POSTDOCTORAL POSITION – Assessing risks to threatened and endangered species: Modeling freshwater mussel populations.

Valery Forbes (University of Minnesota), Nika Galic (Syngenta) and Daniel Hornbach (Macalester College) are looking for a highly motivated and collaborative postdoc to work on a project assessing potential risks to threatened and endangered freshwater mussel species from pesticide exposure through population modeling. In particular this project will involve a life-history analysis of listed and non-listed freshwater mussel species inhabiting Midwest and Southeastern US water bodies and development of generic population models to represent different life-history groupings using a case study approach. Possible validation through field data and population trends from monitoring programs will be explored. Freshwater mussels provide essential services in freshwater ecosystems and represent one of the most endangered groups of animals in North America. Pesticide risk assessments are required for species listed as threatened or endangered in accordance with the Endangered Species Act, and population modeling has been recommended by the National Research Council as a valuable tool in such assessments. A major challenge in developing population models for listed species is a lack of physiological and life-history data for the vast majority of species. This project will aim to address this challenge.

The postdoc will be employed in the Department of Ecology, Evolution and Behavior at the University of Minnesota Twin Cities and co-supervised by Valery Forbes, Nika Galic and Daniel Hornbach. The position term is for 2 years, and is annually renewable depending on performance and availability of funding. The successful candidate will receive training in professional and personal development, research collaboration, presentation and publication of results, outreach, and mentoring. The position includes a competitive salary and health insurance. Review of applications will begin immediately and will continue until the position is filled. A near-term start date is desired.

All applicants must have a Ph.D. in biology, ecology, ecotoxicology or a related field, and preferably be well acquainted with mussel biology and/or ecology. Expertise in modeling and/or computer programming is highly desirable.

Applications should include: (i) brief cover letter, (ii) curriculum vitae, (iii) a brief description of past research accomplishments (under two pages), and (v) the names and contact information for three references. All materials should be uploaded through the University of Minnesota's online system:
Visit http://www1.umn.edu/ohr/employment/
Click the appropriate internal or external applicant link
Search Job ID# 322858

The curriculum vitae, description of past research accomplishments, and references should be combined into one PDF and uploaded in the resume area. The cover letter should be uploaded as a separate document.

Any questions should be directed to Valery Forbes (vforbes@umn.edu).

Position Description

The Post-Doctoral Associate will be responsible for independently conducting a life-history analysis of listed and non-listed mussel species inhabiting Midwest and Southeastern US water bodies on the basis of existing data. It is not envisioned that the project will involve significant collection of new laboratory or field data. On the basis of this analysis, the postdoc will develop a suite of generic population models to represent each life-history group, based on Dynamic Energy Budget (DEB) theory. This work is being co-funded by Syngenta Crop Protection LLC and University of Minnesota Twin Cities.

40% Life history analysis
The postdoc will independently analyze the different life-history types of mussels species from Midwest and Southeastern US water bodies, comparing species that are listed as threatened/endangered under the Endangered Species Act with non-listed species. This analysis will include compilation of other relevant traits such as physiological and habitat data. On the basis of this analysis, individual species will be grouped into a limited number of life-history categories for modeling.

40% Model analysis
The postdoc will independently develop generic individual-based models based on Dynamic Energy Budget (DEB) theory that can be applied to listed and non-listed mussel species. Model parameterization, evaluation, and interpretation of model outputs are included in this. The preferred platform for model development is NetLogo, though other platforms can be considered, depending on the expertise of the postdoc. In addition, analyses will be done to investigate how population models (even for data-poor species) can provide insights that are useful for assessing risks of pesticides to listed species.

10% Prepare results for dissemination
The results of the project will be published in major journals in the field and presented at national and international meetings. This position will require data compilation and figure preparation that will be incorporated into manuscripts to be written and submitted for publication as well as posters and oral presentations.

10% Interaction with the business sector and governmental agencies
The position includes collaborations with the non-academic sector, and the postdoctoral associate will interact, collaborate and present results in academic, as well as non-academic settings.