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Dear Colleague Letter: Advancing Revisionary Taxonomy and Systematics (ARTS)

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The Cluster for Systematics and Biodiversity Science within the Division of Environmental Biology (see the program description at http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503666&org=DEB&from=home encourages the submission of proposals to conduct species-level taxonomic work and revisionary monographic research on particular groups of organisms, and to develop predictive classifications for those organisms. Such taxonomic work forms the fundamental basis of our understanding of planetary biodiversity and its evolutionary history. In addition, systematics and taxonomy play increasing roles in crucial studies concerning conservation, ecological assessment, sustainable ecosystem management, and the effects of climate change on organismal distributions.

A major goal of this activity is to address the "taxonomic impediment" in biodiversity studies, that is, the scope of undescribed biodiversity relative to the human resources and tools available to address that problem. Factors that exacerbate this impediment include the loss of taxonomic specialists with specific organismal expertise and the declining numbers of students broadly trained in organismal and taxonomic research. On the other hand, technological and cyberinfrastructure developments have poised us to revolutionize the way taxonomic and revisionary work can be accomplished. We encourage proposals that will develop novel and transformative approaches to address these challenges, and that will help prepare future generations of broadly trained organismal biologists and systematists to pursue these approaches. Successful proposals will simultaneously provide innovative research to accelerate taxonomic documentation and syntheses, as well as broad systematic training.

Research: Projects should either include taxonomic revision and monography components, or novel approaches that achieve these same goals without compromising the integrity of the systematic enterprise. Proposals using innovative and novel approaches through utilization of biodiversity and taxonomy informatics and new types of collaborations among organismal biologists will have a high priority. The need and timing of the revisionary synthesis for a particular group of organisms should be justified; organisms that are taxonomically understudied or groups for which taxonomic expertise is limited or vanishing are strongly encouraged to submit proposals. Proposals that interface with current digitization efforts and that are interoperable with current biodiversity informatics initiatives are encouraged. Proposals should include well-documented plans for use of modern information technology, electronic dissemination of results, and web-based monographs and keys. Results should be accessible via widely available public databases.

Training: The level of expertise that modern systematics requires is high. The ARTS activity seeks to broaden the base of taxonomists, while enhancing organismal, monographic, and taxonomic expertise and capability in all systematists. Proposals that broaden the systematic and taxonomic skill set of PIs and students will have a high priority. ARTS also encourages collaborations that would broaden the human resource base available to tackle the taxonomic impediment, such as partnerships with undergraduate institutions, community colleges, and other institutions; training of graduate and undergraduate students in organismal and taxonomic work; and cross-training collaborations that would address specific training gaps. Projects should seek to train integrative systematists and should translate current expertise into electronic databases and other products with broad accessibility to the scientific community.

Titles of proposals emphasizing such revisionary and monographic syntheses should be prefaced with "ARTS", and those proposals can be submitted to either the Biodiversity: Discovery & Analysis program (BDA) or Phylogenetic Systematic (PS) program. NSF FastLane requirements (www.fastlane.nsf.gov) apply to all proposals submitted to the Cluster. Proposals must conform to all format requirements in

the Grant Proposal Guide http://www.nsf.gov/pubsys/ods/getpub.cfm?gpg; in particular, pay attention to requirements for addressing Broader Impacts, for presenting Results of Prior NSF Support for all PIs and co-PIs, and for avoiding unauthorized appendices. For full proposals submitted via Grants.gov: NSF Grants.gov Application Guide; A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

Investigators with questions about ARTS proposals are encouraged to contact the Cluster's program officers listed on the program page at: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503666&org=DEB&from=home. Lists of ARTS awards with links to their FastLane Award Abstracts will be posted on the BIO website at http://www.nsf.gov/bio/pubs/awards/arts.htm.

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