

Global Experts Concur with Science to Predict Spread of Large Constrictor Snakes

The U.S. Geological Survey (USGS) risk assessment for nine large species of pythons, anacondas, and the boa constrictor used a method called “climate matching” to estimate those areas of the United States exhibiting climates similar to those experienced by the species in their respective native ranges (Reed and Rodda 2009). This assessment was one of the contributing factors in the U.S. Fish and Wildlife Service’s decision to list nine species of large constrictor snakes as “injurious species” under the Lacey Act.

Responding to questions and concerns regarding the scientific model they used for their risk assessment, Reed and Rodda published a clarification on how they used the climate matching model (Rodda et al. 2011). This new USGS paper highlights the statistical dangers inherent in indiscriminately searching for correlations among a large number of possible parameters as conducted by Pyron et al. (2008). The new paper does not change the previous USGS risk assessment conclusion, or the Service’s interpretation of the USGS risk assessment, that Burmese pythons could find suitable climatic conditions in roughly a third of the United States and insular territories.

Some of the major findings in the USGS’s 2011 study:

- The 2008 study did not include many sites that are climatically suitable for Burmese python invasion because their modeling approach used too many parameters that filtered out sites with suitable climatic conditions for python establishment.
- Additionally, Rodda et al. eliminated four data points on blood pythons (a different species from Burmese pythons). This substantially changed the predicted area that Burmese pythons could invade.
- Factors other than climate may limit a species’ distribution, including the existence of predators, diseases, and other local factors (such as major terrain barriers), which may not be present when a species is released in a new area. Therefore, the areas at risk of invasion often span a climate range greater than that extracted mechanically from the native range boundaries.

The USGS follows mandatory fundamental science practices for peer review. Dr. Susan Haseltine, Associate Director for Biology, USGS, explained the USGS peer-review process for the large constrictor risk assessment: “To ensure objectivity, independent scientific review is required of every USGS publication. Standards require a minimum of two reviews, and adequacy of the author’s responses to reviews is assessed by both research managers and independent scientists within the USGS. The authors (Reed and Rodda) went well beyond the requirements by soliciting reviews from 20 reviewers (18 of them external to the USGS). Reviewers comprised a large portion of the global expertise on both the biology of giant constrictor snakes and the management of invasive snakes.”

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photo: The Nature Conservancy

Students in The Nature Conservancy’s “Python Patrol” workshop display a huge Burmese python captured in south Florida.

