colors urine red." Neat huh! Potential to cause allergic reaction or increase the duration of suffering for those susceptible to pollen allergies.	**MH**	**H**
4. Damage to cultural sites?	Low growing annual herb. Dense patches may create a moderate negative visual effect.	**ML**	**L**
Abiotic			
5. Impact flow?	Although it is found near to streams and drains in Victoria, it is a terrestrial species. No impact on water flow.	**L**	**L**
6. Impact water quality?	See comment above. No data is available to indicate the water stress-tolerance of this plant. Assume it unlikely to establish in standing water.	**L**	**L**
7. Increase soil erosion?	A soft annual herb more commonly found in disturbed or ruderal situations. Its presence is unlikely to affect soil erosion.	**L**	**L**
8. Reduce biomass?	In natural ecosystems it is commonly found in disturbed sites or waste places (CALFLORA 2007; Magyar 2003). Biomass may increase slightly, but likely little to no effect.	**L**	**L**
9. Change fire regime?	Small, fleshy annual herb. Even dense patches are unlikely to add significantly to fuel load. Little to no affect on fire intensity or frequency.	**L**	**L**
Community Habitat			
10. Impact on composition (a) high value EVC	EVC=Valley Grassy Forest (V); CMA=Port Phillip; Bioreg=Gippsland Plain; CLIMATE potential=VH. Occurs along creek / drain line north east of Melbourne where it is displacing other herbaceous annuals and, as a prolific seeding annual, spreading quickly in the absence of control. It is difficult to comment on the level of	**M**	**L**

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	displacement (minor or major) this species may impose on the lower stratum. Somewhere in the middle?		
(b) medium value EVC	EVC=Coastal Headland Scrub (D); CMA=Port Phillip; Bioreg=Gippsland Plain; CLIMATE potential=VH. A soft, annual herb. Impact similar to 10. above.	**M**	**L**
(c) low value EVC	EVC=Riparian scrum (LC); CMA=West Gippsland; Bioreg=Wilsons Promontory; CLIMATE potential=VH. A soft, annual herb. Impact similar to 10. above.	**M**	**L**
11. Impact on structure?	Known in peppermint woodland at Hamelin Bay, Western Australia (about 35 km south of Margaret River), but no detail on effect of its presence on other vegetation. Where it occurs near Melbourne, Victoria, it is associated with a creek corridor / drain in a nature reserve (Baber; Lorimer, pers. comms) where it is displacing other more desirable annual herbs. Minor impact on lower stratum	**L**	**M**
12. Effect on threatened flora?	Not documented	**MH**	**L**
Fauna			
13. Effect on threatened fauna?	Effects not known. At present in Victoria it is likely that the habitats of annual mercury and threatened fauna are mutually exclusive.	**MH**	**L**
14. Effect on non-threatened fauna?	Displacement of beneficial plants by *M. annua* may lead to a reduction in available fodder for non-threatened species.	**M**	**L**
15. Benefits fauna?	Provides no documented benefit. It is recorded as poisonous to domesticated animals (sheep, cattle and horses (Rossof, 2002)). See comments below.	**H**	**H**
16. Injurious to fauna?	Welchman *et al.* (1995) and Deprez *et al.* (1996) report the poisoning of lambs and cattle respectively. 11 lambs died, but the life outcome of the cattle is not described. In the case of lamb poisoning, the authors noted that annual mercury was the predominant vegetation. Rossof (2002) indicates that annual mercury is lethal to all domestic animals (sheep, cattle, horses). Though animals may avoid eating the plant, the potential exists to fatally harm fauna at certain times of the year.	**MH**	**H**
Pest Animal			
17. Food source to pests?	Probably unlikely; see comments in 16 above. Pest herbivores may find consuming this plant to be a fatal.	**M**	**L**
18. Provides harbor?	Images of infestations of in California (CalPhotos) show the plant would not provide harbour for pest animals.	**L**	**M**

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Agriculture			
19. Impact yield?	Although reported as toxic to domesticated animals no data exists on effects on yield regarding stock. Magyar (2003) has undertaken the most comprehensive study of this plant to date, though with a focus on agricultural ecosystems, notably annual crops such as maize and winter wheat. He found that the average cover in maize varied from 1.16% to 2.28%. How it affected production and yield is not discussed. The major concern was the emergence of the weed before the cultivated crop. Given this early competition for plant resources, it could result in a reduction in crop yield of more than 5%, but less than 20%.	**MH**	**H**
20. Impact quality?	There are no data available to suggest the quality of agricultural produce is affected. The few studies on animals consuming the plant (Rossof 2002; Welchman *et al.* 1995; Deprez *et al.*1996) suggest that mortality is the most likely outcome rather than a reduction in vigour. It is not recorded as a seed contaminant. No impact on quality.	**L**	**H**
21. Affect land value?	The continuous spread of this weed in north-western Hungary (Magyar 2003) in annual crops indicates it has been a difficult weed to control or possibly just ignored as another weedy crop competitor. Magyar (2003) demonstrates effective control of annual mercury with herbicides. Normal farm / crop management practices would likely control the weed, though possibly adding to the cost of production. Unlikely to affect land value.	**L**	**L**
22. Change land use?	See comment in 21 above regarding cropping situations. As the weed is most closely associated with high disturbance regimes, well maintained, good quality perennial pasture is likely to suppress the growth of annual mercury. Unlikely to lead to change in land use.	**L**	**L**
23. Increase harvest costs?	Not demonstrated to affect harvest costs.	**L**	**L**
24. Disease host/vector?	Not documented.	**M**	**L**