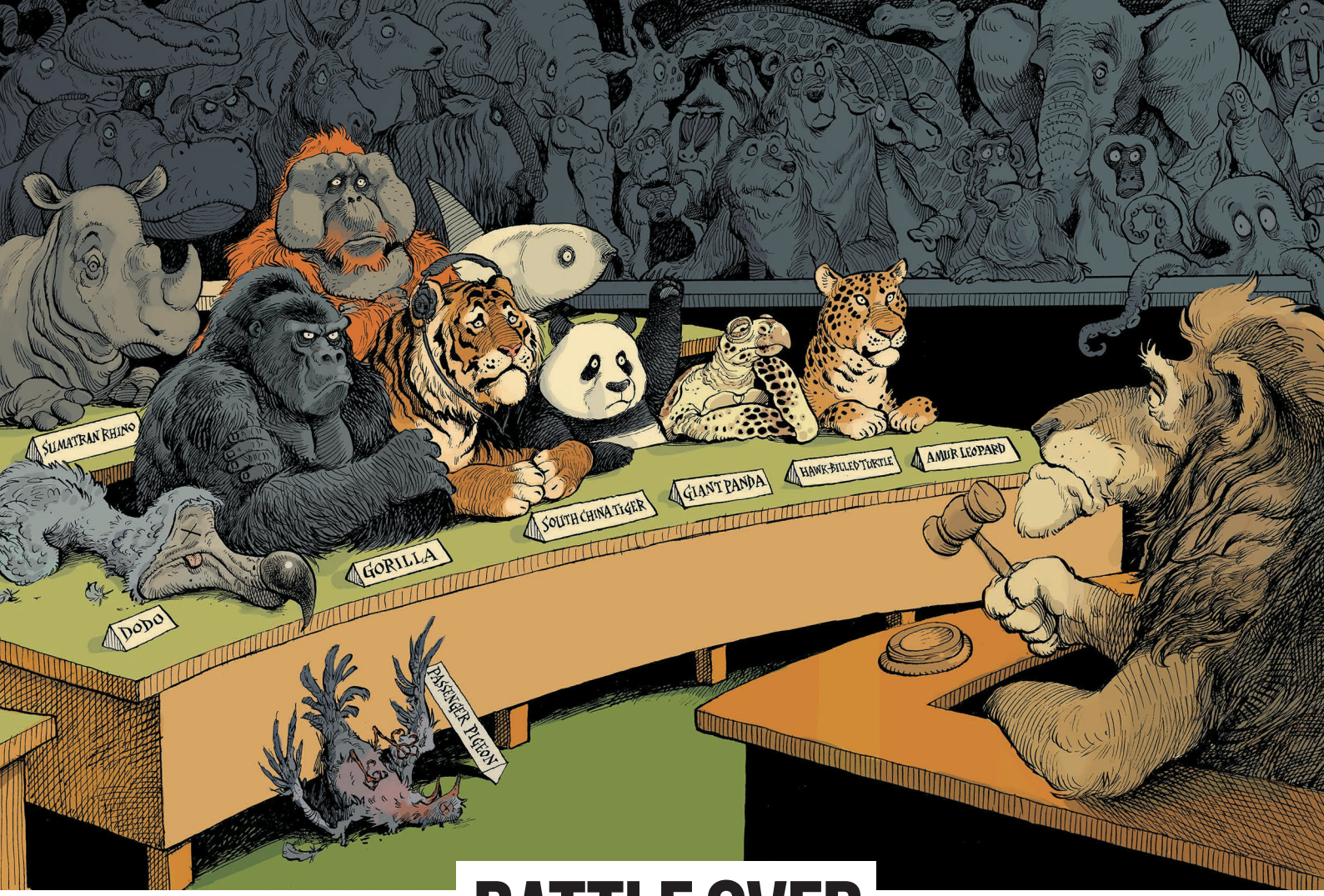

BATTLE OVER BIODIVERSITY

An ideological clash could undermine a crucial assessment of the world's disappearing plant and animal life.

BY EHSAN MASOOD

It's a hot and humid afternoon in the suburbs of Washington DC, and Bob Watson is looking worried.

The renowned atmospheric chemist sits back on a bench in his yard, hemmed in by piles of paperwork. He speaks with his characteristic rapid-fire delivery as he explains the tensions surrounding the international committee he helms. The panel is supposed to provide scientific advice on one of the world's most intractable problems — the rapidly accelerating loss of plants and animals. But a rift in the research community risks diminishing the whole effort. In a few days' time, Watson will fly to England to mark his seventieth birthday, but right now he is not in a celebratory mood.

Watson is talking about a conflict infecting the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), a younger sibling to the Nobel-prizewinning Intergovernmental Panel on Climate Change (IPCC). Both have immense tasks. The IPCC provides timely, expert information on climate change, and it helped to lay the groundwork for international treaties aimed at slowing global warming, such as the 2015 Paris climate accord. The biodiversity panel has been tasked to focus on the epic disappearance of plant and animal populations.

As with climate change, humans are the main culprit in biodiversity loss. People have converted somewhere in the region of 50% of Earth's surface for human activities, and researchers warn that the resulting loss of animal and plant species is leading towards a mass extinction.

But whereas the elder IPCC has largely unified the scientific community and has had considerable international policy success, the six-year-old biodiversity panel has not yet been able to exert anything like the same degree of influence. Moreover, the scientific community it represents is a house divided. The world of biodiversity research is like an extended family that has split into feuding factions. Scientists from less-prosperous southern countries have squared off against colleagues from the wealthier north, and researchers from more empirical disciplines are arguing with those from humanities and the social sciences.

The issues underlying the rift reflect broader debates in science about traditional power structures and increasing access for underrepresented groups, as well as opposition to dominant economic systems. Until now,

ILLUSTRATION BY DAVID PARKINS

scientists and conservationists from developed countries have largely led efforts to study and assess species decline. But the decision-making levers within IPBES are now in the hands of scientists who say that conservation efforts need more input from developing countries, from researchers in the humanities and other non-empirical disciplines, and also from non-academics — such as farmers, citizen scientists and indigenous peoples.

"Ten years ago you had mostly ecologists and some economists. Now many more research and societal actors want to sit at the table," says Sandra Díaz, who is a co-leader of IPBES's upcoming global assessment of biodiversity, which will be the panel's signature accomplishment when it is published next May. "This is likely to create a richer fabric of knowledge," says Díaz, who is also an ecologist at the National University of Córdoba in Argentina.

But those on the opposite side of the rift, who give more weight to an empiricist approach and include some of the biggest names in biodiversity science, say that they have been sidelined. "I am bewildered by this controversy," says Pavan Sukhdev, an economist and president of the conservation group WWF. He leads a smaller and to some extent competing study for the United Nations called The Economics of Ecosystems and Biodiversity.

The feud comes at a crucial time for IPBES as it prepares its global biodiversity report, the most comprehensive assessment on this topic in 14 years. Watson is worried that a public falling out risks diluting the influence that the assessment will have with governments — and the chances for meaningful action to protect biodiversity. "There is no need to have this fracture," he says.

THE SEARCH FOR CONSENSUS

In some ways, the climate and biodiversity panels are relics from the twentieth century, an era when mostly male scientists — largely from developed countries — offered policy guidance to governments and the UN from a position of relatively unchallenged authority.

In 1985, an international science panel co-chaired by Watson established that industrial chemicals were degrading the ozone layer. That panel's reports[1] led to a legally binding treaty, the 1987 Montreal Protocol, which phased out those compounds. Similarly, in 1995, the IPCC provided the scientific consensus that humans were changing the climate[2]. This paved the way for the 1997 Kyoto Protocol, which set limits on greenhouse-gas emissions from developed nations.

But biodiversity has always been the exception. Of the many global agreements in this area, none came about as the result of an IPCC-like process, in which a scientific consensus led to action. In fact, the biodiversity panel was only formed in 2012, a full two decades after international leaders signed the UN Convention on Biological Diversity at the famous Earth Summit in Rio de Janeiro, Brazil, in 1992.

There are many reasons why biodiversity scientists have been unable to exercise collective policy influence in the same way as their colleagues in climate research. "Biodiversity is not the same as greenhouse gases," says Sukhdev. An intergovernmental science team assessing greenhouse gases makes sense because climate change affects everyone, he says. But biodiversity is the responsibility of individual nation states, which makes the reasons for a world scientific panel less obvious. "Why should China be interested in [conserving India's] Royal Bengal tiger," he asks, "or for that matter, why should India be interested in the Chinese panda?"

North–South politics has also played a part. There was concern, for example, that a network of experts dominated by richer countries would slow down or weaken international agreements on regulating genetically modified organisms or sharing the benefits from biodiversity because of the strength of the agribusiness lobby in these countries.

Although those concerns remain strong, France and other European nations in 2005 pushed for establishing a strong international panel and provided key funding. Although their effort eventually fizzled, UN Environment resurrected a version of it[3] and brought IPBES to life in 2012. The new panel, which has cost US$31 million so far, comprises representatives from 129 member governments and is charged with, among other tasks, conducting periodic policy-relevant assessments and providing training, especially in less-developed states.

The breakthrough happened partly because its founders realized it would work only if natural scientists, especially those from richer countries, agreed to be on an equal footing with social scientists, humanities researchers and experts in indigenous knowledge. Also crucial was a close partnership between IPBES's first two chairs: Zakri Abdul Hamid, former chief science adviser to Malaysia's prime minister, and Bob Watson, who had worked together previously bridging North–South divides.

Since its creation, IPBES has not been idle. Earlier this year it published assessments of biodiversity in different regions and a report on the state of land degradation, which concluded that such damaged environments threaten the well-being of 3.2 billion people[4].

This month, IPBES research teams embarked on a widely anticipated assessment of the different ways in which species and ecosystems can be valued. That is one of the key sticking points between the different factions of the biodiversity community.

Although the current controversy has roots that reach back decades, it has heated up since 2016, when IPBES published an 800-page assessment on pollination[5]. This helped to focus attention on the fact that pesticide use has contributed to falling bee populations at a time when the global volume of pollinator-dependent crops has been increasing.

The report says that crops with a market value of up to $577 billion (in 2015 prices) rely on animal pollination, and it includes a chapter on the economics of pollination. However, economic information is largely omitted from the report's summary, even though this is the section that most policymakers would read. Sukhdev and other scientists argue for greater prominence for such economic analysis as a way of quantifying the importance of species such as pollinators. But for the IPBES leadership, doing so would privilege one branch of economics above other disciplines and neglect non-monetary ways to value species.

Many in developing countries see monetary valuation as a 'Western' view of nature, says Unai Pascual, an ecological economist at the Basque

"THE WORLD BENEFITS FROM HAVING MORE OPEN CONVERSATIONS ACROSS THE SCIENCES AND ACROSS CULTURES."

Centre for Climate Change near Bilbao in Spain who is jointly leading the IPBES study on valuing biodiversity. "It is a product of a particular culture and world view and a particular economic system," he says.

AT WHAT COST

These arguments have played out among members of the biodiversity family, but lately the critics of IPBES have sought a broader audience via the letters pages of *Science*, in which they called aspects of the process overly political and accused IPBES of excluding important science[6].

One of the main points of contention is the concept of 'ecosystem services', an idea that gained prominence in 2001 at the start of the last big international assessment of biodiversity, the Millennium Assessment. Ecosystem services are those ecological characteristics, functions or processes that directly or indirectly contribute to human well-being[7].

Ecologists consciously adopted economic language because it was a way to speak to politicians and other policymakers in familiar terms, says Watson, who also chaired that exercise. "We wanted to attract the full range of political actors," he adds.

But although ecosystem services has enjoyed some policy success, researchers who study ecology through this lens say that they have been pushed aside by the IPBES process. "There's too much confusion and negative energy," says Dolf de Groot, a professor of environmental sciences at Wageningen University in the Netherlands who chairs the Ecosystem Services Partnership, a network of some 3,000 scientists

MARC MORITSCH/NGC

The Amur or Siberian tiger is an endangered subspecies.

working in that field. There is a perception among the network's members that they are being banned, he says.

"There is absolutely no ban" of ecosystem services, counters Díaz. "We are not planning to abolish it, erase it, or replace it."

But she adds that scientists working in ecosystem services and those who favour including economic analysis in biodiversity studies must be willing to work with researchers and non-scientists who disagree with such approaches. There is notable scepticism, she says, about the concept of ecosystem services among researchers and governments in developing countries.

Díaz and her colleagues have persuaded IPBES member governments to adopt an alternative assessment framework that they call Nature's Contribution to People. The newer concept, Díaz says, is more appropriate to an assessment of biodiversity because it will include the knowledge of indigenous communities, as well as researchers from developing countries. Many non-Western approaches to biodiversity are less reductive and more holistic, says Sebsebe Demissew, who heads the Gullele Botanic Garden in Addis Ababa and was a former member of IPBES's expert scientific panel. "In such cultures, it makes no sense to place a monetary value on a forest or a river because they are part of the whole body. It's like saying to a human: 'what price, your limb? Or what price, your kidney?'"

For de Groot, however, it is "simply wrong to say that ecosystem services is 'Western' science". He and his allies contend that the language of economic estimates is valuable because it attracts the attention of policymakers. "You are not going to stop the Trump government putting pipelines in nature reserves by emphasizing Nature's Contribution to People," de Groot says.

A HOUSE DIVIDED

One of Watson's biggest concerns is that policymakers will stop paying attention at the first sight of squabbling scientists. So in the first week of June, he convened a meeting of IPBES's scientists and government representatives in Bonn, Germany, to encourage them to green light the more-holistic approach of Nature's Contribution to People. Governments and UN agencies want the fledgling body to succeed in its ambition to be more inclusive, and they endorsed the new model.

Colombia's delegate to IPBES, Ana María Hernández, was at the Bonn meeting. She accepts that IPBES's assessments will challenge the way that scientists and policymakers think about issues. "The science community has one vision," she says. "But not everyone who knows about biodiversity or is a custodian of biodiversity is a scientist. We need to learn to listen to people even if they don't have a PhD," says Hernández, who is head of policy at the Alexander von Humboldt Biological Resources Research Institute in Bogotá.

Christiana Figueres, who successfully steered the Paris climate agreement as the former executive secretary of the UN Framework Convention on Climate Change, is also excited by the IPBES panel's more-inclusive approach. "The world benefits from having more open conversations across the sciences and across cultures. I really applaud and support what they're doing and I hope they succeed," she says.

But others worry about the schism rocking the biodiversity community and IPBES. And the two sides are not getting closer. In fact, the June IPBES meeting left out the Ecosystem Services Partnership, according to de Groot. "We were not invited to any meetings." In response, Watson says that the meeting was restricted to representatives of the 129 IPBES member governments, and the 49 that attended supported the shift away from ecosystem services.

Yet its critics argue that IPBES has become a vehicle for what its member researchers want, rather than offering up practical science that can spur and inform upcoming decisions — such as setting new targets to stem biodiversity loss. These are currently being discussed separately as part of the UN Convention on Biological Diversity.

For IPBES to have the desired impact, it will have to move beyond this divide, says Maria Ivanova of the University of Massachusetts in Boston, who is writing a history of UN Environment. She recommends that Watson and the IPBES leadership extend an olive branch to their critics. "They should at least be having a more constructive dialogue than firing off letters to each other through the pages of academic journals," she says.

Watson seems to concur. The veteran of earlier North–South debates, and of many previous global scientific assessments, knows that the IPCC's early years were also dogged by intra-community skirmishes, in part over the evidence that humans were causing climate change. He also understands that the climate panel's influence would have been much reduced without the community uniting around a scientific consensus.

IPBES is also undergoing an external assessment that is due to report by May next year. The reviewers are well aware of the rift and the risk it poses to IPBES's ambitions for persuading policymakers to take steps that will reduce the loss of biodiversity. If IPBES is to succeed, Watson warns, "We must not, under any circumstances, split the academic community or governments." ■

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