

The Australian weed risk assessment system: Does it work in Hawai'i? Would it work in Canada?

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Abstract

The Australian weed risk assessment (WRA) model is a general system for identifying all types of pest plants, and its structure allows it to be easily adapted to other locations. We adapted the Australian WRA for use in Hawai'i and added a second screening to reduce the number of species rated as “evaluate further”. Our Hawai'i-Pacific WRA (HPWRA) correctly predicted 95% of major pests while also correctly classifying 92% of non-pests. Measures of the accuracy of any WRA system are affected by how one determines which plants are actually pests. The threshold for tolerance for minor pests can easily be adjusted, but there is a trade-off between increased detection of minor pests and mis-classification of non-pests as pests. In Hawai'i, HPWRA is used on a voluntary basis for screening new plant introductions, as well as for making planting decisions and prioritizing species for control or eradication. Whereas HPWRA is predictive, the Hawai'i Exotic Plant Evaluation Protocol (HEPEP) was developed as an extension of HPWRA to document actual impacts of plants already present, as well as the likelihood of further spread and difficulty of control. Information from HPWRA and HEPEP can be used to support noxious weed designations. HPWRA (including the second screening) has been successfully used to predict major pests in Florida and Central Europe, and it could be adapted for use in Canada. Relative to risk assessment procedures used at the Federal level in the United States (USDA-APHIS), the modified Australian WRA has a better-documented ability to identify most serious invaders, and it requires less time per species, thereby allowing more assessments to be made at lower cost.