

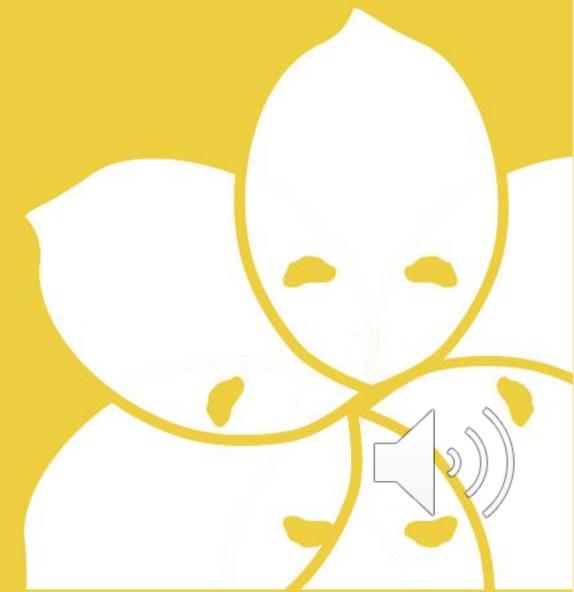


Instituto de Investigación de Recursos Biológicos
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Biodiversity Monitoring for Sustainable Territories

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November 9, 2021



Biodiversity crisis is globally recognized.

REVIEW

doi:10.1038/nature09678

Has the Earth's sixth mass extinction already arrived?

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Paleontologists characterize mass extinctions as times when the Earth loses more than three-quarters of its species over a geologically short interval, as has happened only five times in the past 540 million years or so. Biologists argue that a sixth mass extinction may be under way, given the known species losses over the past few centuries. Here, we review how differences between fossil and modern data and the addition of recently available information influence our understanding of the current extinction crisis. Our results confirm that current extinction rates are higher than would be expected from the fossil record, highlighting the need for effective conservation.



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wildlife World on track to lose two-thirds of wild animals by 2020, major report warns

Living Planet Index shows vertebrate populations are set to decline by 67% on 1970 levels unless urgent action is taken to reduce humanity's impact

Damian Carrington @dpcarrington

Thursday 27 October 2016 00:53 BST

32k Shares 1,694 Comments

“Together, croplands and pastures have become one of the largest terrestrial biomes on the planet, rivaling forest cover in extent and occupying 40% of the land surface.”

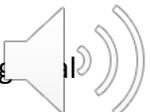
“During the past 40 years, there has been a 700% increase in global fertilizer use and a 70% increase in irrigated cropland area.”

“Seventy-five per cent of the land surface is significantly altered, 66 per cent of the ocean area is experiencing increasing cumulative impacts, and over 85 per cent of wetlands (area) has been lost.”

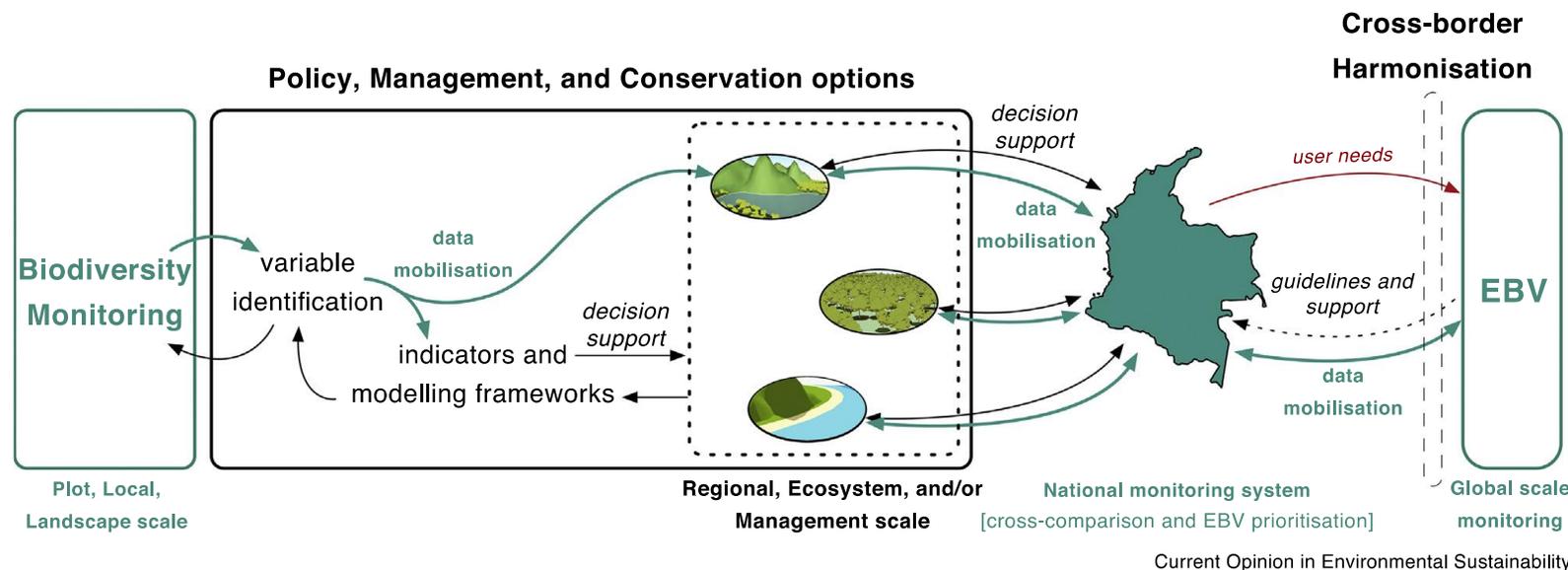
“An average of around 25 per cent of species in assessed animal and plant groups are threatened, suggesting that around 1 million species already face extinction”

Foley, J. A., DeFries, R., Asner, G. P., Barford, C., Bonan, G., Carpenter, S. R., ... & Helkowski, J. H. (2005). Global consequences of land use. *science*, 309(5734), 570-574.

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Multiple scales of decision making are related through policy instruments and private interests.

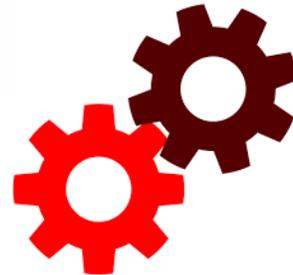
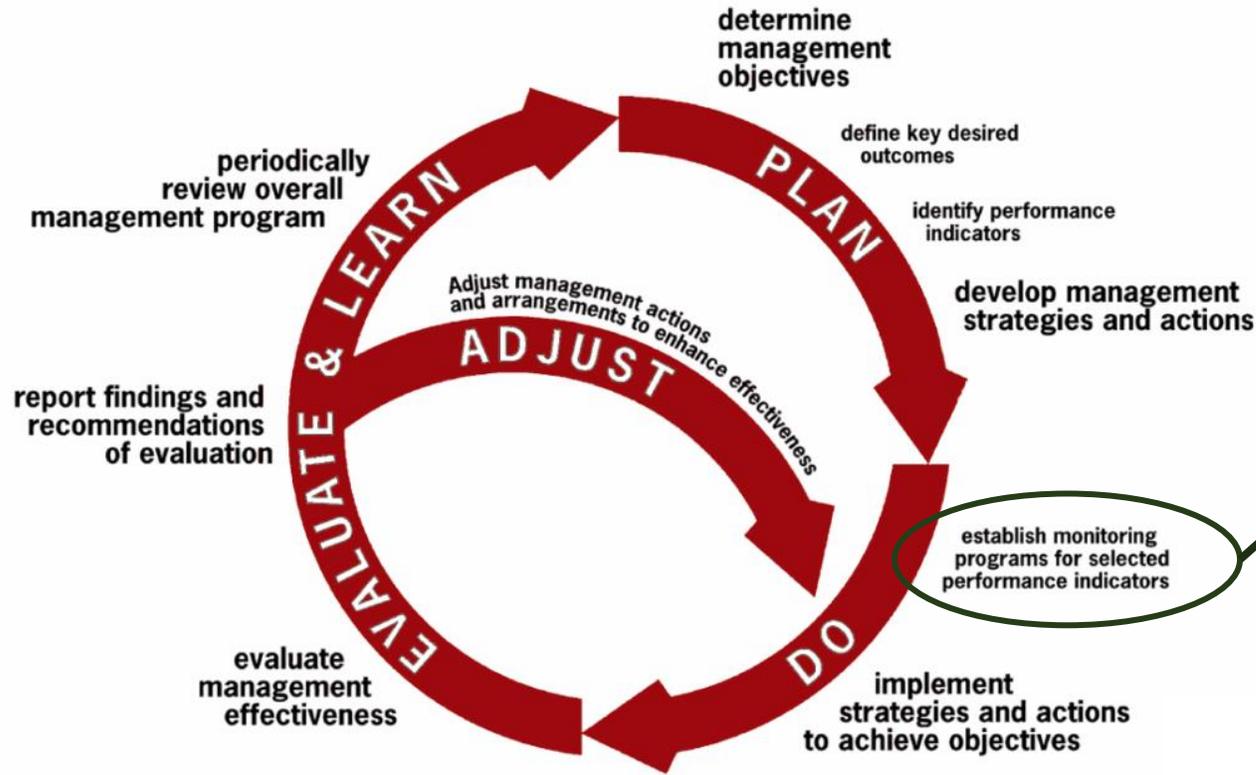


Navarro et al. 2017. Monitoring biodiversity change through effective global coordination. *Current opinion in environmental sustainability*, 29, 158-169.

Scale	National	Subnational	Local
Stakeholder	National government	Subnational governments	Productive sector Land owners/ Land managers
Decision process	National Policies Multilateral agreements	Land use planning	Biodiversity offsets Particular interests



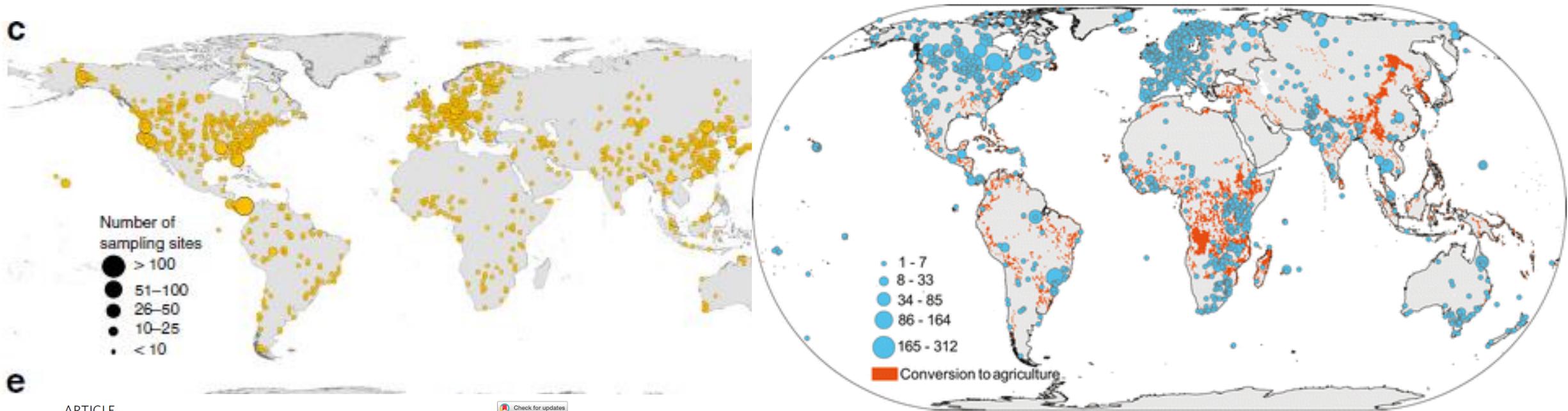
Monitoring in the decision making process.



CSIRO <https://reefresilience.org/management-strategies/reef-management/adaptive-management/>



Differences in the opportunities for making informed decisions are increasing the sustainability gap in a divided world.



ARTICLE

<https://doi.org/10.1038/s41467-020-17688-2> OPEN

Blind spots in global soil biodiversity and ecosystem function research

Carlos A. Guerra^{1,2,5*}, Anna Heintz-Buschart^{1,3}, Johannes Sikorski⁴, Antonis Chatzinotas^{5,1}, Nathaly Guerrero-Ramírez^{1,6}, Simone Cesarz^{1,6}, Léa Beaumelle^{1,6}, Matthias C. Rillig^{7,8}, Fernando T. Maestre^{9,10}, Manuel Delgado-Baquerizo⁹, François Buscot^{3,1}, Jörg Overmann^{4,11}, Guillaume Patoiné^{1,6}, Helen R. P. Phillips^{1,6}, Marten Winter^{1,6}, Tesfaye Wubet^{12,1}, Kirsten Küsel^{1,13}, Richard D. Bardgett¹⁴, Erin K. Cameron¹⁵, Don Cowan¹⁶, Tine Grebenc¹⁷, César Marín^{18,19}, Alberto Orgiazzi²⁰, Brajesh K. Singh^{21,22}, Diana H. Wall²³ & Nico Eisenhauer^{1,6}

AR Pereira HM, et al. 2012.
Annu. Rev. Environ. Resour. 37:25–50

Pereira, H.M., Navarro L.M and Martins I.S. (2012). Global Biodiversity Change: The Bad, the Good, and the Unknown. Annual Review of the Environment and Resources.

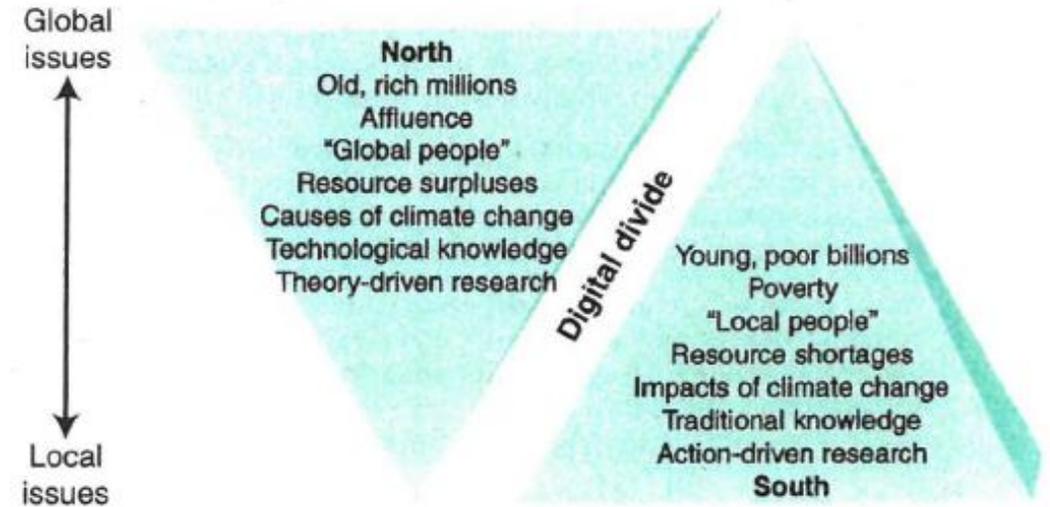


Biodiversity data in a divided world.

Sustainability Science

Robert W. Kates, William C. Clark,* Robert Corell, J. Michael Hall, Carlo C. Jaeger,
Ian Lowe, James J. McCarthy, Hans Joachim Schellnhuber, Bert Bolin,
Nancy M. Dickson, Sylvie Faucheux, Gilberto C. Gallopin, Arnulf Grüber,
Brian Huntley, Jill Jäger, Narpat S. Jodha, Roger E. Kasperson, Akin Mabogunje,
Pamela Matson, Harold Mooney, Berrien Moore III, Timothy O'Riordan, Uno Svedin

www.sciencemag.org SCIENCE VOL 292 27 APRIL 2001



Sustainability science within a divided world.

Research questions:

1. How can environmental and social monitoring and assessment systems be integrated or expanded to provide more useful guidance for advancing toward sustainability?

2. How can research planning, monitoring, evaluation, and decision support activities be better integrated into adaptive management and societal learning systems?



Open science and Open Access values

- Equality
- Social justice
- Democracy
- Participation

- Traceability
- Verifiability
- Reproducibility

Some values are more related to:
Societal impact of science:
“science is too isolated from society to fulfill the promise of working for the common good”

or to:

Linea model: data and technology for decisions.

Holbrook, J. B. (2019). Open science, open access, and the democratization of knowledge. *Issues in Science and Technology*, 35(3), 26-28.

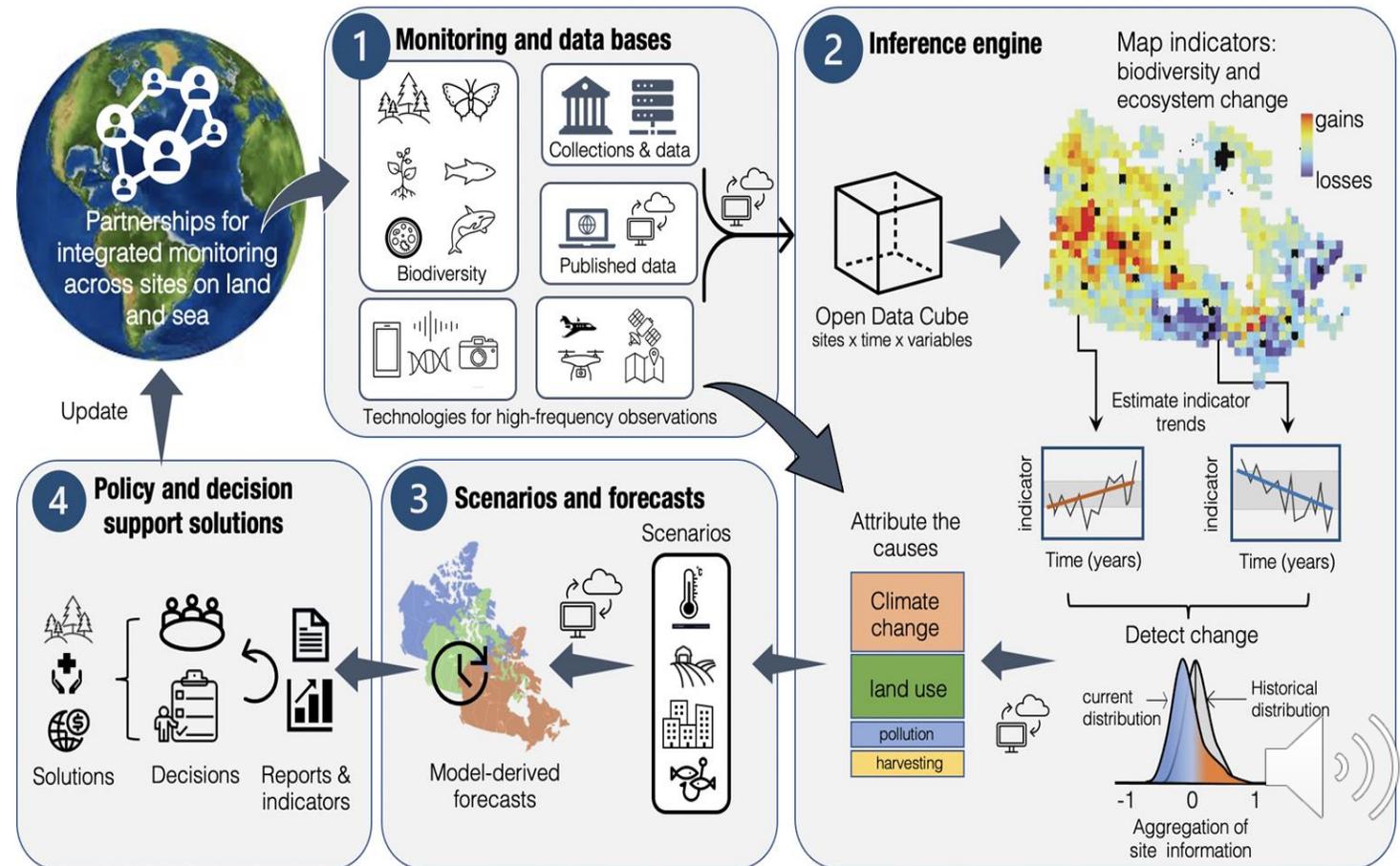


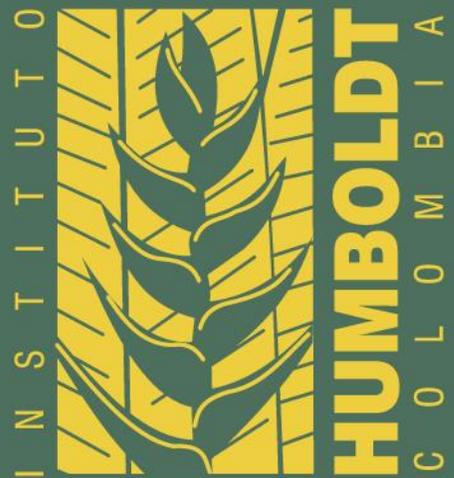
Biodiversity monitoring will reduce uncertainty in biodiversity analysis, improving the generality and validity of theoretical knowledge and the quality of conservation assessments and actions.



Trabajando por la biodiversidad

All countries should be able to implement the cycle of learning to assess how and where biodiversity is changing, adapt biodiversity monitoring to reduce uncertainty, and improve conservation actions.





Trabajando por la biodiversidad

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