NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

NSF 17-139

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

September 19, 2017

Dear Colleagues:

Revisionary taxonomic research forms the fundamental basis of a contemporary understanding of planetary biodiversity and its evolutionary history. It underpins all human communication about biodiversity, and organizes its units into nomenclatures and classifications that provide a conceptual framework for all biological and related applied sciences. However, the characterization, description, naming and classification of the Earth's extant and extinct biodiversity has not kept pace with its rate of discovery. This is exacerbated by the loss of taxonomic specialists with specific organismal expertise and the declining numbers of students broadly trained in organismal and taxonomic research, particularly in the U.S.

The Advancing Revisionary Taxonomy and Systematics (ARTS) category within the Systematics and Biodiversity Science (SBS) cluster aims to address this "taxonomic impediment". The main goals are to describe planetary organismal diversity, broadly disseminate new and revised taxonomic information, and train the next generation of taxonomic scientists. The SBS cluster encourages proposals that will develop novel and transformative approaches to address these challenges, that leverage recent technological and cyberinfrastructure developments, and that help prepare future generations of broadly trained organismal biologists and systematists to pursue these approaches. Proposals should simultaneously provide innovative research to accelerate taxonomic documentation and syntheses, and broad systematic training.

To achieve these goals, the SBS Cluster encourages the submission of proposals to conduct revisionary taxonomic and monographic research aimed at developing modern and complete as possible classifications for organisms spanning the tree of life. Research, training, and broad dissemination of results are all essential components of an ARTS proposal.

Research: ARTS proposals must include characterization, description, and naming at the species level (or equivalent), as well as classification and monography components, or novel approaches that achieve these same goals without compromising the integrity of the systematic enterprise. Proposals using innovative and novel revisionary approaches through utilization of biodiversity and taxonomy informatics and new types of collaborations among organismal biologists are highly

encouraged. The need and urgency of the revisionary synthesis for a particular group of organisms must be justified. 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 must be made accessible via widely available public databases.

Training: The level of expertise that modern systematics requires is high and training is essential to an ARTS proposal. The ARTS category seeks to broaden the base of taxonomists, while enhancing organismal, monographic, and taxonomic expertise and capability in all systematists. Proposals must include a detailed plan to broaden the systematic and taxonomic skill set of the researchers, students or trainees. Groups of organisms that are taxonomically understudied, or for which taxonomic expertise is limited or vanishing, are strongly encouraged to submit proposals. Collaborations that would broaden the human resource base available to tackle the taxonomic impediment are encouraged, including partnerships with undergraduate institutions, community colleges, and other institutions; cross-training collaborations that would address specific training gaps; and engagement of citizen scientists. Projects must seek to train integrative systematists and must translate current expertise into electronic databases and other products with broad accessibility to the scientific community.

Titles of proposals submitted to this category must be prefaced with "ARTS", and submitted to the SBS core program. Proposals must conform to all requirements in the current Division of Environmental Biology (DEB) core program solicitation found on the SBS core program webpage. Investigators with questions about ARTS proposals are encouraged to contact the SBS cluster Program Officers listed on the program page.

James Olds
Assistant Director
Directorate for Biological Sciences