Convention on Biological Diversity

Final Briefing

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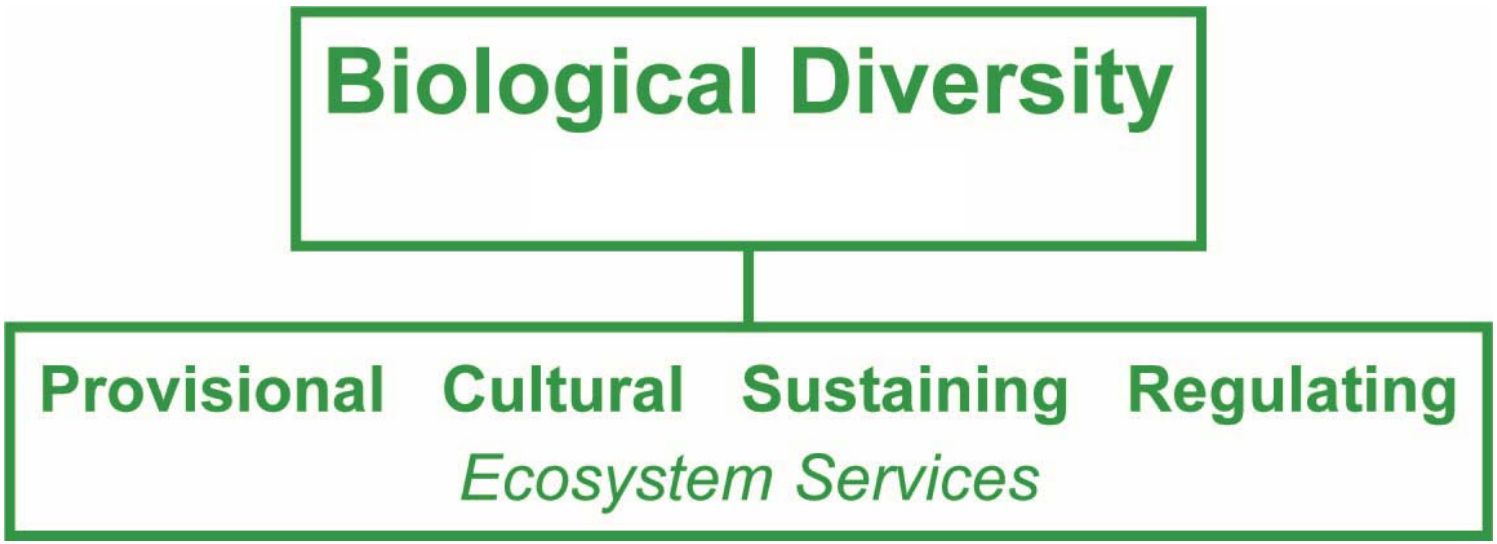
What is Biological Diversity?

Biological diversity is the variability amongst all life forms and is usually a measure of the health of a biological system.

(CBD definition)

Why is it important?



Extrinsic value of biological diversity can be categorized as **Ecosystem Services**.

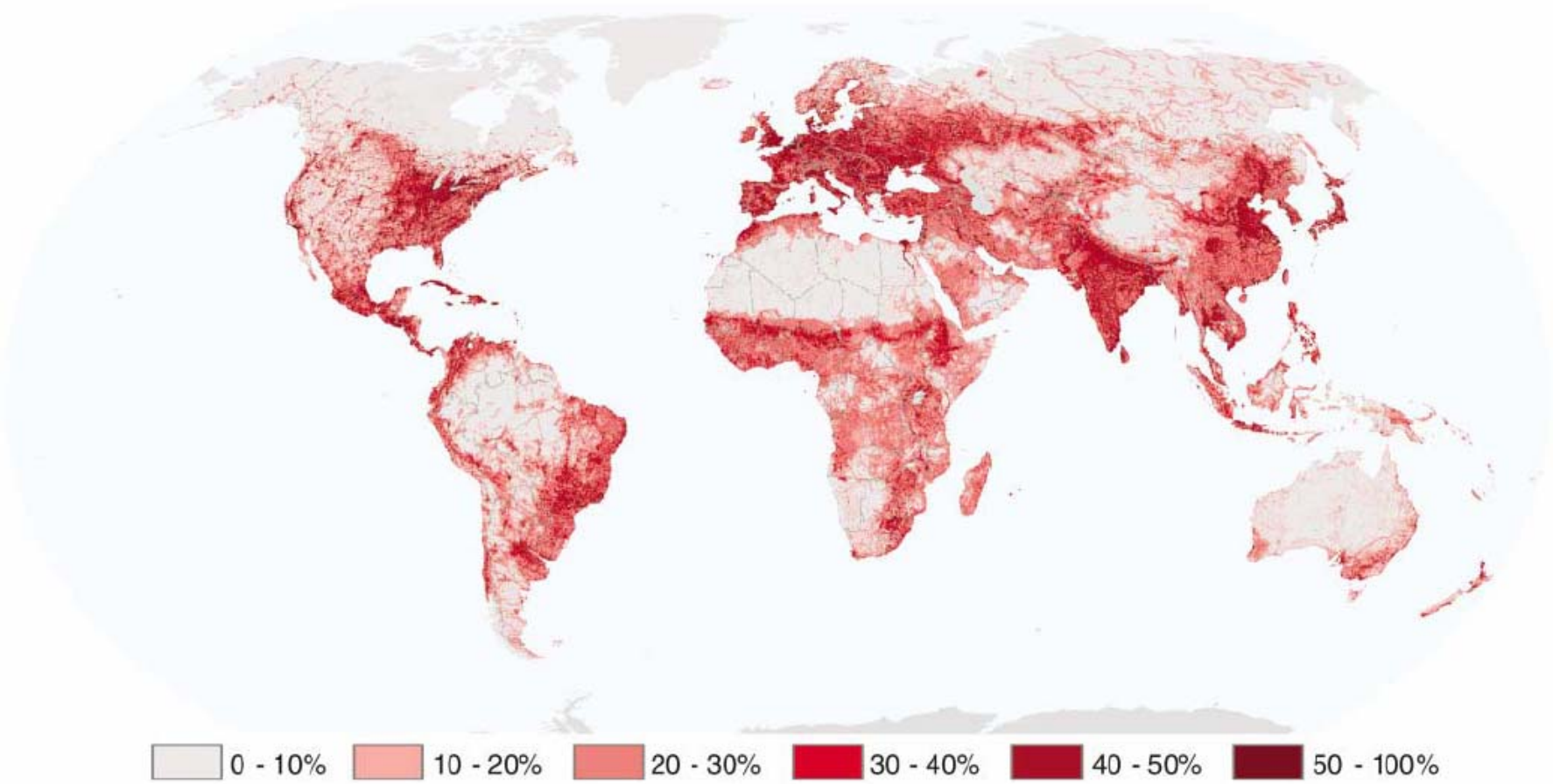
What is causing this loss?

The scientific consensus is:

Anthropogenic Drivers

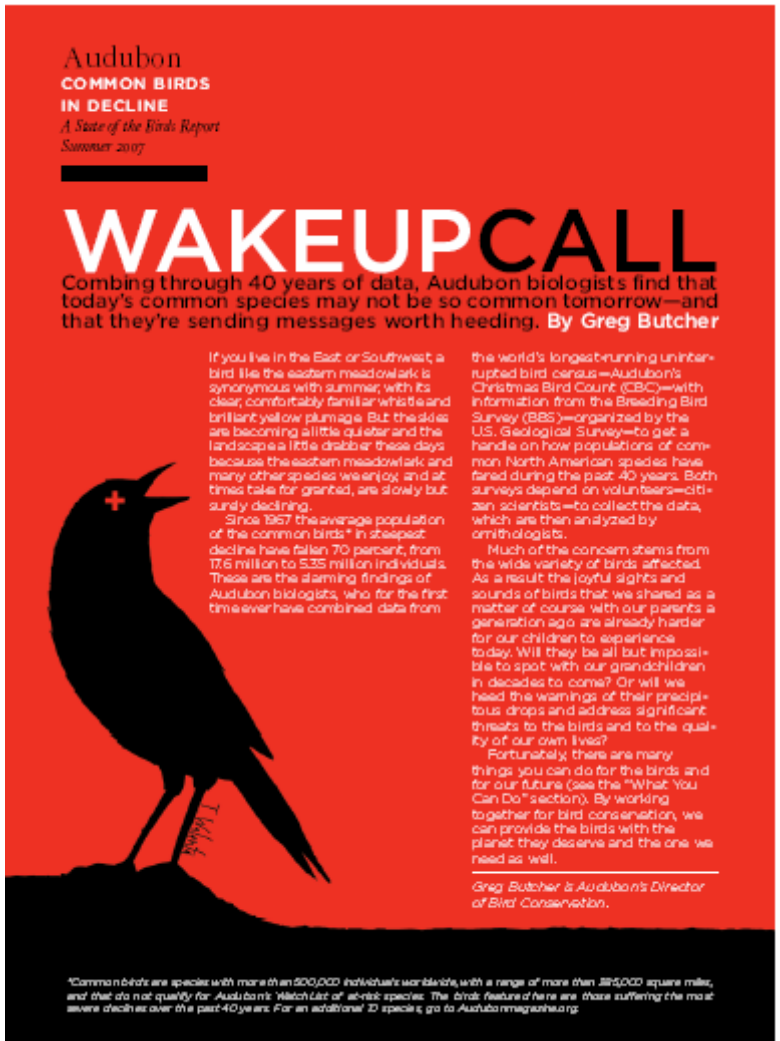
- Habitat Change
- Climate Change
- Invasive Species
- Over-exploitation
- Pollution

Global Human Footprint



Kareiva et al. 2007. Domesticated Nature: Shaping Landscapes and Ecosystems for Human Welfare. *Science* 316:1866-1869

Even the most common species are declining



Audubon
COMMON BIRDS
IN DECLINE
A State of the Birds Report
Summer 2007

WAKEUPCALL

Combing through 40 years of data, Audubon biologists find that today's common species may not be so common tomorrow—and that they're sending messages worth heeding. By Greg Butcher

If you live in the East or Southwest, a bird like the eastern meadowlark is synonymous with summer, with its clear, comfortably familiar whistle and brilliant yellow plumage. But the skies are becoming a little quieter and the landscape a little drabber these days because the eastern meadowlark and many other species we enjoy and at times take for granted, are slowly but surely declining.

Since 1967 the average population of the common birds* in steepest decline have fallen 70 percent, from 17.6 million to 5.35 million individuals. These are the alarming findings of Audubon biologists, who for the first time ever have combined data from the world's longest-running uninterrupted bird census—Audubon's Christmas Bird Count (CBC)—with information from the Breeding Bird Survey (BBS)—organized by the U.S. Geological Survey—to get a handle on how populations of common North American species have fared during the past 40 years. Both surveys depend on volunteers—citizen scientists—to collect the data, which are then analyzed by ornithologists.

Much of the concern stems from the wide variety of birds affected. As a result the joyful sights and sounds of birds that we shared as a matter of course with our parents a generation ago are already harder for our children to experience today. Will they be all but impossible to spot with our grandchildren in decades to come? Or will we heed the warnings of their precipitous drops and address significant threats to the birds and to the quality of our own lives?

Fortunately, there are many things you can do for the birds and for our future (see the "What You Can Do" section). By working together for bird conservation, we can provide the birds with the planet they deserve and the one we need as well.

Greg Butcher is Audubon's Director of Bird Conservation.

*Common birds are species with more than 500,000 individuals worldwide, with a range of more than 2M,000 square miles, and that do not qualify for Audubon's Watchlist of at-risk species. The birds featured here are those suffering the most severe declines over the past 40 years. For an additional 10 species, go to Audubonmagazine.org.

Audubon Society - Birds in Decline - Browse Species http://www.audubon.org/bird/stateofthebirds/cbid/browseSpecies.php

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List of Top 20 Common Birds in Decline

The following are the 20 common North American birds with the greatest population declines since 1967. Click on the name to view each individual profile to learn how you can help.

#1 Northern Bobwhite: a chubby, robin-sized bird that runs along the ground in groups and is found in grasslands mixed with shrubs or widely spaced trees throughout much of the Eastern United States. 82%

#2 Evening Grosbeak: a robund, robin-sized bird found in the mountains of the western United States and Canada; the boreal forest of Canada and the northern edge of the United States east to Nova Scotia. 78%

#3 Northern Pintail: a Mallard-sized "puddle duck" with a slim body found in grassy uplands and untilled crop fields near shallow seasonal and semi-permanent wetlands in much of the Northern Hemisphere. 77%

#4 Greater Scaup: a black, gray, and white duck, smaller than a Mallard, found along lakes and large ponds in large open tundra complexes in Alaska and eastern Canada. 75%

#5 Boreal Chickadee: a small, active, grayish bird with a black chin, brown cap, and brownish sides found in spruce and fir forests in most of Alaska and Canada and the U.S. states adjacent to Canada. 73%

#6 Eastern Meadowlark: a robin-sized bird with a light brown back and brilliant yellow breast with a big, black "V", found in grasslands and open savannas in eastern Canada south through the eastern United States. 72%

#7 Common Tern: a slender, medium-sized, black-capped, gray-and-white bird with thin, pointed bill, and a long, deeply forked tail, found near shore in oceans, lakes, and rivers in the Northern Hemisphere, wintering in the Southern Hemisphere. 71%

#8 Loggerhead Shrike: a robin-sized gray bird with black wings, white wing-patches, a black mask, and black tail, found in short grass with isolated trees or shrubs, especially pastureland in most of Mexico and the southern half of the United States. 71%

#9 Field Sparrow: a small brown songbird with a light rusty cap and a bright pink bill found in abandoned fields with scattered shrubs and trees in the United States east of the Rocky Mountains and Canada. 68%

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#10 Grasshopper Sparrow: a fairly nondescript, small brown bird with a short tail and a flat head often found hiding in larger patches of grassland, usually with few shrubs or trees, in the United States east of the Rocky Mountains and adjacent portions of southern Canada. 65%

#11 Snow Bunting: a small, pale-brown-and-white bird usually found in winter by the ocean, lakes, and rivers shores, grassy fields or roadsides in North America, Alaska and northern Canada. Its breeding plumage is brilliant white and black. 64%

#12 Black-throated Sparrow: a very distinctive small, brown bird with a black throat and mask found in open areas with scattered shrubs and trees, including deserts and semi-desert grasslands in the intermountain region in the western United States, northern Mexico, and Baja California. 63%

#13 Lark Sparrow: a brown bird with distinctive markings on the head and tail, found in grassy habitats with scattered trees or shrubs, including sagebrush, park-like settings, and open deciduous savannas in interior southwestern Canada south to northern Mexico and from Illinois west to California. 63%

#14 Common Grackle: a dark bird longer than most blackbirds, slimmer than most crows, and very iridescent with long center-creased tail, found in a variety of open habitats with trees, including urban areas, parks, riparian areas, and a variety of woody wetlands in the United States and Canada. 61%

#15 American Bittern: a two-foot tall brown and tan striped wading bird found in freshwater wetlands with tall, emergent vegetation in most of the Canadian provinces and the northern half of the contiguous United States. 59%

#16 Rufous Hummingbird: a very small, almost all cinnamon-colored bird with a red throat, found wherever flowers are near, from dense forests to sunny gardens in southern Alaska to northern California and Mexico. 58%

#17 Whip-poor-will: a bird only active at night with mottled brown plumage, found in dry, open woodlands with little underbrush in most of the eastern United States, and parts of southeastern and south-central Canada, southwestern United States, Mexico, and into northern Central America. 57%

#18 Horned Lark: a small grayish brown bird with dramatic black, yellow, and white facial and breast pattern, and small, feathered "horns" on its head, found in open, barren habitats in Canada, the United States (including Alaska), and northern Mexico outside of heavily forested areas. 56%

#19 Little Blue Heron: a dark blue bird with a light blue bill that has a black tip in adults, found in a wide variety of shallow waters and wetlands, including fresh and saltwater in the southeastern United States, Bahamas, Cuba, and most of the coast of Mexico. 54%

#20 Buffled Grouse: a round-bodied, mottled-brown, crow-sized bird found in aspen forests, but in parts of the United States, found in young, open, mixed deciduous-coniferous forests, also in Alaska, through most of Canada, and the northern United States. 54%

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http://www.audubon.org/bird/stateofthebirds/cbid/

The World is Taking Notice!

The Convention of Biological Diversity:

- The first global treaty to explicitly take comprehensive ecosystem based approach
- A multi-lateral, voluntary agreement
- Ratified by 190 countries (parties)
- Allows each party to implement its own provisions according to guidelines
- Mandates that financing and administration are shared according to ability
- Integrated with UN Millennium Development Goal #7

What are the Convention's Main Objectives?

1. To preserve biological diversity as essential to the future of the earth and its ecosystem services
2. To promote sustainable use of biological resources
3. To ensure the equal distribution of genetic resources

How do the proposed solutions work?

Protected Areas

Economic Incentives

Certification

Ecosystem Approach

CITES

How do the proposed solutions work?

Mahogany Case

Protected Areas

Economic Incentives

Certification

Ecosystem Approach

CITES

What is the scientific evidence that the solutions work?

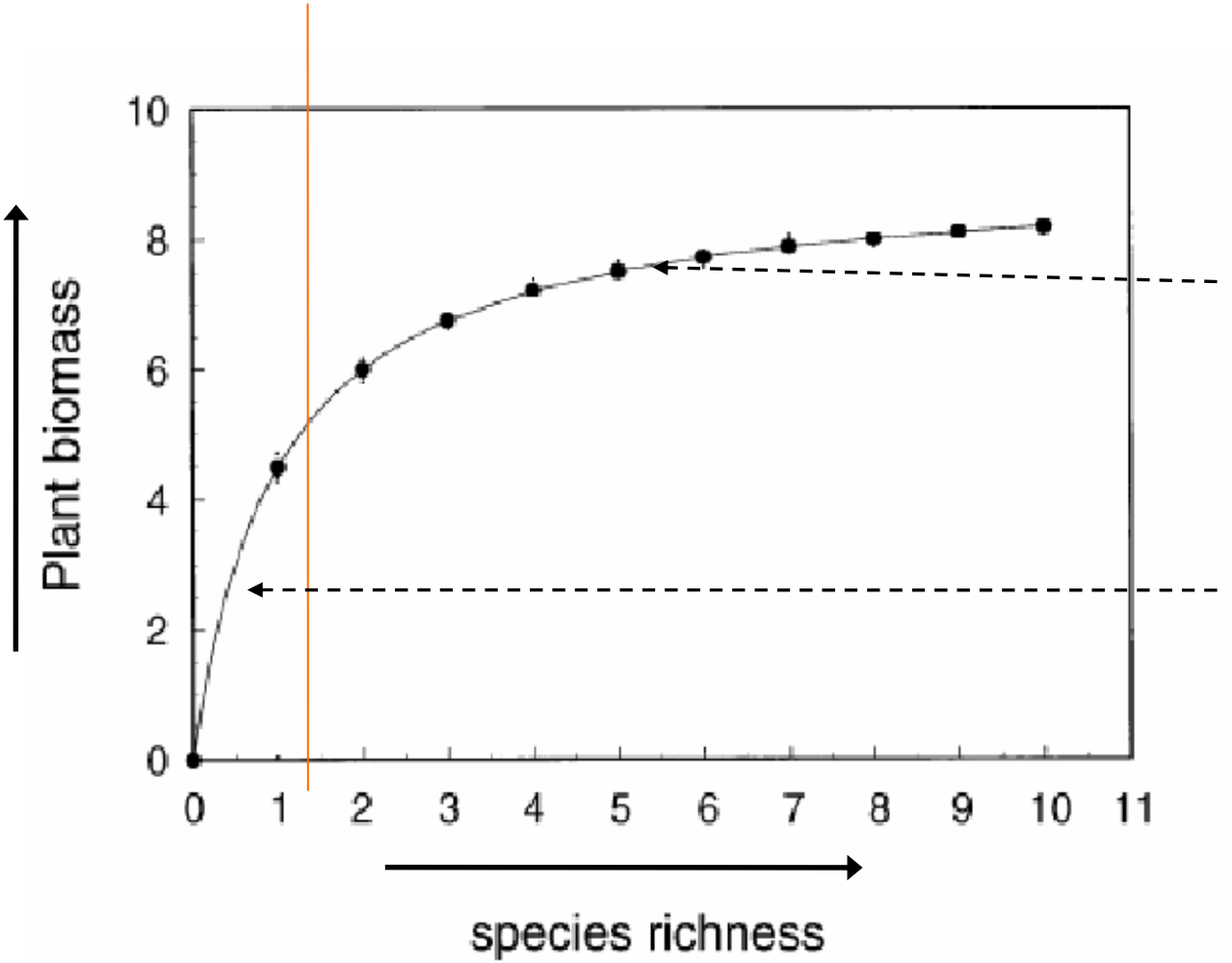
↑ Biological Diversity
leads to
↑ Ecosystem Function

↑ Functional Diversity
equals
↑ Ecosystem Function

(Guternam 2000; Naeem et al. 1994)

One of the many components in Biological Diversity is Functional Diversity

Theoretical Model of Ecosystem Function



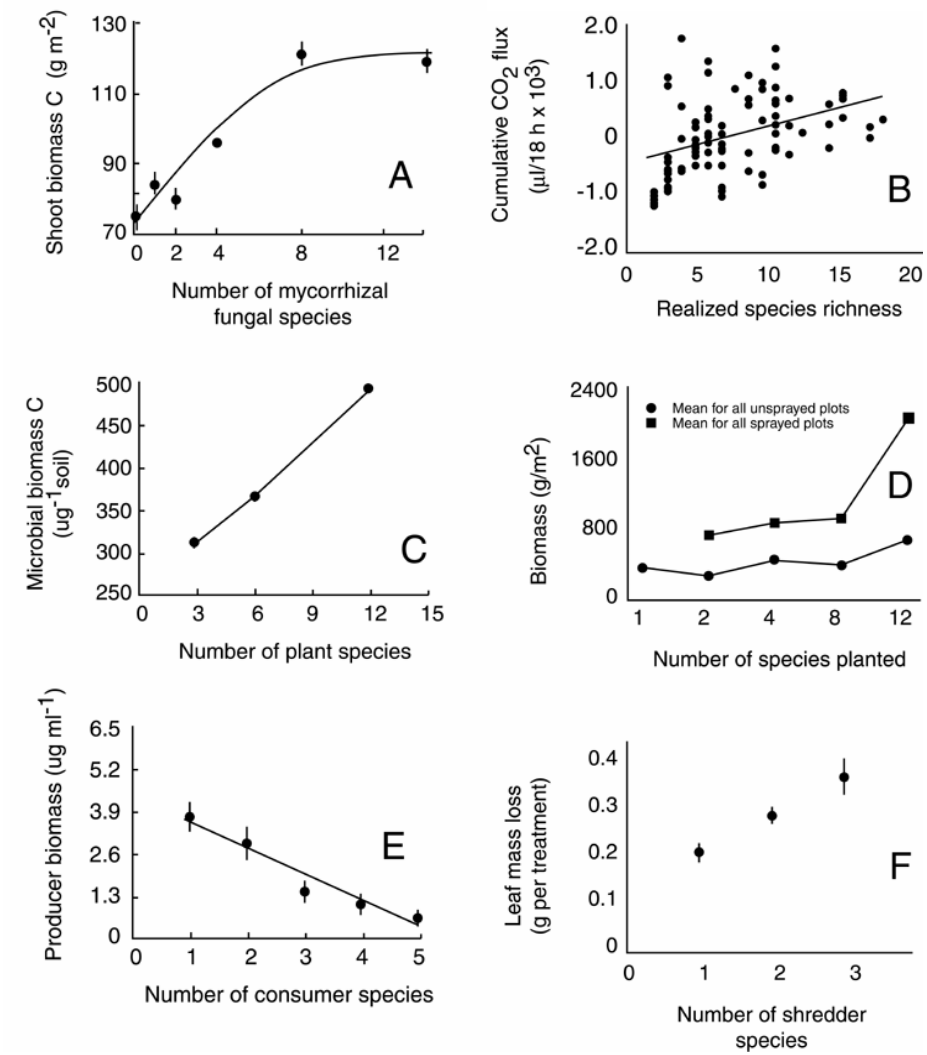
Starts to Plateau

Exponential increase

Simplification of a graph taken from Hooper *et al*, 2005

Experimental Studies of Ecosystem Function

Changes
in biodiversity
changes ecosystem
function



What's causing these results?

Is it **Complementarity?** Or **Sampling Effect?**

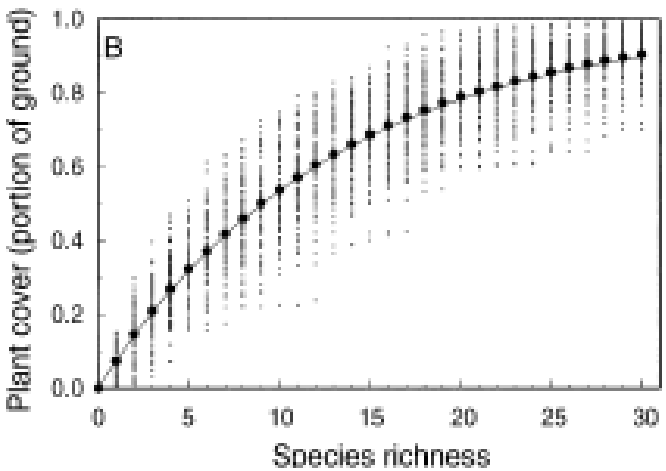
When species use resources in different ways function increases as a result of increased species diversity.

Statistical probability that more diverse communities show more function.

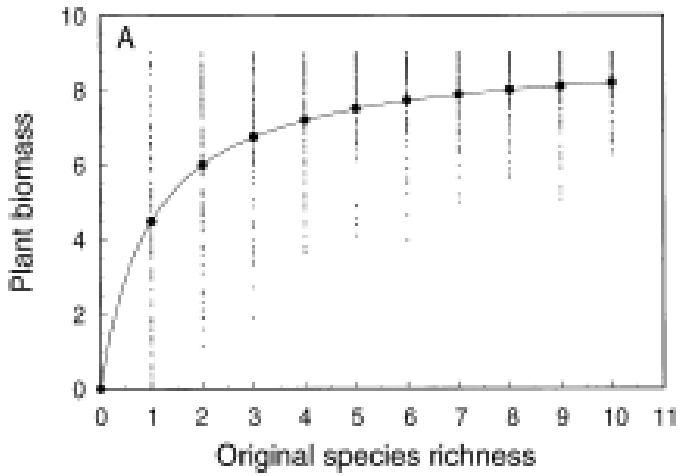
Example

(Millennium Ecosystem Assessment, 2005b)

Theoretical complementarity



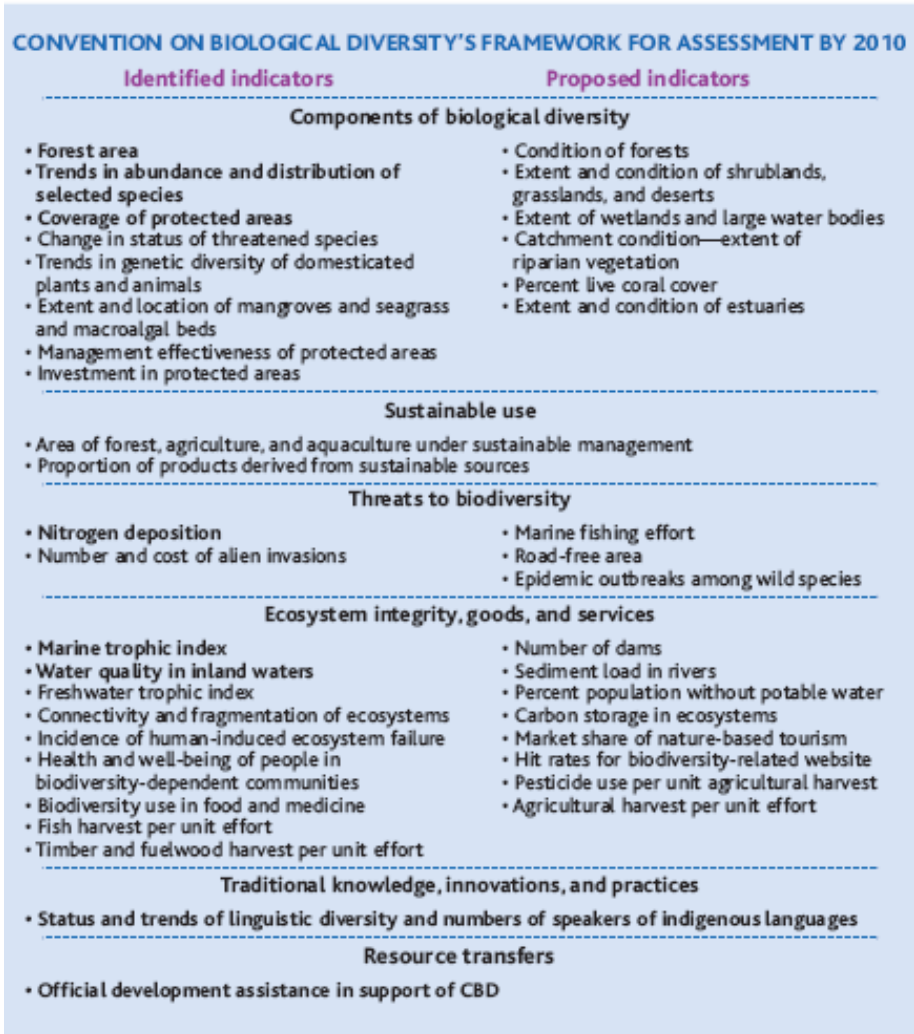
Theoretical sampling effect



Hooper, 2005

How do we measure the success of the Convention?

- Ecological Metrics are Improving
- Participation is Increasing - currently 65% of countries are reporting

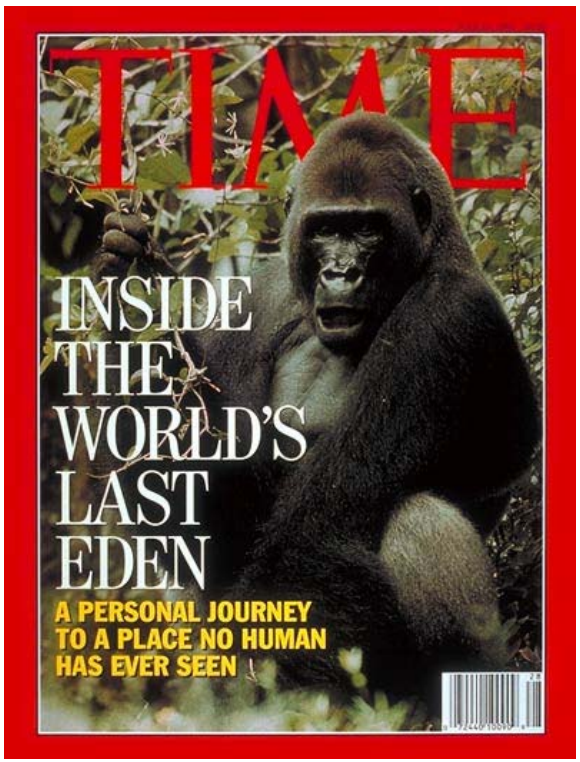


CONVENTION ON BIOLOGICAL DIVERSITY'S FRAMEWORK FOR ASSESSMENT BY 2010

Identified indicators	Proposed indicators
Components of biological diversity	
• Forest area	• Condition of forests
• Trends in abundance and distribution of selected species	• Extent and condition of shrublands, grasslands, and deserts
• Coverage of protected areas	• Extent of wetlands and large water bodies
• Change in status of threatened species	• Catchment condition—extent of riparian vegetation
• Trends in genetic diversity of domesticated plants and animals	• Percent live coral cover
• Extent and location of mangroves and seagrass and macroalgal beds	• Extent and condition of estuaries
• Management effectiveness of protected areas	
• Investment in protected areas	
Sustainable use	
• Area of forest, agriculture, and aquaculture under sustainable management	
• Proportion of products derived from sustainable sources	
Threats to biodiversity	
• Nitrogen deposition	• Marine fishing effort
• Number and cost of alien invasions	• Road-free area
	• Epidemic outbreaks among wild species
Ecosystem integrity, goods, and services	
• Marine trophic index	• Number of dams
• Water quality in inland waters	• Sediment load in rivers
• Freshwater trophic index	• Percent population without potable water
• Connectivity and fragmentation of ecosystems	• Carbon storage in ecosystems
• Incidence of human-induced ecosystem failure	• Market share of nature-based tourism
• Health and well-being of people in biodiversity-dependent communities	• Hit rates for biodiversity-related website
• Biodiversity use in food and medicine	• Pesticide use per unit agricultural harvest
• Fish harvest per unit effort	• Agricultural harvest per unit effort
• Timber and fuelwood harvest per unit effort	
Traditional knowledge, innovations, and practices	
• Status and trends of linguistic diversity and numbers of speakers of indigenous languages	
Resource transfers	
• Official development assistance in support of CBD	

Is it working?

In 15 years, this habitat has gone from Eden to complex social landscape.

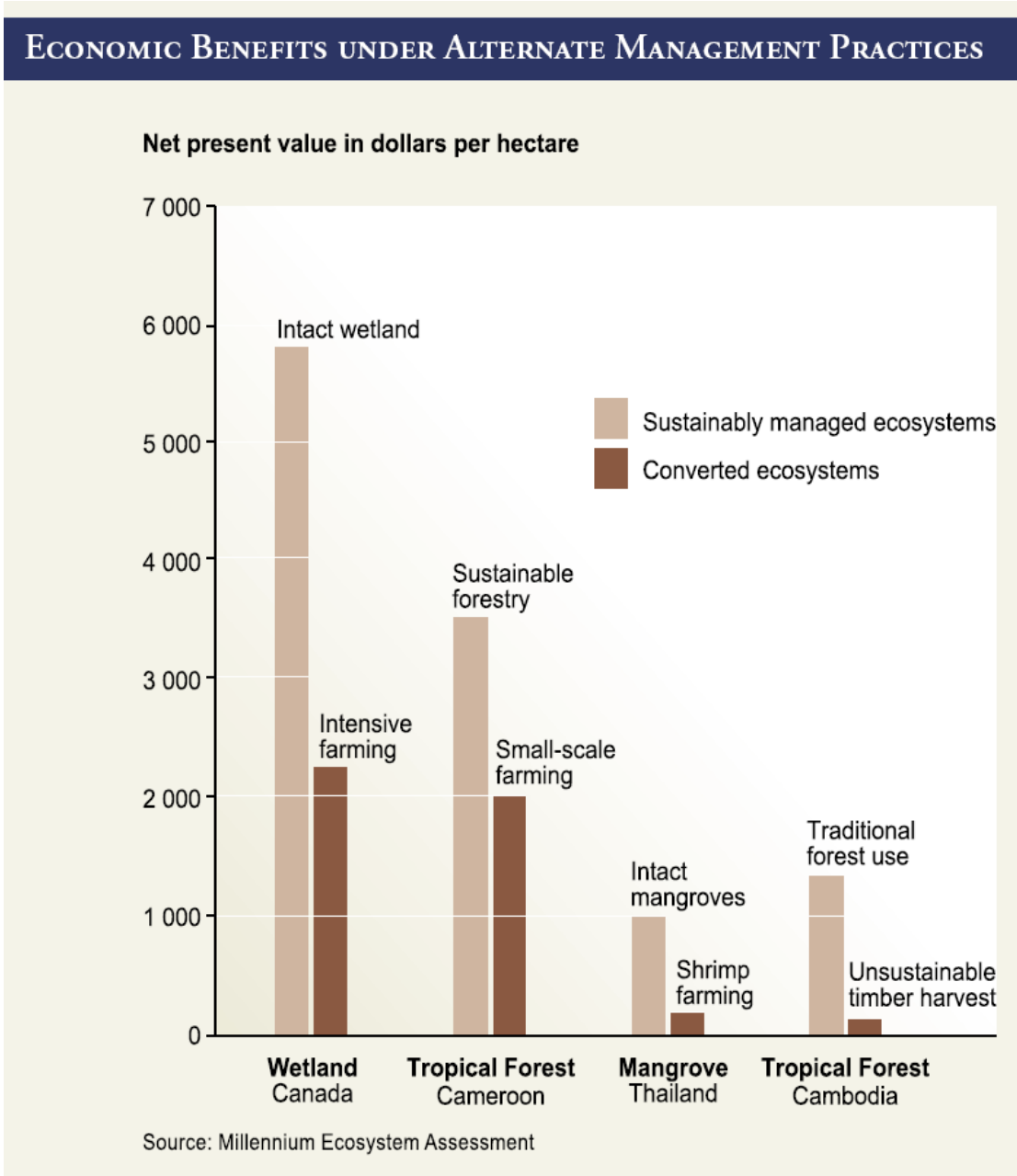


Time 13 July 1992

Newsweek
6 August 2007

The solutions can work

Practices that conserve biodiversity show **substantial increases** in their net value



Conclusion

The decreasing loss of biological diversity is a global challenge however the scientific evidence shows there are a number solutions that will work with international cooperation.

Thank you