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Text from presentation on E.O. Wilson's book, 'The Future of Life'

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1) Our relationship with the environment, Toles Washington Post cartoon 2003. Uncle Sam is hugging a woman labeled The Environment, saying 'I promised to love you until the mountains crumbled into the valleys and I meant it'. Lower panel shows Mountain-Top Removal Mining Operation #347 at work leveling mountains and filling valleys. At bottom is added '..until all the oceans are overfished..'

2) Pale Blue Dot. This incredible picture, taken by NASA's Mars Global Surveyor Spacecraft on May 22, 2003 shows Earth and Jupiter, in the same frame.

From Pale Blue Dot: A Vision of the Human Future in Space

by [Carl Sagan](#) Random House 1994 'Look again at that dot. That's here. That's home. That's us. The Earth is the only world known so far to harbor life.'

3) Mass extinctions in earth history - Will there be a human-caused mass extinction event comparable in severity to past extinction events? 250 million years ago -mass extinction between Paleozoic and Mesozoic Eras, 90% of all known Paleozoic species disappeared. 65 million years ago - mass extinction between Mesozoic and Cenozoic Eras, end of dinosaurs and other large reptiles, rise of birds and mammals. Present – will there be a comparable mass extinction in the Holocene of large animals and birds, loss of ecosystems?

4) 'The Future of Life' by E.O.Wilson P. 171 "It has always been clear that the struggle to save biological diversity will be won or lost in the forests."

5) Space shuttle photo: Rondônia, Brazil August 1992 This photograph, showing the destruction of tropical rain forests, provides a visual indication of the rate of deforestation that is taking place in the state of Rondônia, which has been especially hard hit by deforestation. The amount of clear-cut area now exceeds the area of remaining rain forest timber stands. The solid dark green areas show the remaining tropical rain forest canopy.

6) Space shuttle photo: Southern Madagascar December 1993 Almost two-thirds of Madagascar, the world's fourth largest island, is seen in this near-vertical, almost cloud-free photograph. The island is composed of relatively narrow coastal plains on both the east and west coasts, with a much larger central plateau that extends generally north-south for the entire length of the country. The dark north-south line that parallels the east coast shows the remaining 10 percent of the original lowland and mountain rain forests that exist on Madagascar. The major cause of the dramatic decrease in forests has been the slash-and-burn agriculture practiced by small-scale farmers.

- 7) Space shuttle photo: Okanagan Lake, British Columbia, Canada August 1997 The northern half of Lake Okanagan (elongate bluish feature) is in the center of this east-looking oblique image. The checkered landscape east and west of Lake Okanagan (small, light colored angular patches) is a result of extensive timber clear-cutting. The two thin converging lines (light colored) are power-line right of ways that have been cut through the heavily forested slopes. Part of the Space Shuttle orbiter can be seen in the lower left corner of the image
- 8) Marine systems are under stress too: Areal photo of silt from erosion due to land use in Burma choking marine coastal ecosystems
- 9) Decline in Biodiversity- What's at stake? Ethical concerns, Economic values, Biosphere services

10) Ethical concerns:

- During the past 150 years, humans have directly impacted and altered close to 47% of the global land area
- Under one bleak scenario, biodiversity will be threatened on almost 72% of Earth's land area by 2032
- 48% of South East Asia, the Congo Basin, and parts of the Amazon will likely be converted to agricultural land, plantations and urban areas --compared with 22% today, suggesting wide depletions of biodiversity

Wilson suggests human beings should concern themselves with their legacy.

"Have you ever wondered how we'll be remembered 1,000 years from now, when we seem as remote as Charlemagne," he asks.

- 11) Economic value; *In your new book Future of Life you deflate the myth that environmental policy is hostile to economic growth. Can you elaborate?*

Wilson: The living resources of the world -- ecosystems and its species -- are still largely unexplored, much less studied for the benefits they might hold for humans, for example, new pharmaceuticals or water purification. Some ecologists and economists have estimated that the total value of these natural ecosystems, that's the total amount of services they provide to humanity, is in the vicinity of 30 trillion dollars a year. That's more than the total of the gross national products of all nations combined. And it's free!

To save and make fuller use of them in a non-obtrusive way is economically valuable to us. To destroy them is to force humanity into an artificial world in which we have to personally manage our water systems, our food supply, and our atmosphere by prosthetic devices day by day instead of relying on powerful organisms to do the work for us. Do we want to turn Earth literally into a spaceship that requires constant tinkering?

Nature's services are worth \$30 trillion a year. Why destroy such a valuable commodity?

12) Biosphere services: “We need what we are destroying. Creepy-crawlies and weeds are the very foundation of life, the little things that run the earth, cycle and recycle nutrients, create the air and soil. And they do it for free. Without them, Wilson assures us the terrestrial ecosystems of the world would collapse within a year, making human life unsustainable. That’s before taking into account the species we are driving to extinction provide us priceless resources for scientific information, new pharmaceuticals, and much more.”

13) There is still time: Current status of species: 1% presumed extinct, 7% critically imperiled, 9% imperiled, 15% vulnerable, 67% apparently secure

14) But we still are finding species new to science: as an example
‘New frog family from India reveals an ancient biogeographical link with the Seychelles’
S. D. BIJU^{1,2,*} AND FRANKY BOSSUYT^{2,*}, *Nature* 425, 711 - 714 (16 October 2003)
Here we report the discovery of a burrowing frog from India that is noticeably distinct from known taxa in all anuran families. Phylogenetic analyses of 2.8 kilobases of mitochondrial and nuclear DNA unambiguously designate this frog as the sister taxon of Sooglossidae, a family exclusively occurring on two granitic islands of the Seychelles archipelago (*off the southeast coast of Africa, just above Madagascar*). Furthermore, molecular clock analyses uncover the branch leading to both taxa as an ancient split in the crown-group Neobatrachia. Our discovery discloses a lineage that may have been more diverse on Indo-Madagascar in the Cretaceous period, but now only comprises four species on the Seychelles and a sole survivor in India. Because of its very distinct morphology and an inferred origin that is earlier than several neobatrachian families, we recognize this frog as a new family.

15) Wilson’s ‘Bottleneck’ – world population growth through history, a rapid increase in the last 200 years compared to much slower growth in the past, we live in extraordinary times

16) Some history:

1962 - ‘*Our Crowded Planet, Essays on the Pressures of Population*’, edited by Fairfield Osborn, Doubleday & Co.

1971 – Paul Ehrlich. ‘*The population bomb.*’ New York: Ballantine Books

1970-72 – Rockefeller Commission on Population Growth and America’s Future, established by President Nixon, findings disavowed in the election year of 1972.

1974 – National Security Study Memo 200 (NSSM 200) directed by re-elected President Nixon to determine implications of world population growth on US national security. The resulting document was signed by President Ford and classified until 1989. None of the recommendations of either effort were ever acted upon.

1980 - William R. Catton, ‘*Overshoot: The Ecological Basis of Revolutionary Change*’ Univ. Illinois Press Urbana: ‘We are backing into the future, eyes firmly fixed on the past.’

1990 – Paul and Anne Ehrlich, ‘*The Population Explosion*’, Simon & Schuster, New York.

1992- D.H. Meadows, D.L. Meadows, and J. Randers 'Beyond the Limits' Chelsea Green Publishing Co. Post Mills VT

1993 – Garrett Hardin, 'Living Within Limits: Ecology, Economics and Population Taboos' Oxford Univ. Press

17) The two jaws of Catton's vise:

From the book by sociologist William R. Catton, "*Overshoot: the Ecological Basis of Revolutionary Change.*", 1980

"We, the human species, are inexorably tightening the two jaws of a vise around our fragile civilization,....there are already more human beings alive than the world's renewable resources can perpetually support. We have built complex societies that therefore depend on rapid use of exhaustible resources. Depletion of resources we don't know how to do without is reducing this finite planet's carrying capacity for our species.

That is one jaw of the closing vise.

The other is the accumulation of harmful substances that are unavoidably created by our life processes. There are so many of us, using so much technology, that these substances accumulate too fast for the global ecosystem to reprocess them; in fact, by overloading the natural reprocessing systems we are even breaking down their already limited capacity to set things right for us.'

18) One of the problems associated with the second jaw of the vise is global climate change: 2003 Toles cartoon: Top panel: Wife to husband: 'The polar ice is melting, now can we start taking global warming seriously?' Husband: 'Not yet, these things tend to be self correcting.' Bottom panel, living room is awash in water. Wife: 'Self-correcting?' Husband: 'The furnace just flooded out', at bottom: 'And see! The SUV won't start'.

19) Limits to growth figure at: <http://dieoff.org/page25.htm>

20) Final words from Wilson: "I'm a cautious optimist. On the matters of environment I like to think of that phrase that was used by A.A. Milner. In the middle of the Nineteen Sixty-seven war he said, 'When all else fails, men turn to reason.' "

"It's a race between destruction and enlightened policy. I think probably we're going to come out OK."

21) April 24 2003 Toles cartoon: Earth day 2003, showing President Bush at the 'Ceremonial Planting of an Environmentalist'