UN DOCUMENTS ACCELERATING BIODIVERSITY LOSS THREATENING ALL LIFE

Ecosystem protections and transformative change urgently needed

DEBRA SIMES

Biodiversity, upon which human life depends, is being lost at an alarming rate. This loss, and the drivers accelerating it, have been documented by hundreds of recent studies. The collective significance of these studies has been examined in reviews, including "Worldwide decline of the entomofauna: A review of its drivers," which was featured in the Spring 2019 issue of *Pesticides and You*.

NEW UNITED NATIONS ASSESSMENT

A new assessment from the United Nations Decade on Biodiversity project brings together three years of work by 145 experts from 50 countries, informed by 15,000 scientific studies and other resources, including indigenous and local knowledge, to underscore the speed and depth of biodiversity loss—and its causes and effects. The 1,500-page report by IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), the IPBES Global Assessment Summary for Policymakers, is the most comprehensive look to date at the biodiversity crisis and its implications for human civilization. A summary of the report's findings, approved by representatives from the U.S. and other member countries,* was released in Paris in May, and the complete report is expected later in 2019.

IPBES is an intergovernmental body of 132 member states, established by the United Nations in 2012, that assesses the state of biodiversity and of the ecosystem services such diversity provides to societies. The group also reports to policymakers on those assessments, and on the dynamics—causes and impacts—between human activity and the state of biodiversity and ecosystem services.

NATURE IS DETERIORATING

The IPBES report finds that nature and its vital contributions to people, which together embody biodiversity and ecosystem functions and services, are deteriorating worldwide. The report finds, "Since 1970, trends in agricultural production, fish harvest, bioenergy production and harvest of materials have increased, but 14 of the 18 categories of contributions of nature that were assessed, mostly regulating and non-material contributions, have declined." Among the contributions that have declined are soil organic carbon and pollinator diversity. Land degradation and pollinator loss put agricultural production at risk. Loss of coastal habitats and coral reefs result in increased risk from floods and hurricanes. Among the summary's alarming conclusions are that, across most of the globe's major habitats, the plenitude of plants and animals has dropped by 20% or more during the past century. Around one million species are threatened with extinction.

DRIVERS OF CHANGE HAVE ACCELERATED

The report finds that direct and indirect drivers of change have accelerated during the past 50 years. Human activities—including agriculture, land conversion through logging and subsequent deforestation, extraction of minerals and fossil fuels, overfishing, poaching, and pollution of all sorts—are changing the face and dynamics of the natural world at a rate "unprecedented in human history." Pesticides are

BOX 1

Comments on the UN Report

Project co-chair Eduardo Brondizio, PhD of Indiana University remarked at a press conference on the release, "We have reconfigured dramatically life on the planet."

Thomas Lovejoy, PhD, George Mason University Professor of Biology, Senior Fellow at the United Nations Foundation, former assistant secretary for environmental and external affairs for the Smithsonian Institution—who is sometimes called the 'godfather of biodiversity' for his research efforts—commented, "Humanity unwittingly is attempting to throttle the living planet and humanity's own future.... The biological diversity of this planet has been really hammered, and this is really our last chance to address all of that."

Sir Robert Watson, PhD, a British, and former NASA scientist who headed the report, noted that, "The findings are not just about saving plants and animals, but about preserving a world that's becoming harder for humans to live in. 'We are indeed threatening the potential food security, water security, human health and social fabric' of humanity, Dr. Watson said, adding, 'Business as usual is a disaster.'"

* https://www.ipbes.net/sites/default/files/downloads/spm_unedited_advance_for_posting_htn.pdf.

one of the contributors to loss of biodiversity. The report finds, "Species loss is accelerating to a rate tens or hundreds of times faster than in the past," with insufficient habitat for long-term survival.

IPBES asserts that this decline in biodiversity threatens society's ability to meet people's basic needs, and that current patterns of production and consumption are unsustainable. The report notes, "Harmful economic incentives and policies associated with unsustainable practices of fisheries, aquaculture, agriculture (including fertilizer and pesticide use), livestock, forestry, mining and energy (including fossil fuels and biofuels) are often associated with land/sea-use change and overexploitation of natural resources, as well as inefficient production and waste management." The report endorses the transition away from pesticide-laden agricultural practices and toward sustainable agriculture.

Exacerbating this biodiversity loss is climate change, which is heating the planet through human activities that dump greenhouse gases (GHGs), notably carbon dioxide and methane, into the atmosphere. The report says, "The rate of global change in nature during the past 50 years is unprecedented in human history." It identifies climate change as one of the most impactful drivers, after changes in land and sea use and direct exploitation of organisms.

The GHG load in the atmosphere, when combined with the other drivers of human damage to the environment, is helping drive a rapidly increasing number of species toward extinction—and sooner, rather than later. "Human actions threaten more species with global extinction now than ever before," the report concludes, estimating that "around one million species already face extinction, many within decades, unless action is taken." The report further projects that, absent major conservation efforts across the planet, biodiversity loss—particularly in the tropics—will accelerate at least through 2050.

SUSTAINABILITY GOALS CANNOT BE ACHIEVED WITHOUT TRANSFORMATIVE CHANGE

The IPBES report finds, "Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors." While pulling no punches about the gravity of the situation, the IPBES report points to the possibility for arresting and redirecting the current entropy: "The negative trends in biodiversity and ecosystem functions are projected to continue or worsen in many future scenarios in response to indirect drivers such as rapid human population growth, unsustainable production and consumption, and associated technological development. In contrast, scenarios and pathways that explore the effects of a low-to-moderate population growth, and transformative changes in production and consumption of energy, food, feed, fibre, and water, sustainable use, equitable sharing of the benefits arising from use and nature-friendly climate adaptation and mitigation, will better support the achievement of future societal and environmental objectives."

CONSERVATION AND SOCIETAL GOALS CAN BE MET THROUGH TRANSFORMATIVE CHANGE

The report says, "Nature can be conserved, restored and used sustainably while simultaneously meeting other global societal goals through urgent and concerted efforts fostering transformative change." It directs policymakers toward pathways that can generate "the transformative change needed to reverse these alarming trends." Such paths include further and more resolute international cooperation; reversal of perverse—i.e., crisis-exacerbating—incentive structures; use of more holistic decision making; and strengthened implementation of environmental laws and policies. It also sets out a number of nature-based solutions that address some of the identified challenges:

- reducing deforestation, restoring forests, wetlands, and other ecosystems, and agricultural practices that build soil organic matter could together contribute more than a third of the total efforts needed by 2030 to keep global warming below two degrees;
- better use of biodiversity in agriculture (such as pollinators, natural enemies of pests and soil biodiversity) could increase yields while reducing the use of harmful chemicals;
- protecting coral reefs and mangroves protects coastal areas from extreme weather events

The released summary provides a comprehensive conclusion:

> **Societal goals**—including those for food, water, energy, health and the achievement of human well-being for all, mitigating and adapting to climate change and conserving and sustainably using nature—can be achieved in sustainable pathways through the rapid and improved deployment of existing policy instruments and new initiatives that more effectively enlist individual and collective action for transformative change. Since current structures often inhibit sustainable development and actually represent the indirect drivers of biodiversity loss, such fundamental, structural change is called for. By its very nature, transformative change can expect opposition from those with interests vested in the status quo, but such opposition can be overcome for the broader public good. If obstacles are overcome, commitment to mutually supportive international goals and targets, supporting actions by indigenous peoples and local communities at the local level, new frameworks for private sector investment and innovation, inclusive and adaptive governance approaches and arrangements, multi-sectoral planning and strategic policy mixes can help to transform the public and private sectors to achieve sustainability at the local, national and global levels.