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US Geological Survey, Dept. of the Interior

Biodiversity and Climate Change Assessment

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RESPONSE OF THE ECOLOGICAL SOCIETY OF AMERICA TO THE BIODIVERSITY AND CLIMATE CHANGE ASSESSMENT PROSPECTUS

I Overview: The Ecological Society of America endorses the concept of the Biodiversity and Climate Change Assessment Prospectus.

The Ecological Society of America, founded in 1915, is the world's largest community of professional ecologists and a trusted source of ecological knowledge, committed to advancing the understanding of life on Earth. The 9,000-member Society publishes five journals and a membership bulletin and broadly shares ecological information through policy, media outreach, and education initiatives. The Society's Annual Meeting attracts 4,000 attendees and features the most recent advances in ecological science.

The diversity of life on Earth constitutes both a unique heritage from the past and a unique resource for the future. Despite widespread acknowledgement that the quality of life of future generations of humans depends critically on the conservation of biological diversity, this resource is now being threatened by our changing climate and other global environmental changes due to the unsustainable activities of contemporary societies.

The Biodiversity and Climate Change Assessment (BCCA) importantly examines the linkages among climate change, biodiversity and human wellbeing. The BCCA will be a timely and necessary step toward meeting our national goal of conserving biological diversity and implementing applied climate mitigation, adaptation and resilience polices.

The Ecological Society of America fully endorses an ambitious program for the BCCA to assess the distributions of species and species associations across North America's major ecosystems and to link the pattern of distribution of species and habitats with natural and anthropogenic processes that affect biological diversity.

It is essential that the assessment does not focus solely on endangered, threatened or charismatic species, but also on all biological taxa and the habitats they require. Although providing more accurate information on the abundance, distribution and population trends of organisms should be a major goal of the BCCA, the interpretation of such patterns and trends also needs to reflect on how society will be affected by changes in patterns of abundance and distribution.

II Context: ESA commends the effort to include practitioners, natural resource managers, ecologists, conservationists, academic institutions and Indigenous Peoples and Local Communities (IPLCs) across different sectors throughout North America. To fulfill the goals of the NCCA, ESA recommends that environmental social scientists be included in the assessment design, process and implementation of the BCCA.

The establishment of the Biodiversity and Climate Change Assessment in the United States, Mexico and Canada will be critical to our national needs and to the global Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) global assessment of biodiversity and ecosystem services to better understand the regional and continental scale of changes in biodiversity related to environmental change and the potential implications for human wellbeing.

Governmental Coordination

The success of the BCCA will be intimately tied to how well its programs are coordinated with other federal agencies. The BCCA will need to coordinate its efforts with the fourteen agencies that participate in the US Global Change Research Project, all of which are critical to the nation's efforts to understand and preserve our biota and ecosystems, and to understand the effects of climate change. The Dept. of Health and Human Services, the Dept. of Homeland Security and the National Science Foundation, in particular, provide social and behavioral science and human health expertise in addition to the other scientific disciplines needed for a comprehensive assessment.

Interest in biological diversity and other ecological topics has created an expansion of federal environmental programs at a time when increased cooperation and coordination are more important than ever. ESA encourages robust engagement with the US National Nature Assessment and the US National Climate Assessment. The nation needs a stronger, more integrated, and more cohesive federal environmental research program, and the government should be seeking ways to coordinate and consolidate existing and new federal environmental activities. The creation of the BCCA should not be seen as a substitute for other, more comprehensive, proposals aimed at improving the scientific basis for making decisions about the environment.

Engaging the ecological community and other stakeholders

ESA fully supports participation from universities, non-governmental organizations and civil society organizations, the private sector, and Indigenous Peoples and Local Communities (IPLCs). Collaboration with these groups is vital. Including environmental social scientists is critical for understanding the relationships among biodiversity, climate change and human wellbeing.

Indigenous peoples have a deep understanding of their ecosystems and have valuable knowledge about biodiversity and climate change. Including their perspectives and knowledge in the assessment process not only respects their sovereignty but also enhances the accuracy and effectiveness of the assessment. ESA has long embraced the traditional ecological knowledge community to contribute to ecological knowledge creation and sharing. The ESA Traditional Ecological Knowledge Section members can provide expert information that would be useful in framing the important relationships among Indigenous peoples, biodiversity, climate change and other human-caused perturbations to the environment.

To include the ecological scientific community in the assessment, it is crucial to establish mechanisms for meaningful participation and collaboration. ESA is a primary leader in gathering and communicating with the ecological community.

Creating platforms for dialogue, such as workshops, conferences and stakeholder consultations will enable the exchange of knowledge, identification of research gaps and co-creation of strategies and recommendations. Additionally, including ecologists in establishing working groups or advisory panels comprising ESA members will ensure their direct involvement in shaping the assessment process and its outcomes. By actively involving the ecological community, the National Biodiversity and Climate Assessment can benefit from their expertise, enhance the scientific rigor of the assessment and foster greater ownership and support for its findings and recommendations.

III. Policy-relevant questions: Along with the questions listed, adding questions about biodiversity risk assessments modeled after the Integrated Ecosystem Assessment tool is worth consideration. Risk assessments can help prioritize management action and set the stage for analysis of trade-offs through management strategy evaluation (NOAA)**.**

IV. Chapter Outline: More consideration for the scope and outline of the chapters is needed after the Guidance Committee and Lead Authors are in place. After the chapter outline is updated, ample lead time for the ecological community to comment would strengthen the report. Structuring similar chapter outlines to the IPBES reports would be efficient.

Greater emphasis needs to be placed in the chapters to understand connections among biodiversity, climate and human well-being.

To effectively address the interconnected challenges of biodiversity loss and climate change, it is crucial to incorporate both ecological considerations and human wellbeing into the National Biodiversity and Climate Assessment. Ecology provides the scientific framework for understanding the intricate relationships between species, ecosystems and their environments,

while human wellbeing highlights the critical importance of biodiversity for our own survival and quality of life. Incorporating environmental social science will provide elements of social science, natural science and humanities to understand the relationship between society, climate change and biodiversity.

The linkage between biodiversity and human wellbeing has been reinforced in recent efforts such as data gathered by the Millenium Ecosystem Assessment and extended by the establishment of the IPBES efforts, and in the identification of the critical role of biodiversity in the Sustainable Development Goals (SDG's). The BCCA will be instrumental in identifying critical changes in biodiversity across North America that may undercut our nation's ability to meet development goals and the needs of human populations.

Recognizing the dependency of human societies on the services provided by ecosystems and biodiversity, the assessment should assess the impacts of biodiversity loss and climate change on human communities. This includes examining the effects on livelihoods, food security, water availability, public health, and cultural heritage. By understanding these complex ecological and socio-economic systems, the assessment can inform decision-making processes, such as prioritizing conservation actions that support both ecological integrity and human well-being. The ESA can provide input from various experts and communities of practice to address these areas of interconnection between biodiversity, climate change and social well-being.

V. Process: ESA believes the process is sound, but we encourage robust communications at every point with the scientific community for ongoing opportunities for participation.

VI. Assessment fellowship opportunities: ESA endorses the creation of fellowships for early-career scientists. In addition to the fellowships, ESA recommends creating opportunities for undergraduate and graduate student participants through existing governmental and NGO programs.

ESA actively seeks to engage undergraduates to create a diverse scientific community in the STEM fields. One ESA effort is the SEEDS (Strategies for Ecology Education, Diversity and Sustainability) Program – an award-winning education initiative with a mission to diversify and advance the ecology profession through opportunities that stimulate and nurture the interest of historically excluded students to participate and to lead in ecology.

Another possible program from which to recruit students is the National Park Service (NPS) Scientists in Parks (SIP) Program. ESA and several other non-governmental organizations work together with the NPS to provide meaningful experiences through internship opportunities for students in US national parks.

Other scientific NGOs and governmental fellowships and internships are additional avenues to identify undergraduate and graduate students to participate in the BCCA.

VII. Audience and Communication: The audience and communication plan outlined is comprehensive. The inclusion of decision-makers in the public and private sectors, the general public and the scientific community across multiple countries demonstrates an inclusive approach to disseminating information about biodiversity and climate mitigation and adaptation.

ESA recommends the use of scholarly publications and scientific conferences to communicate with the ecological and biological sciences communities.

The plan's intention to commence communication and outreach during the report's development phase reflects a proactive approach to familiarize and engage with interested and potential end users. This early engagement will foster meaningful connections and build anticipation for the assessment report's launch in mid- to late 2025.

VIII. Assessment participants: Overall, the clear roles and responsibilities outlined and the coordination of cross-cutting themes, along with the establishment of a Technical Support Unit, create a strong framework for the smooth functioning and high-quality output of the Assessment.

ESA strongly encourages a diverse set of participants at all levels of the assessment.

XI. Information Quality and Peer Review (to be developed): The information gathered by BCCA will be useful for setting public policy only if it is scientifically and statistically sound. National assessment programs must provide statistical and inferential reliability. This will require a substantial planning effort and the documentation of statistical guidelines.

The BCCA must not, however, make the mistake of confusing statistical soundness and ecological relevance. Documenting the changes in abundance and distribution of species will ultimately be futile unless we understand the ecological processes controlling rates and direction of change. While it may be outside of the BCCA scope, there needs to be a strong hypothesis-driven research program aimed at understanding the processes controlling biological diversity at all levels of organization to contribute significantly to the long-term goal of preserving biological diversity.

V. Process: ESA encourages early involvement with the ecological community and urges the USGS to publicize events at least eight weeks in advance on its website and in other communication outlets. ESA encourages the development of free BBCA newsletters that anyone can receive by signing up on the USGS webpage.