



## ***Sirex noctillio* National Scale Survey Sample Areas for the Conterminous US Summary**

This project incorporates methods developed by Coulston, et. al. (2006) to develop national scale sampling areas based on the Forest Health Technology Enterprise Team (FHTET) *Sirex noctillio* Susceptibility Surface. The process involved:

- 1) reclassification of the susceptibility risk potential surface into four classes (0 - Little/No, 1 – Low, 2 – Medium, 3 – High);
- 2) estimating the intensification factor based on the required number of samples and the relative certainty for each risk category;
- 3) intensifying EMAP’s North American hexagon to develop a systematic point grid for each risk stratum;
- 4) spatially intersecting the intensified point grids with the corresponding risk stratum;
- 5) merging each set of selected points from the stratum intersection;
- 6) creating the sample areas that are semi-regular tessellations of theissen polygons created from the merged grid intensification points.

For this project, the FHTET *Sirex noctillio* susceptibility risk potential surface was used and reclassified into the required four classes. A total of 1,200 sample areas were used for the intensification model. Relative certainties were assigned in order to create increasing plot intensifications for increasing risk stratum. A custom EXCEL application calculates the intensification factor and sequence number based on the number of points and desired relative certainty. The sequence for the point intensification is determined from a table supplied by the authors. Table 1 shows the risk class, area by class, and number of sample areas used for this project. The point grid intensification is based on the Environmental Monitoring and Assessment (EMAP) hexagon for the conterminous United States and is iteratively intensified using a custom ArcView 3.3 application. A new point file is created for each iterative intensification. The final intensification iterations for each class is intersected with a vector version of the susceptibility surface and merged to create a single point shape file. A sample area tessellation is then performed from the merged intensification points using a custom function in the ArcView 3.3 application that creates theissen polygons. These polygons become the sample areas, where the sample areas are based on the risk class. It is intended that each sample area is given the same number of sample plots.

### **Citation**

Coulston, John W., Koch, F.H., Smith, W.D., Sapio, F.J. 2006. *Developing Survey Grids to Substantiate Freedom from Exotic Pests*. FIA Symposium Proceedings. In Press.

Table 1. Summary Statistics

<b>Risk Class</b>	<b>Relative Certainty</b>	<b>Area (km)</b>	<b>Sample Areas</b>
Little/No (0)	0.25	7,199,762	95
Low (1)	0.4	173,784	170
Mod (2)	0.7	291,350	400
High (3)	0.8	119,769	535

### **Point of Contact**

Marla Downing,  
Forest Health Technology Enterprise Team,  
Forest Health Protection ,  
USDA Forest Service  
2150 Centre Ave., Bldg A, Suite 331,  
Fort Collins CO., 80526-1891.  
Phone: 970-295-5843.  
[mdowning@fs.fed.us](mailto:mdowning@fs.fed.us)

**Contractor Support (ITX)**  
Michael Tuffly