



Ecological Society of America

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Dr. Sethuraman Panchanathan
National Science Foundation
4201 Wilson Blvd, Room 605
Arlington, VA 22230

November 28, 2023

Dear Dr. Panchanathan:

The Ecological Society of America (ESA) is the world's largest society of professional ecologists, representing over 8,000 members across the country. As leaders of ESA, we write to express our concerns with the decision made by the National Science Foundation (NSF) Directorate of Biological Science (BIO) Division of Environmental Biology (DEB) to discontinue the Macrosystems and NEON-enabled Science Program (MSB-NES). This decision was announced in a memo, dated Nov. 14, entitled, [“Transitioning funding for macrosystems biology and NEON-enabled science.”](#)

ESA respectfully requests that NSF pause the decision to discontinue dedicated funding for the National Ecological Observatory Network (NEON) MSB-NES program and seek input from the ecological community, including the National Academy of Science and Engineering (NASEM) report it commissioned, before implementing any changes. We request a meeting with you to discuss the concerns of the ecological community and find a path to move forward.

We understand that the end of one program is not normally the level of granularity at which an NSF Director offers input; however, we believe this situation merits your attention for several reasons. First, the announcement was abrupt with no plan for transition of the Principal Investigator (PI) community and before a National Academies consensus report on this topic, commissioned by NSF BIO, has been completed. Second, this program encourages use of the NEON facility, which is still in its early years of operation, and currently MSB-NES appears to support the vast majority of NEON users (based on a search of active awards). NEON is a first-of-its-kind facility, and researchers are still learning how to incorporate these impressive resources into their research. It is too early to remove this incentive, without another plan in place for incentivizing NEON use.

We appreciate that Division Director for the Division of Environmental Biology Dr. Allen Moore met with us to discuss the memo, and he also participated in an ESA public, online [“Water Cooler Chat”](#) Nov. 21, that is now available for on demand viewing. However, there appears to be no acknowledgement of the need for a strategic plan to support Macrosystem research and, in particular, dedicated support for the nascent community of NEON users. We left the discussion with the impression that NSF is jeopardizing its investment in NEON. We are sharing the concerns outlined below with you that were also shared with Dr. Allen Moore, and BIO Assistant Director Dr. Susan Marqusee.

The program, “*Macrosystems Biology and NEON-Enabled Science (MSB-NES): Research on Biological Systems at Regional to Continental Scales*” is the only program at NSF that explicitly encourages continental-scale biology as well as the use of the NEON field sites, data products, and training modules; accordingly, it is at the heart of work being done by the National Academies committee that NSF BIO commissioned, “Research at Multiple Scales: A Vision for Continental Scale Biology,” which has not yet delivered its final report recommendations to NSF.

We, and many members of the ESA community, are deeply concerned about the decision to abruptly end the Macrosystems program and discontinue a dedicated funding source for this unique area of research. At the forefront of progress, continental-scale biological research stands as an imperative toward understanding, mitigating, and adapting to climate and environmental change to benefit and safeguard society. This decision will have many adverse consequences for the science, the research community, US leadership in continental-scale environmental biology, and for the public and policy sectors that depend on such research for effective environmental decision making.

The proposed change would disproportionately affect ecological researchers who study environmental change at the regional and continental scales required to address climate change. Through Macrosystems, NSF has created a research community, who now refer to themselves as “Macrosystems biologists,” and with no warning is leaving them without dedicated support. The memo encourages PIs to take their MSB-NES proposals to the core programs; however, Macrosystems projects are unlike research typically seen in the core programs. Macrosystems projects are highly interdisciplinary and are typically undertaken in a team science approach that creates relatively large networks. The core ecology programs are likely to receive the majority of the redirected proposals from Macrosystems PIs, creating additional administrative burden and lower funding rates, without likelihood of success for redirected MSB-NES projects. Furthermore, we believe that eliminating the MSB-NES program will slow down the use of NEON data.

NSF can be proud of building NEON, the first of its kind in several ways – the first ecological observatory network in the world, and the first Major Research Equipment and Facilities Construction (MREFC) project for BIO – and it is not the time to remove incentives for researchers to scale up their science by incorporating NEON into their research and teaching. These early years of operation are critical years for supporting NEON use by a research community now learning the power that these data can bring to environmental research that addresses the Nation’s most pressing threats associated with climate change, invasive species, and land use change.

NSF already has invested over \$1 billion in constructing and operating NEON, and it has been fully operational since 2019 – barely four years (two of which included pandemic years). Now that it is fully operational, researchers still need both the incentive and the support to learn about how they can integrate NEON into their projects. Other major facilities funded by NSF have user groups funded by distinct NSF support (e.g., LIGO Scientific Collaboration), but for NEON, the MSB-NES program has been the only defined support to encourage its use and coordinate the PI community.

The MSB-NES research community is eager to provide a bridge for the environmental biologists of the NSF BIO research community to the new Directorate for Technology, Information and

Partnerships (TIP). Macrosystems and NEON-enabled research engages cutting-edge technologies such as remote sensing, sensor networks, artificial intelligence analytics, and environmental ‘omics that cross biological scales, with a focus on major environmental issues such as climate change and biodiversity loss. This PI community can be leveraged as a natural connection to TIP.

NSF BIO made the decision without consultation with the scientific community affected by it. NSF BIO commissioned a NASEM study to write a consensus report specifically for developing a future vision of continental scale biology. The report is especially timely now that NEON is operational, and the community is beginning to understand how NEON data will strengthen their research. The final report is not complete, and it seems shortsighted to make this change to the Macrosystem program without the benefit of its final recommendations. We are now hearing broadly that no other consultation with the ecological community seems to have been made; neither the NEON user community nor Macrosystems PIs and, to the best of our knowledge, neither the Advisory Committee for Biological Sciences nor the Advisory Committee for Environmental Research and Education were given the opportunity to provide input before NSF made the decision.

Thank you for your support for the ecological and biological sciences. A copy of the letter sent Nov. 21 to Drs. Moore and Marqusee was sent to the White House Office of Science, Technology, and Policy to share the ecological community’s response to the announcement. We are also sharing a copy of this letter with the National Science Board Chair and Vice Chair.

Alison Mize, alison@esa.org will schedule a meeting date with your staff. We stand ready to work with NSF and offer our assistance to seek a compromise that benefits NSF and the scientific community.

Sincerely,



ESA President Shahid Naeem



ESA Past-President Sharon Collinge



ESA President-Elect Stephanie Hampton

CC: National Science Board Chair Dan Reed, National Science Board Vice Chair Victor McCrary