



**HAL**  
open science

## **A decision support scheme for mapping endangered areas in pest risk analysis**

Richard R. Baker, Maxime M. Dupin, Sarah S. Brunel, Dominique D. Eyre, David D. Makowski, Philippe P. Reynaud, Darren D. Kriticos, Christelle Robinet, Hella H. Kehlenbeck, Wopke W. van Der Werf, et al.

### **► To cite this version:**

Richard R. Baker, Maxime M. Dupin, Sarah S. Brunel, Dominique D. Eyre, David D. Makowski, et al.. A decision support scheme for mapping endangered areas in pest risk analysis. 5. International Pest Risk Mapping Workshop, Aug 2011, Fort Collins, United States. 1 p. hal-01000523

**HAL Id: hal-01000523**

**<https://hal.science/hal-01000523>**

Submitted on 6 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# International Pest Risk Mapping Workshop V

## Pest risk in a changing world

16 – 18 August 2011  
Fort Collins, Colorado

## ABSTRACT SUBMISSION TEMPLATE

### A decision support scheme for mapping endangered areas in pest risk analysis

Authors (presenting author underlined):

Richard Baker<sup>1</sup>, Maxime Dupin<sup>2</sup>, Sarah Brunel<sup>3</sup>, Dominic Eyre<sup>1</sup>, David Makowski<sup>4</sup>, Philippe Reynaud<sup>5</sup>, Darren Kriticos<sup>6</sup>, Christelle Robinet<sup>4</sup>, Hella Kehlenbeck<sup>7</sup>, Wopke van der Werf<sup>8</sup>, Vojtech Jarosik<sup>9</sup>, Jan Pergl<sup>9</sup>, Johan Bremmer<sup>10</sup>, Tarek Soliman<sup>8</sup>, Zhenya Ilieva<sup>11</sup>, Sue Worner<sup>12</sup>

Author affiliations, including corresponding author email address:

1. Food and Environment Research Agency (Fera), [richard.baker@fera.gsi.gov.uk](mailto:richard.baker@fera.gsi.gov.uk)
2. [maxime.dupin@gmail.com](mailto:maxime.dupin@gmail.com)
3. European and Mediterranean Plant Protection Organization (EPPO)
4. National Institute for Agricultural Research, France (INRA)
5. Agency for Food, Environmental and Occupational Health & Safety, France (ANSES)
6. CSIRO Ecosystem Sciences and the CRC for National Plant Biosecurity, Australia (CSIRO)
7. Julius Kühn Institute, Germany (JKI)
8. Wageningen University, The Netherlands (WU)
9. Institute of Botany, Czech Republic (IBOT)
10. LEI Wageningen UR, The Netherlands (LEI)
11. Plant Protection Institute, Bulgaria (PPI)
12. Bio-Protection Research Unit, Lincoln University, New Zealand (Bio-Protection)

### Abstract (maximum 300 words):

International standards for pest risk analysis (PRA) require assessors to define the endangered area: “the part of the PRA area where the presence of the pest will result in economically important loss.” In some cases it may be appropriate to use a simple geographical description but maps generally provide a much better method for defining this area. However, mapping the endangered area is very challenging because it needs to be defined by combining maps of the area of potential establishment (based on climatic suitability and the distribution of hosts, habitats, soils, etc) with maps of factors that indicate where economically important loss is likely to occur. This presentation will describe progress made by the EU-funded PRATIQUE project in developing a decision support scheme (DSS) to guide risk assessors when mapping endangered areas highlighting the importance of clearly defining the map combination rules. The DSS shows how MCAS-S (The Multi-Criteria Analysis Shell for Spatial Decision Support) can be used to display, manipulate, and combine map layers. This software does not require GIS skills, and allows risk assessors to combine maps derived from either continuous or categorical variables using simple mathematical equations and risk matrices. The DSS is linked to the computerised EPPO PRA scheme and modules for mapping climatic suitability, quantifying economic impacts and modelling spread. The DSS is illustrated with a case study of the western corn rootworm (*Diabrotica virgifera virgifera*) in Europe.