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Inspire Conference. Strasbourg (France)

September, 2017

Monitoring marine ecosystems.

The role of the DIRECTIVE 2004/35/CE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.

A potential criminal liability.

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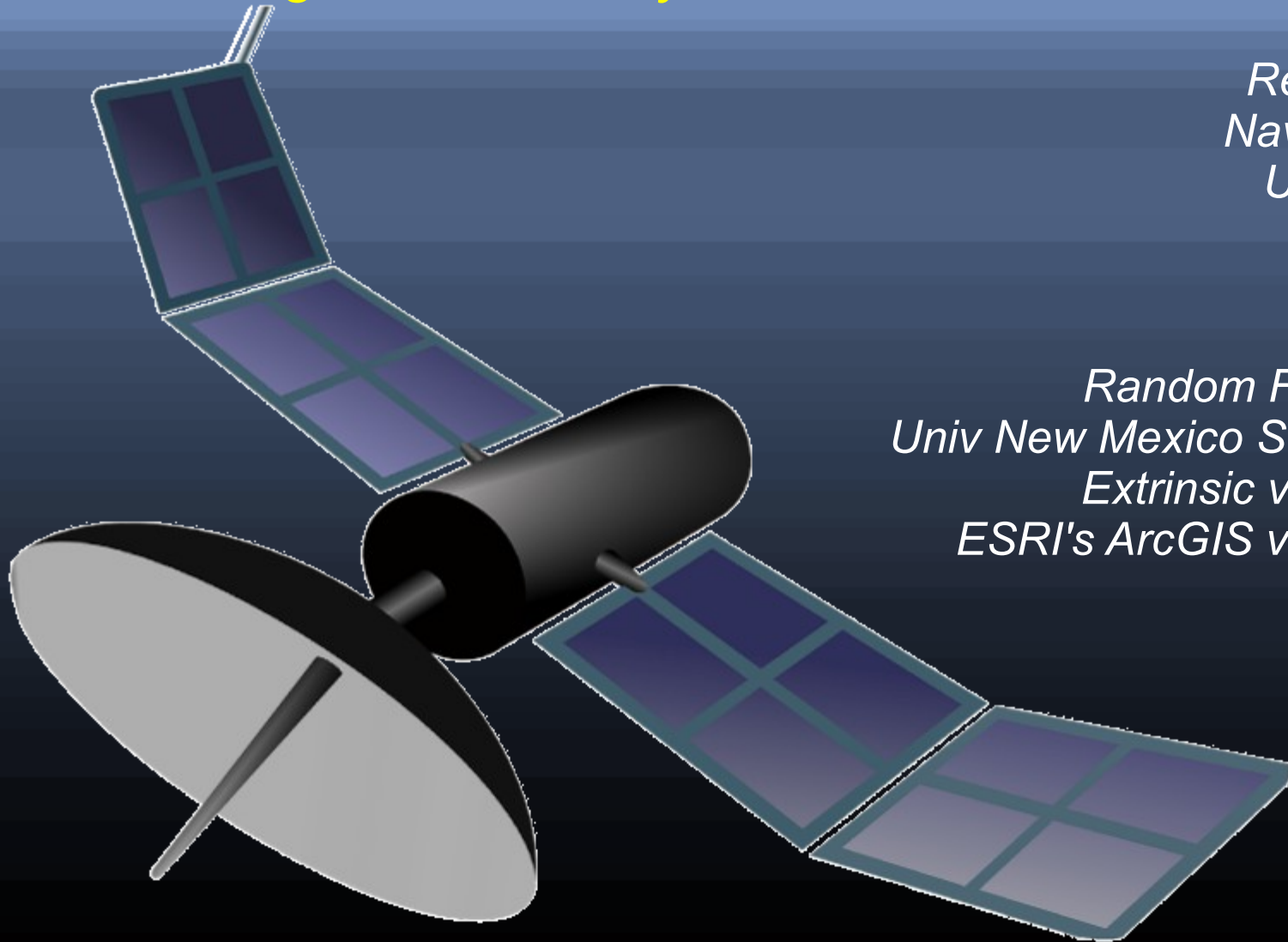
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I. Monitoring marine ecosystems. How. Facts. Extinction Rate



*Remote Sensing and
Navigational Satellites,
Underwater Drones,
Aircrafts,
ROVs, Buoys,
In situ sensors.*

*Random Forest Calculations.
Univ New Mexico Study carried in 2011
Extrinsic vs Intrinsic Variables
ESRI's ArcGIS v9.3 spatial statistics*



I. Monitoring marine ecosystems. Facts / Extinction Rate (cont)

Predictors of extinction risk. External factors vs marine capacity to rebound for marine species. Unbearable Extinction Rate.

Escalating Human impact against marine mammals and marine life in general: Hunting, extermination programs, climate change, spread of diseases and exotic species illegal trade, deforestation, habitat fragmentation, urbanization, desertification, overfishing (depleted fish populations between 50 and 90%), overharvesting, altering food chains and marine mammal migration patterns, less sea ice (decline in seal and polar bear population)

Major mass extinction?. Unbearable extinction triggering factors: Abrupt carbon isotope rising patterns / Ocean acidification (ongoing decrease in Earth's oceans pH (- 0.1), caused by the uptake of carbon dioxide (CO₂) from the atmosphere. If 450 ppm is reached then = point of no return). 30% Increase in Hydrogen. 2040 estimate deadline.



I. Monitoring marine ecosystems. Facts / Extinction Rate (cont)

An estimated 30–40% of the carbon dioxide from human activity released into the atmosphere dissolves into oceans, rivers and lakes.

Recent estimates have calculated that 26 percent of all the carbon released as CO₂ from fossil fuel burning, cement manufacture, and land-use changes over the decade 2002–2011 was absorbed by the oceans. (About 28 percent went to plants and roughly 46 percent to the atmosphere.) as in Jul 3, 2013

407.25 parts per million (ppm) Mauna Loa Observatory, Hawaii (Scripps CO₂) Preliminary data released August 4, 2017. "parts per million" and it also can be expressed as milligrams per liter (mg/L).

The global concentration of carbon dioxide in the atmosphere – the primary driver of recent climate change – has reached 400 parts per million (ppm) for the first time in recorded history, according to data from the Mauna Loa Observatory in Hawaii. May 21, 2013



I. Monitoring marine ecosystems. Facts. Extinction Rate (cont)

International Union for the Conservation of Nature

25% Marine Mammals Risk of Extinction

40% marine mammal species still UNKNOWN due to lack of satellite data

*Effects of Ocean Acidification on Marine Ecosystems. TROPICAL CORAL REEFS /
OPEN OCEAN PLANKTONIC ECOSYSTEMS / COASTAL ECOSYSTEMS / DEEP SEA
MARINE LIFE / HIGH LATITUDE ECOSYSTEMS*

Do phytoplankton absorb co2? Climate and the Carbon Cycle.

Functions of Coral Reefs / effect carbon dioxide on krill

Source: Drivers and hotspots of extinction risk in marine mammals Ana D. Davidson- et a / Impacts of Climate Change on Marine Organisms and Ecosystems .Andrew S.Brierley et al



I. Monitoring marine ecosystems. Facts. Extinction Rate (cont)

As in 2012. Extinct marine mammals: Steller's sea cow, Caribbean Monk Seal, Japanese Sea Lion, (source IUCN Red List), North Pacific long-finned pilot whale), Sea mink, Neovison macrodon EX

As in 2017, earth mammals are vanishing at unprecedented rates: in danger of extinction 1 out of 8 birds, 1 out of 4 mammals, 1 out of 4 conifers, 1 out of 3 amphibians, 6 out of 7 marine turtles.,, the list goes on

75% of genetic diversity of agricultural crops has been lost

75% of the world's fisheries are fully or over exploited

Up to 70% of the world's known species risk extinction if the global temperatures rise by more than 3.5°C

1/3rd of reef-building corals around the world are threatened with extinction

Over 350 million people suffer from severe water scarcity



I. Monitoring marine ecosystems. Facts. Extinction Rate (cont)

Extinction rate, Humans accelerated extinction by 1000x

Human impact needs to be reassessed (re-estimated according to new factors, moral and ethics) with environment values, otherwise the situation will become more and more complicated for marine life to coexist along with human activities.



Data deficient.... need a deeper study, information poorly known for species,

Source: Drivers and hotspots of extinction risk in marine mammals Ana D. Davidson- et a / Impacts of Climate Change on Marine Organisms and Ecosystems .Andrew S.Brierley et al



II. The role of the DIRECTIVE 2004/35/CE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.

Polluter pays (Article 1). Marine Scope? (Article 1,2, b)

Court proceedings. Fast and reliable? (Article 13,1)

Precautionary measures. Seizing assets. Banning activities?

The Insurance company role ? (Article 14,2)

The environment consultant role?



III. A potential criminal liability. Issues and Consequences

2004 Environment Directive? No reference (criminal / penal)

Against Individuals or Companies

Crime against Humanity. International Criminal Court. Governments, individuals and companies could be prosecuted for crimes against humanity by the international criminal court.

*ICC. OFFICE OF THE PROSECUTOR
POLICY PAPER ON CASE SELECTION AND
PRIORITISATION*

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III. A potential criminal liability. Issues and Consequences (cont)

Fast and global enforceability of judgments

Other approaches. Citizens Bringing Proceedings against their own countries to make them comply with laws and regulations. Dutch Ruling ordered The Netherlands to cut carbon emissions by 25% within five years.

Educating with values no matter the sector

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Thank you!

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