



The impact is in the details: evaluating a standardized protocol and scale for determining non-native insect impact

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Abstract ▲

Assessing the ecological and economic impacts of non-native species is crucial to providing managers and policymakers with the information necessary to respond effectively. Most non-native species have minimal impacts on the environment in which they are introduced, but a small fraction are highly deleterious. The definition of ‘damaging’ or ‘high-impact’ varies based on the factors determined to be valuable by an individual or group, but interpretations of whether non-native species meet particular definitions can be influenced by the interpreter’s bias or level of expertise, or lack of group consensus. Uncertainty or disagreement about an impact classification may delay or otherwise adversely affect policymaking on management strategies. One way to prevent these issues would be to have a detailed, nine-point impact scale that would leave little room for interpretation and then divide the scale into agreed upon categories, such as low, medium, and high impact. Following a previously conducted, exhaustive search regarding non-native, conifer-specialist insects, the authors independently read the same sources and scored the impact of 41 conifer-specialist insects to determine if any variation among assessors existed when using a detailed impact scale. Each of the authors, who were selected to participate in the working group associated with this study because of their diverse backgrounds, also provided their level of expertise and uncertainty for each insect evaluated. We observed 85% congruence in impact rating among assessors, with 27% of the insects having perfect inter-rater agreement. Variance in assessment peaked in insects with a moderate impact level, perhaps due to ambiguous information or prior assessor perceptions of these specific insect species. The authors also participated in a joint fact-finding discussion of two insects with the most divergent impact scores to isolate potential sources of variation in assessor impact scores. We identified four themes that could be experienced by impact assessors: ambiguous information, discounted details, observed versus potential impact, and prior knowledge. To improve consistency in impact decision-making, we encourage groups to

establish a detailed scale that would allow all observed and published impacts to fall under a