# Aquatic Conservation in the Age of the Sustainable Development Goals. Crisis, What Crisis?

k.irvine@un-ihe.org

Kenneth Irvine, k.irv Chair of Aquatic Ecosystems IHE Delft Institute for Water Education, Netherlands



# SUSTAINABLE GALS





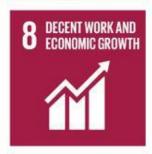
































http://unu.edu/globalgoals

3oals@trollback.com | +1.212.529.101

### Let's clarify other terminology

The Oxford English Dictionary definition of 'crisis':

- > a time of intense difficulty or danger;
- a time when a difficult or important decision must be made;
- the turning point of a disease when an important change takes place, indicating either recovery or death.

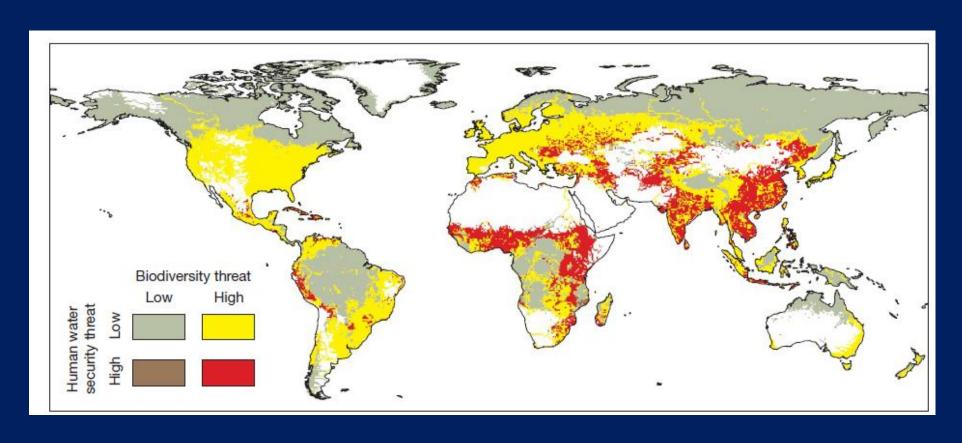


### An Agenda for Water Action UN Report

An Open Letter from the High Level Panel on Water (14th March 2018)

- > Water... risks to economic progress..and sustainable development
- Water needs to be allocated (to)maximise benefits for drinking, food and energy, and healthy rivers, lakes, aquifers and wetlands.

# 65% of global river discharge, and the aquatic habitat supported by this water is under moderate to high threat



# The strategic 2050 vision of the Convention on Biological Diversity (CBD) Aichi targets now linked to the SDGs.

Twenty headline targets for 2015 or 2020 guided by five strategic goals (https://www.cbd.int/sp/targets/).

#### Related SDG targets 2020:

- 6.6 and 15.1 and 15.1 (ecosystems),
- 15.5 (degradation of natural habitats)
- 15.5 (prevent extinction of threated species),
- 15.8 (invasive species) that relate to freshwater ecosystems
- 14.2, 14.4, 14.5, 14.6 (marine and fisheries)

### Multiple human pressures on freshwater habitats



Vörösmarty et al. (2010). Global threats to human water security and river biodiversity. *Nature*, *467*, 555–561. http://doi.org/10.1038/nature09440

Dudgeon (2010). Prospects for sustaining freshwater biodiversity in the 21<sup>st</sup> century: linking ecosystem structure and function. Current Opinions in Environmental Sustainability 2: 422-430.

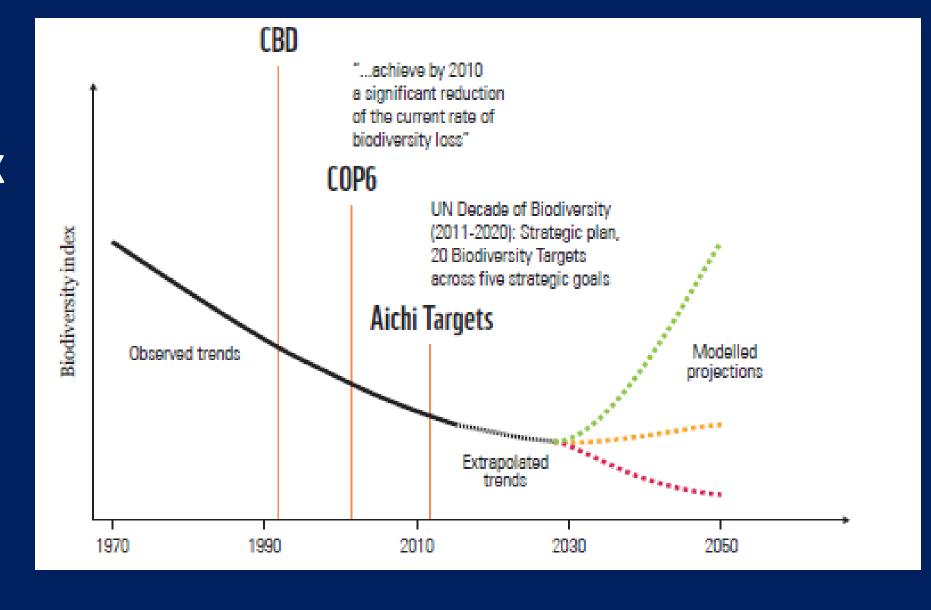
#### **Loss of Freshwater Biodiversity**

- Loss or degradation of most of world's inland wetlands.
- ➤ One-third of the 28 000 freshwater species assessed for IUCN Red List threatened with extinction.
- Freshwater vertebrate populations undergoing declines that are more rapid than those of terrestrial and marine species.
- Loss continues, despite the importance of freshwater ecosystems as a source of clean water, food, livelihoods, recreation, and inspiration.

Darwall et al. (2018) **The Alliance for Freshwater Life: A global call to unite efforts for freshwater biodiversity science and conservation**. Aquatic Conservation: Marine and Freshwater Ecosystems. 28:1015–1022

# WWF Living Planet Index

Biodiversity
the 'web of
life' is
undergoing
rapid decline



https://wwf.panda.org/knowledge\_hub/all\_publications/living\_planet\_report\_2018/

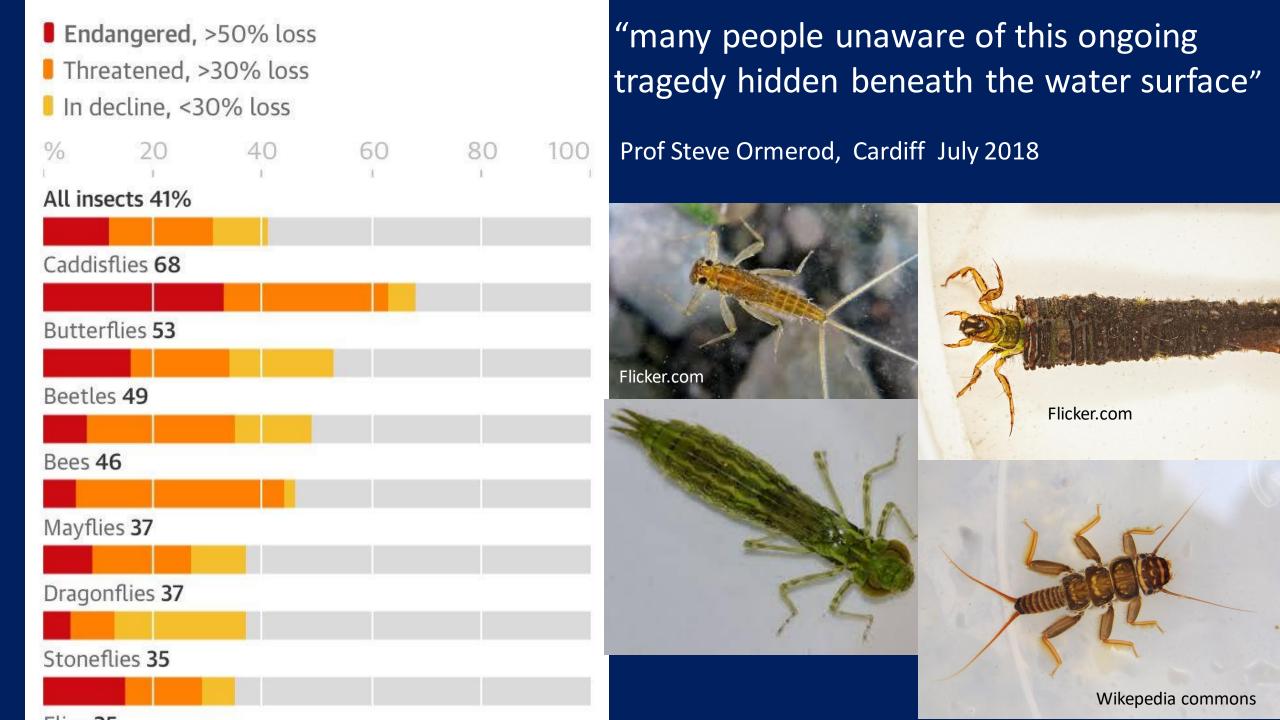
# Decline of insects with potentially "catastrophic" effect on planet (*Biological Conservation* 232: 8-27).







More than 40 percent of insect species could become extinct in the next few decades. Butterflies are moths have been especially hard hit. (Source: WKBT/WXOW/CNN/file)



# An opportunity to reflect

Irvine, K. (2018) Editorial: Aquatic conservation in the age of the Sustainable Development Goals. *Aquatic Conserv: Mar Freshw Ecosyst. https://doi.org/10.1002/aqc.3007* 

Is there really a crisis?

How did we get to this point?

What to do?

### I. Is there really a crisis?

The Oxford English Dictionary definition of 'crisis':

- > a time of intense difficulty or danger;
- a time when a difficult or important decision must be made;
- the turning point of a disease when an important change takes place, indicating either recovery or death.

# II. ECOLOGICAL ASSESSMENT AND SHIFTING BASELINE SYNDROME

Each generation sets a new baseline based on personal experience

## Lough Carra SAC: shifting baselines?

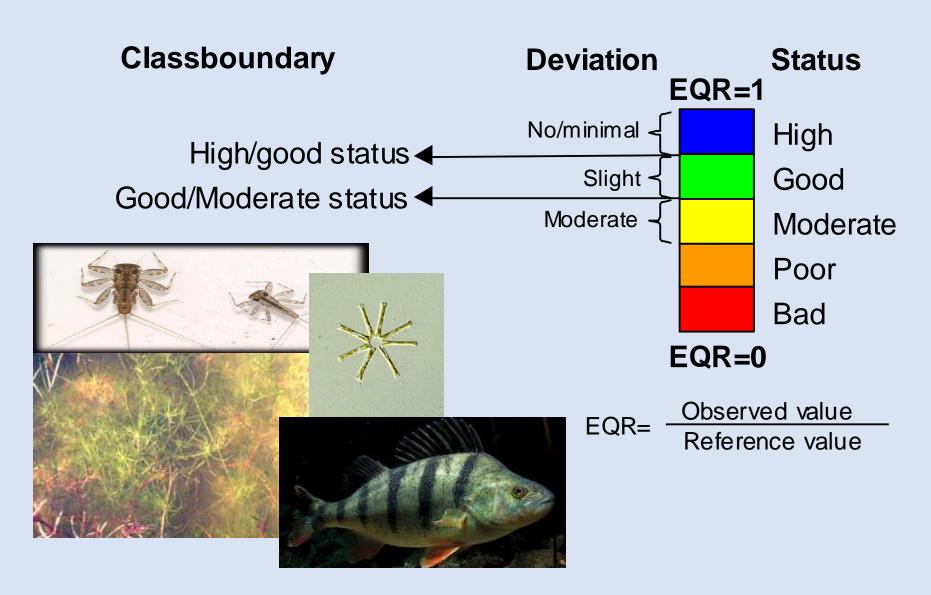


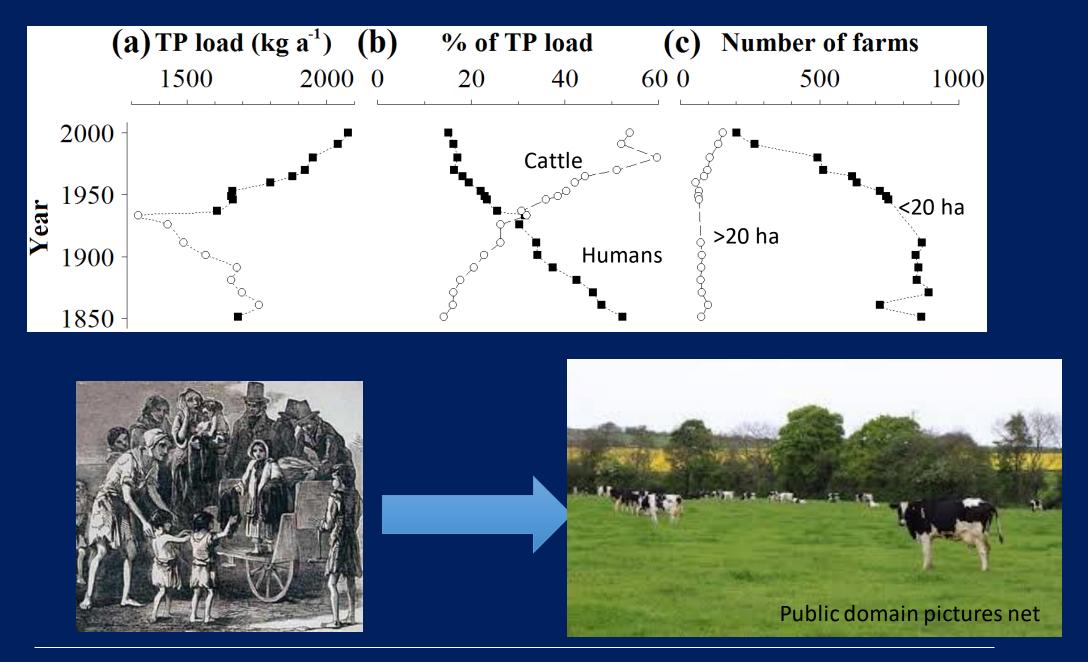
Hobbs et al. (2005) Using sediments to assess the resistance of a calcareous lake to diffuse nutrient loading. *Arch für Hydro*, 164: 109-125

<sup>2</sup>McCarthy et al. (2006). Field evidence for stoichiometric relationships between zooplankton and N and P availability in a shallow calcareous lake. *Freshwater Biology.* 51: 1589-1604

#### Water Framework Directive (2000/60/EC)







Donohue et al (2010) Rapid ecosystem recovery from diffuse pollution after the Great Irish Famine *Ecological Applications*. 20: 1733–1743

- A classification of 'good status' under the EU Water Framework Directive (WFD) in 2007–2009 reflected the documented impact (Environmental Protection Agency, 2014).
- Despite the continued pressures of nutrient loading, the classification was subsequently revised to 'high status', as verified by the WFD intercalibration exercise.
- Environmental Protection Agency noted that the current status class was based on 'established monitoring tools', while confirming 'significant concern' over the declining water quality.
- > Illustrates a form of institutional baseline syndrome

### Wider consequences of baseline syndrome

Living in areas lacking semi-natural habitats, or reduced exposure to then, reduces an awareness or empathy with nature

### Clear links between greenspace and public health



Central Park, New York

Restall, B. and Conrad, C. 2015. A literature review of connectedness to nature and its potential for environmental management. *Journal of Environmental Management* 159. Elsevier Ltd: 264–78. doi:10.1016/j.jenvman.2015.05.022.

# III. THE ROLE OF SCIENTISTS IN INFORMED DECISION MAKING AND ADVOCACY

Lackey (2007) cautioned against scientists' use of adjectives such as 'degradation', 'improvement', 'good', and 'poor', because they imply a preferred ecological state and promote policy advocacy,

Conservation and ecosystem protection are built on a foundation of judgements of 'good' and 'bad', measured against baselines, with normative terminology exemplified by European targets of 'good ecological status' (WFD) or 'favourable conservation status' (Habitats Directive),

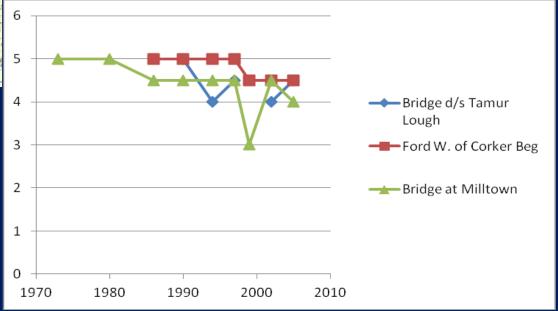
Lackey, R. T. (2007). Science, scientists, and policy advocacy. *Conservation Biology*, 21, 12–17.

# Bank works Bridge works Wind turbines Forestry Cattle in river New bridge

From: Management Strategies for the Protection of High Status Water Bodies A Discussion Document Strive Programme Project 2010-W-DS-3

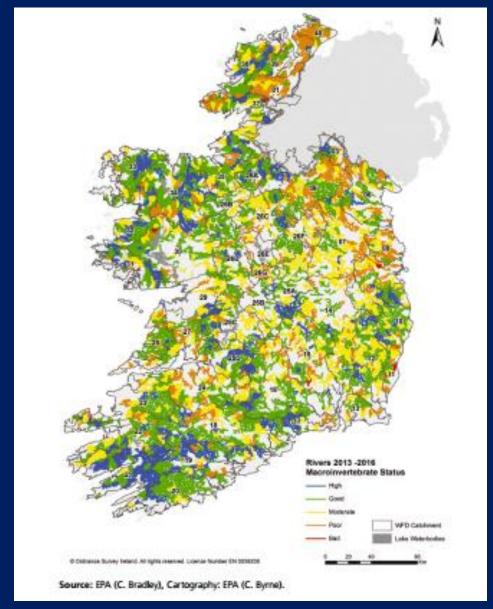
# Pressures on high status waters

Decline of river quality in the Oily Catchment 1973-2005



# A world of conflicting policy objectives

Irish EPA River Water Quality
Indicators (Assessment 2013-2016)



Local production:
balancing economic
opportunity with
environmental risk?



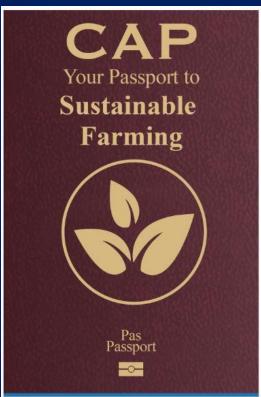
### www.agriaware.ie/cap

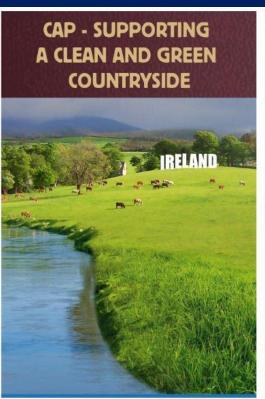
#### What is Agri Aware?

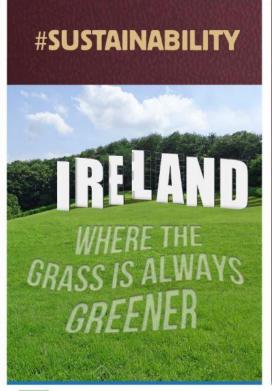
Agri Aware is the Irish agri-food educational body. It is a Charitable Trust, funded by the Irish farming and agri-food industry.

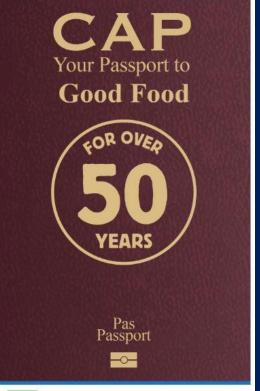
#### **Mission Statement**

The mission statement of Agri Aware, is to 'improve the image and understanding of agriculture, farming and the food industry among the general public'.

































#### **FOOD WISE 2025**

"Local Roots, Global Reach"

#### **Targets**

- 85% increase in exports to €19 billion;
- 70% increase in value added to €13 billion
- 60% increase in primary production to €10 billion and
- The creation of 23,000 additional jobs all along the supply chain from producer level to high end value added product development.

https://www.agriculture.gov.ie/foodwise2025/

Further instensification is not possible without exerting more pressures on freshwater and terrestrial habitats

### Key Issues and the way forward

- > Multiple, often interacting pressures degrade ecosystems.
- > The global "biodiversity crisis" cannot be separated from the "water crisis".
- > Real integrated and concerted action is needed.
- The SDGs provide national and global opportunities to address the *wicked problems* of aquatic ecosystem sustainability for biodiversity and people.
- > We can all choose how to be part of the solution.

# IV. So, what to do?





https://allianceforfreshwaterlife.org/

Twitter: @AFL\_org

#### **Vision:**

A world where people better understand, value, and safeguard freshwater biodiversity

#### **Mission:**

To halt and reverse the global decline of freshwater biodiversity through research, data synthesis, conservation, education, outreach, and policy-making

### Integrating skills and persectives for common purpose

Policy

Sets direction and cross-compliance

Data and Synthesis

Mobilise existing information

Conservation

On-the-

ground action

and Outreach
Awareness
and capacity
development

**Education** 



Science to inform conservation and policy



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POLICY, PRACTICE AND STANDARDS

WILEY

The Alliance for Freshwater Life: A global call to unite efforts for freshwater biodiversity science and conservation

DOI: 101002/aqc

https://onlinelibrary.wiley.com/journal/10990755

"We may not want to march in the streets, but an occasional letter to the local newspaper, public speaking engagement, and social media exchange or other outreach can be a liberating experience. The dawn of the SDGs provides an extra incentive to do so" (Irvine, 2018).



Twitter.com