

**COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY  
U.S. HOUSE OF REPRESENTATIVES  
HEARING CHARTER**

***“Nature in Crisis: Biodiversity Loss and its Causes”***

Tuesday, June 4, 2019

10:00 a.m.

2318 Rayburn House Office Building

**PURPOSE**

The purpose of this hearing is to discuss the major findings of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) summary for policymakers of their first Global Assessment Report.<sup>1</sup> The comprehensive review found that “nature’s dangerous decline is unprecedented,” and that one million species - 25% of global species in assessed groups - are threatened with extinction. This report also identifies potential pathways and solutions to implement *transformative change* to addressing the biodiversity loss described in the report. This hearing will serve as an opportunity to not only discuss the findings of the report, but to identify knowledge gaps and solutions for dealing with human-driven biodiversity loss.

**WITNESSES**

- **Sir Robert (Bob) Watson**, Past Chair, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)
- **Dr. Kate Brauman (*BROW-man*)**, Coordinating Lead Author, IPBES Global Assessment; Lead Scientist, Global Water Assessment, University of Minnesota, Institute of the Environment
- **Dr. Steven Monfort**, Director of the Smithsonian National Zoo and Smithsonian Conservation Biology Institute
- **Mr. Jeff Goodwin**, Conservation Stewardship Lead & Agricultural Consultant, Noble Research Institute
- **Dr. James Porter**, Josiah Meigs Distinguished Professor, *Emeritus*, University of Georgia, and Scientific Advisor, *Chasing Coral*

**OVERARCHING QUESTIONS**

- What are the major findings of the IPBES report?
- How have direct drivers, such as climate change and pollution, impacted biodiversity?
- What are the potential impacts of biodiversity loss on human health?
- What knowledge gaps remain for understanding drivers and impacts of biodiversity loss?
- What are some potential solutions to stem human-caused biodiversity loss?
- How can we achieve the *transformative change* outlined in the report?

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<sup>1</sup> IPBES. Global Assessment Summary for Policymakers. 2019.

[https://www.ipbes.net/sites/default/files/downloads/spm\\_unedited\\_advance\\_for\\_posting\\_htn.pdf](https://www.ipbes.net/sites/default/files/downloads/spm_unedited_advance_for_posting_htn.pdf)

## **BACKGROUND**

In early May 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) released their first Global Assessment Summary for Policymakers on biodiversity and ecosystem services.<sup>2</sup> The full 1,800 page Global Assessment was released on May 31, 2019.

The IPBES was established in 2012 as an independent intergovernmental body open to all members of the United Nations, but is not a United Nations body.<sup>3</sup> The IPBES does not conduct new science, but produces synthesis reports in a process similar to the Intergovernmental Panel on Climate Change (IPCC). Over 130 countries participated in the IPBES Global Assessment, with almost 500 experts reviewing 15,000 publications. Representatives of these government met in late April 2019 to finalize and approve the specific language in the Summary for Policymakers.

The Global Assessment is meant to help inform the Convention on Biological Diversity meeting in 2020. The Convention on Biological Diversity is a multilateral treaty between 196 parties that was first established in 1992; the United States is the only United Nations member state not to ratify the treaty. The International Union for Conservation of Nature (IUCN) has endorsed the IPBES Global Assessment and its findings.<sup>4</sup>

### **Summary of the Global Assessment report**

The IPBES Global Assessment describes the immense and varied ecosystem services that are provided to mankind as a result of biodiversity around the globe. It also outlines a profound change in global ecosystems that has accelerated aggressively in the past fifty years. IPBES explains that nature underpins all aspects of human health and the global economy, so any decline of nature's contributions to people will adversely impact human health and the economy. As the human population doubled since 1970, the global economy has grown fourfold, greatly increasing global demand for energy and materials.

The Global Assessment outlines five direct drivers of biodiversity loss, in order of the largest global impact:

- (1) changes in land and sea use
- (2) direct exploitation of organisms
- (3) climate change
- (4) pollution
- (5) invasive species

These direct drivers are primarily a result of human activity. The indirect drivers of change are underpinned by societal values and behaviors that include (1) production and consumption

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<sup>2</sup> IPBES. Global Assessment for Policymakers. 2019.

<sup>3</sup> <https://www.ipbes.net/about>

<sup>4</sup> IUCN. <https://www.iucn.org/news/global-policy/201905/iucn-welcomes-intergovernmental-platforms-assessment-biodiversity-and-ecosystem-services>

patterns (2) human population dynamics and trends (3) technological innovations and (4) governance (from the most local levels to the global/multinational).

The Global Assessment finds that the sustainability goals for 2030 and 2050 articulated via the Convention on Biological Diversity, the UN Framework Convention on Climate Change (UNFCCC) and the 2050 Vision for Biodiversity cannot be met under current trajectories for continued biodiversity loss. It argues that these goals can be met only with urgent and concentrated efforts toward *transformative change*, which is described as a “fundamental, system-wide reorganization across technological, economic, and social factors, including paradigms, goals, and values.” In addition to synthesizing the impacts of both direct and indirect drivers of biodiversity loss on our ecosystems, the Global Assessment provides approaches for sustainability and potential pathways to achieve transformative change and highlights some outstanding knowledge gaps. The Science Committee has a role to play in helping to address these knowledge gaps through scientific discovery, which can help implement solutions to biodiversity loss.

Some of the major findings, approaches to sustainability, and knowledge gaps identified in the Global Assessment are summarized below.

### **Key Findings**

- Three-quarters of land surface has been significantly altered by human activity
- Two-thirds of ocean area is experiencing increasing cumulative impacts
- Over 85% of wetlands by area have been lost due to human drivers
- Approximately 1 million species may face extinction in the next few decades unless action is taken to stem biodiversity loss
- The disappearance of different varieties and breeds of domestic plants and animals threatens global food security
- Many organisms are rapidly evolving, some over the course of only a few years, in response to anthropogenic drivers
- Agriculture production trends since 1970 are not sustainable.
  - While the aggregate value of crop and timber production has increased drastically in the last generation, fourteen of the 18 categories of contributions of nature, such as soil organic carbon, have declined over the same time period.
- \$235-577 billion in annual global crop output is at risk due to loss of pollinators (i.e. bees).
- Half of the live coral cover on coral reefs has been lost since the 1870s.
  - The loss of coastal habitats and coral reefs puts the 100-300 million people that live in coastal communities at increased risk of hurricanes and floods
- Land-use change (driven by agriculture, forestry, and urbanization) is the largest negative impact on terrestrial and freshwater ecosystems, followed by direct exploitation
- One third of the terrestrial land surface is dedicated to cropping or animal husbandry.
  - Agricultural expansion is the most widespread form of land use change
- For marine ecosystems, direct exploitation (such as fishing) has had the largest negative impact, followed by land/sea-use change

- Many types of pollution and invasive alien species are increasing and having negative impacts on nature
- Marine plastic pollution has increased tenfold since 1980
- The cumulative record of invasive species has increased by 40 percent since 1980
- Areas around the world that will be most impacted from global changes in climate, biodiversity, and ecosystem services are home to the largest concentrations of indigenous people and many of the world's poorest communities.
- Climate change is a direct driver of change that exacerbates the other direct drivers
- The negative impacts of climate change as a driver of change will increase with increased global temperatures
- The overall state of nature continues to decline, with 12 of 16 indicators showing worsening trends

### **Approaches for sustainability and pathways to achieve transformative change**

- Promoting cross-sector approaches to governance through stakeholder engagement and inclusion of local communities and indigenous people
- Ensuring policy decisions are informed by a complete understanding of nature's contributions to people
- Producing and consuming food sustainably
- Integrating multiple uses for sustainable forests
- Conserving, effectively managing and sustainably using terrestrial landscapes
- Promoting sustainable governance and management of ocean ecosystems
- Improving freshwater management, protection, and connectivity
- Building sustainable cities
- Promoting sustainable energy and infrastructure
- Improving the sustainability of economic and financial systems

### **Knowledge gaps**

- Data, inventories and monitoring on nature and drivers of change
- Gaps on biomes and units of analysis
- Taxonomic gaps
- Nature's contribution to people gaps
- Links between nature, nature's contributions to people and drivers with respect to targets and goals
- Integrated scenarios and modeling studies
- Potential policy approaches
- Indigenous peoples and local communities

## **ADDITIONAL READING**

Millennium Ecosystem Assessment

<https://www.millenniumassessment.org/en/Global.html>

International Union for the Conservation of Nature (IUCN): Red List of Threatened Species

[www.iucnredlist.org](http://www.iucnredlist.org)

Living Planet Index

[www.livingplanetindex.org](http://www.livingplanetindex.org)