



# **PUBLIC AWARENESS AND EMPOWERMENT IN MARINE BIODIVERSITY PROTECTION**

Aileen Tan Shau Hwai



$\frac{7}{8}$

OF THE EARTH IS  
WATER

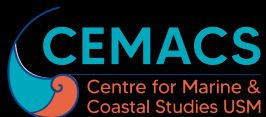




A circular frame captures an underwater scene. In the upper left, a diver in a black wetsuit and blue fins swims towards the right. The foreground is dominated by a large, reddish-brown, textured coral structure with a white, ribbed interior. To its right is a smaller, yellowish-orange branching coral. The background shows a rocky reef covered in green algae and other smaller corals. The water is a deep blue, and the surface is visible at the top of the frame.

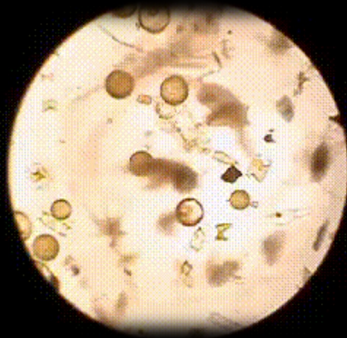
OUR HERITAGE  
OUR WEALTH

National Marine  
Reference  
Collection





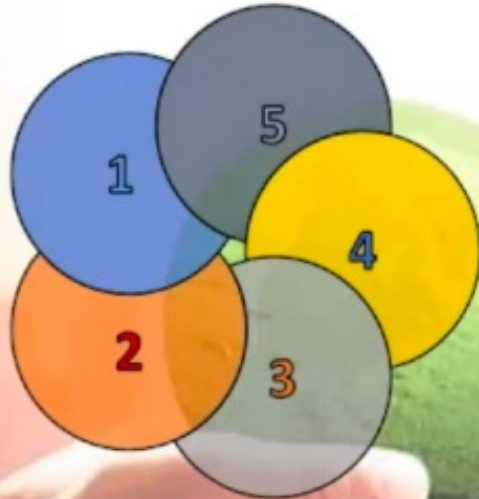
# MALAYSIAN MARINE BIODIVERSITY ASSESSMENT



UNIVERSITI SAINS MALAYSIA



# WHY IS BIODIVERSITY IMPORTANT TO US



## Economic

biodiversity provides humans with raw materials for consumption and production. Many livelihoods, such as those of farmers, fishers and timber workers, are dependent on biodiversity.



## Ecological life support

biodiversity provides functioning ecosystems that supply oxygen, clean air and water, pollination of plants, pest control, wastewater treatment and many ecosystem services.



## Recreation

many recreational pursuits rely on our unique biodiversity, such as birdwatching, hiking, camping and fishing. Our tourism industry also depends on biodiversity.



## Cultural

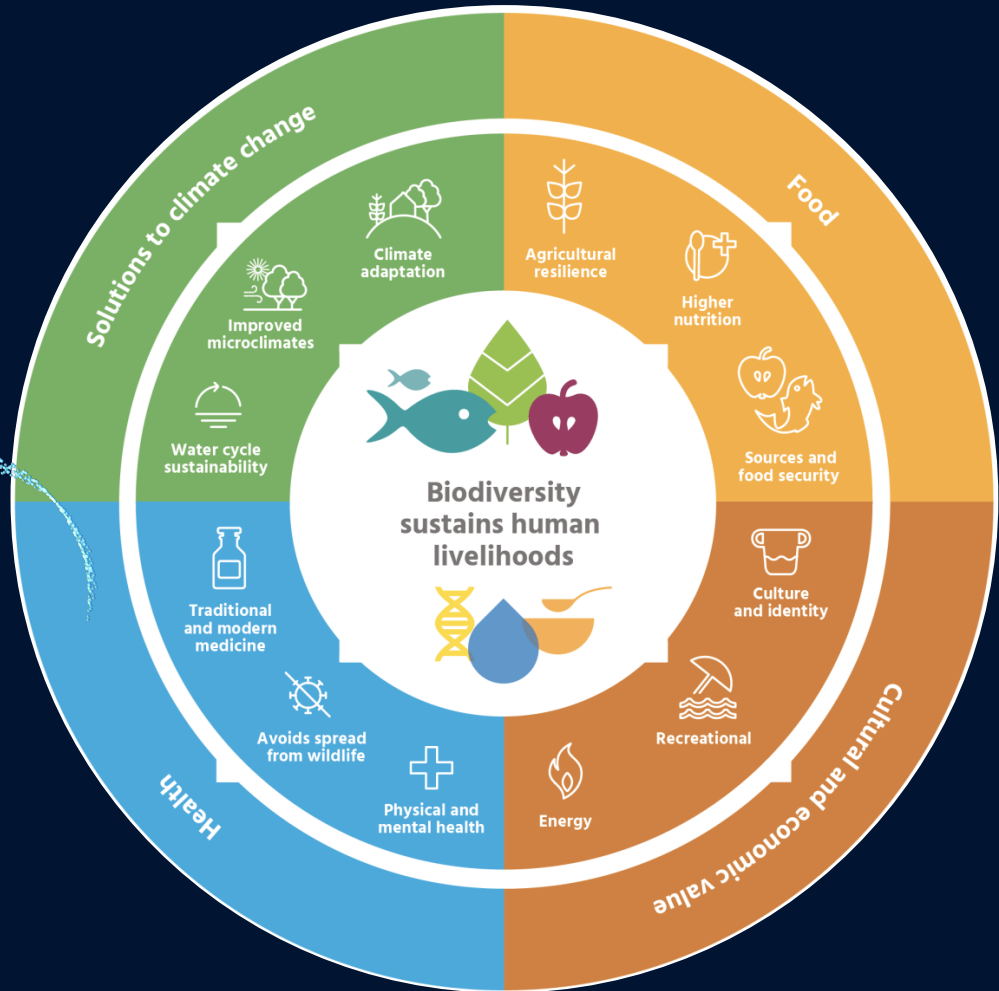
most cultures are closely connected to biodiversity through the expression of identity, through spirituality and through aesthetic appreciation. Indigenous peoples and local communities have strong connections and obligations to biodiversity arising from spiritual beliefs about animals and plants.



## Scientific

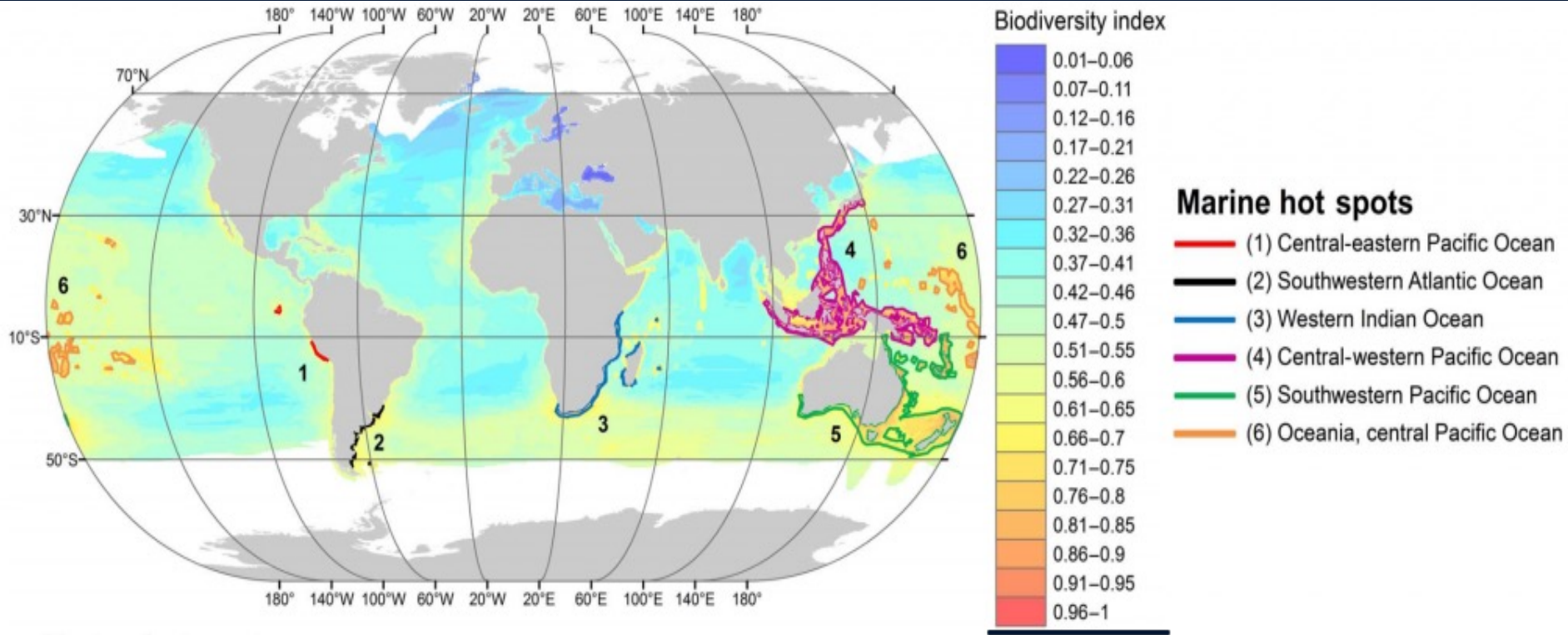
biodiversity represents a wealth of systematic ecological data that help us to understand the natural world and its origins.

# BIODIVERSITY AND HUMAN WELL-BEING



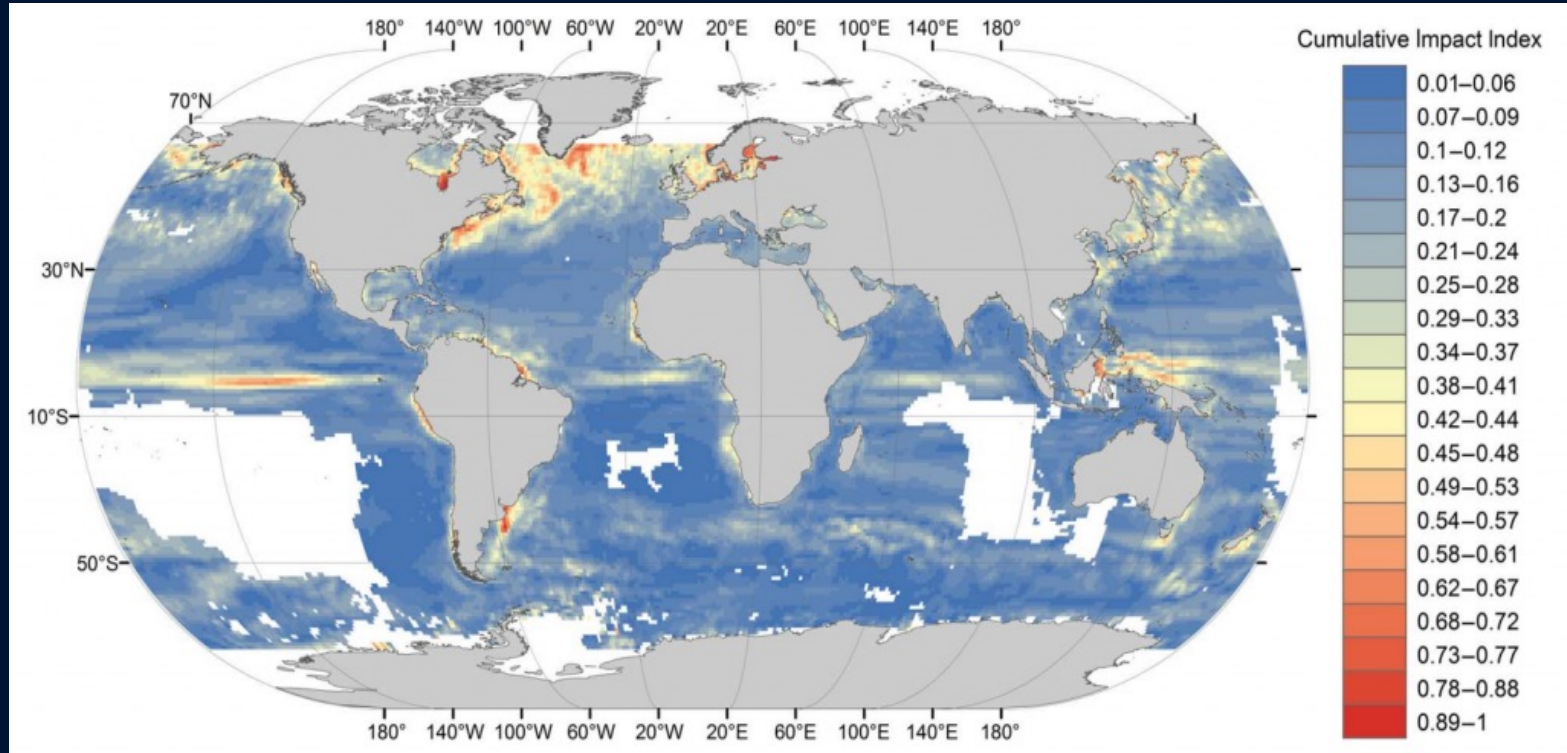


# MARINE HOT SPOTS OF THE WORLD



Source : Ramirez et al. (2017)

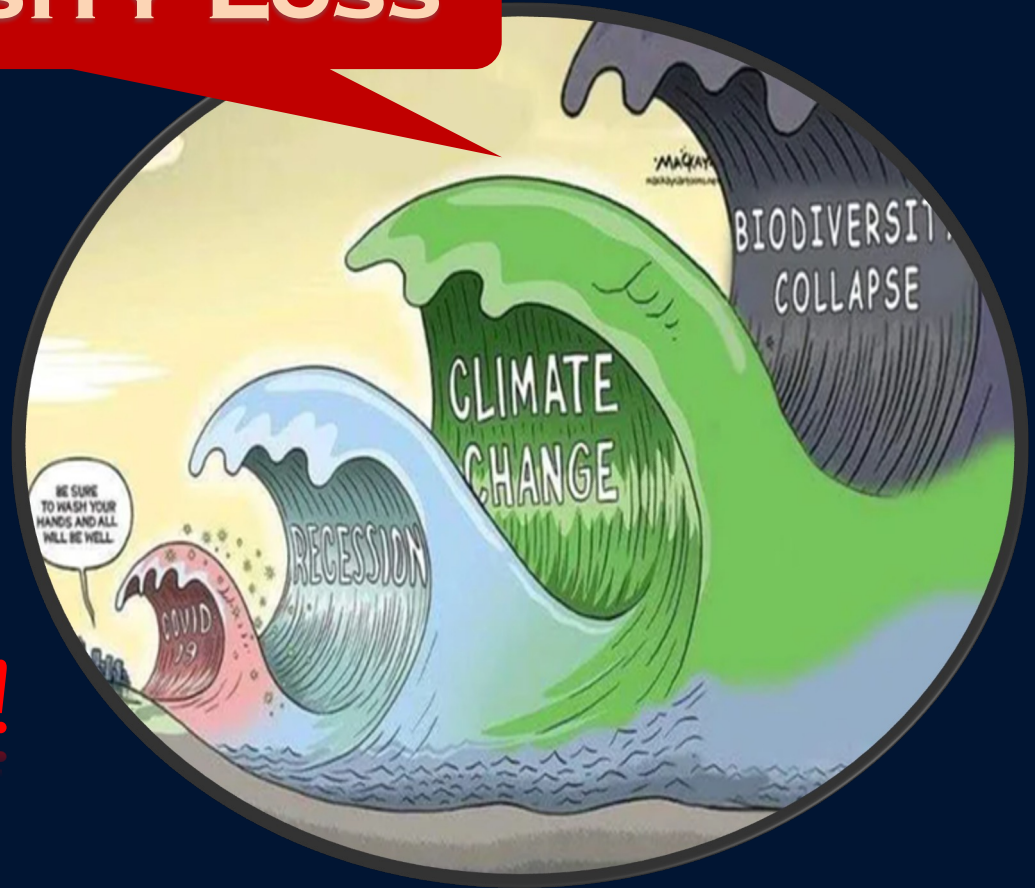
# GLOBAL DISTRIBUTION OF CUMULATIVE ENVIRONMENTAL IMPACTS



Source : Ramirez et al. (2017)

# BIODIVERSITY LOSS

Worrying  
Coincidence !!!





# THERE ARE MANY **THREATS** TO THE OCEAN, AMONGST THE GREATEST ARE:

Climate change

Ocean Acidification

Rise in Sea Surface Temperature

Introduction of Alien Species

Harmful Algal Blooms

**Marine Debris**

# *The Ocean is Changing*



Oceans  
past

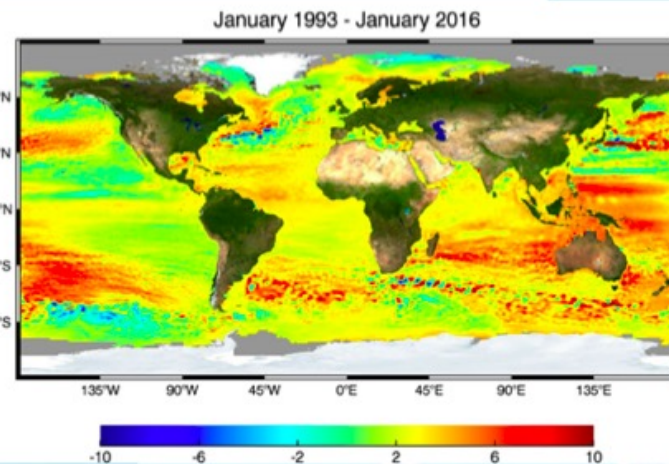
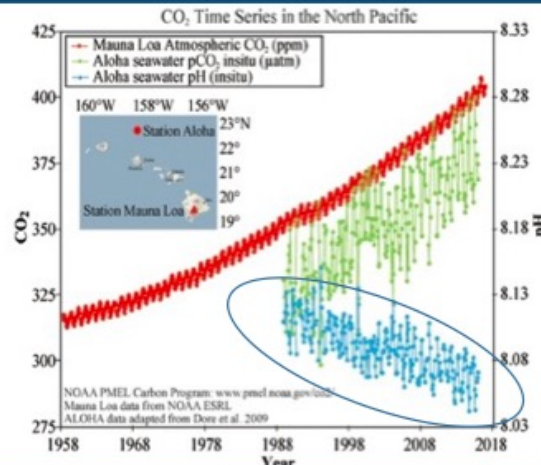
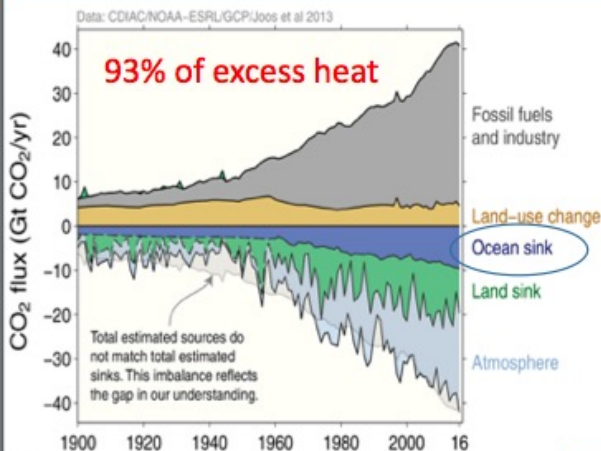


Oceans  
present



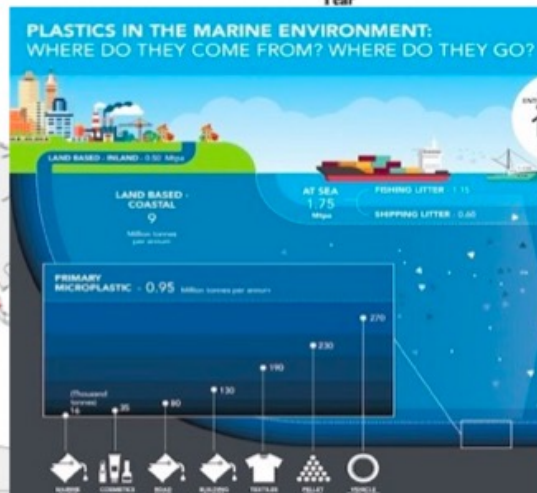
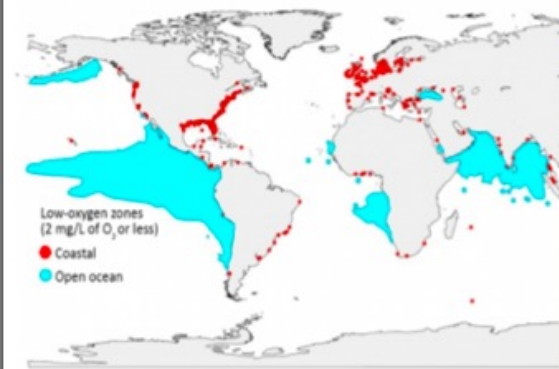
Oceans  
future

## Ocean: hot, sour and breathless!



### Ocean Deoxygenation: Global map

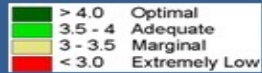
December 28, 2017



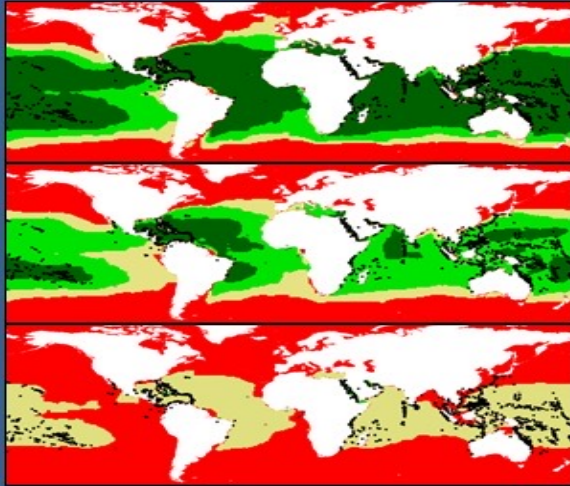


# Impacts of Environmental Change

Combination  
Future environment  
for corals  
Predicted based on  
Temperature  
And  
pH



[www.iobis.org](http://www.iobis.org)



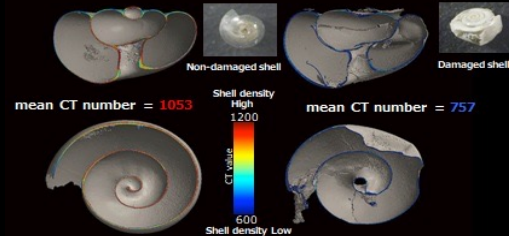
1880

2004

2065



Dissolution of Pteropod shells found in the Arctic Ocean



70% OF OUR PLANET IS OCEAN



YET...

93% of  
FISHERIES

are fully  
fished or  
overfished

EVERY 60  
SECONDS

Truckloads of  
plastic enters  
the ocean

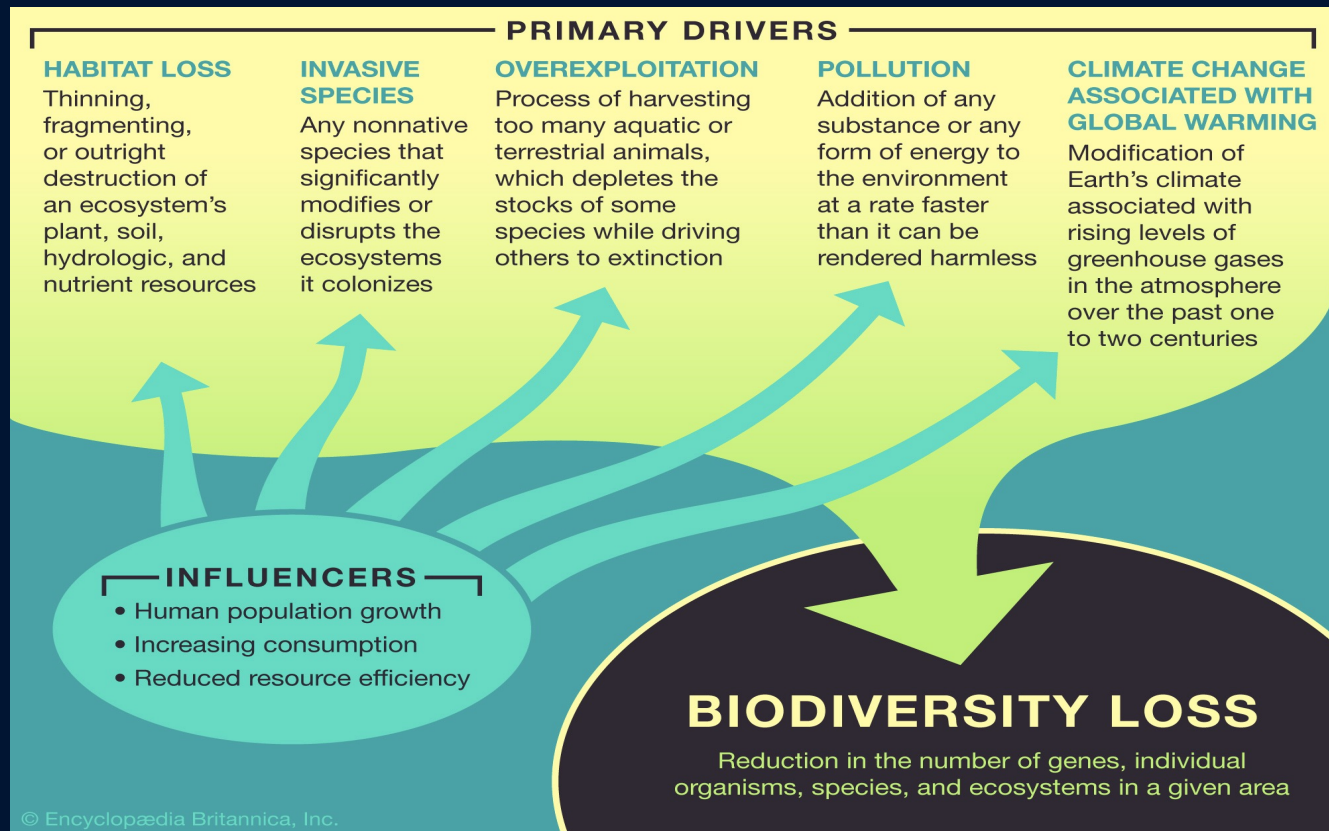
90% OF  
CORAL  
REEFS

Are  
projected to  
die by 2050

ONLY 5.3%  
OF OUR  
OCEAN

is currently  
protected

# BIODIVERSITY LOSS





***“No one will protect what  
they don’t care about; and  
no one will care about  
what they have never  
experienced”***

**- Sir David Attenborough**



Winter storms  
and flooding

## VALUES

94%

94%

90%

89%

Having open  
green spaces  
close to me

I am glad  
natural places  
exist

I am  
concerned  
about  
damage to  
the natural  
environment

Spending  
time out of  
doors is  
important

(Proportion of population  
undertaking activities)

## HOUSEHOLD ACTIONS

74%

I usually  
recycle  
items

44%

Walk or cycle  
when I can

32%

Buy  
seasonal  
or locally  
grown food

27%

I usually buy  
eco-friendly  
products  
and brands

27%

I encourage  
other people  
to protect the  
environment

## CONSERVATION ACTIONS

10%

I donate money  
to support an  
environmental  
organisation

10%

I have signed  
a conservation  
petition

8%

Member of an  
environmental  
organisation

4%

I donate my  
time to an  
environmental  
organisation

4%

I volunteer  
to help the  
environment

Source: MENE 2018/19,  
Adults living in England

# Pro-environmental values and actions



***Value action gap***

(Blake, 1999)

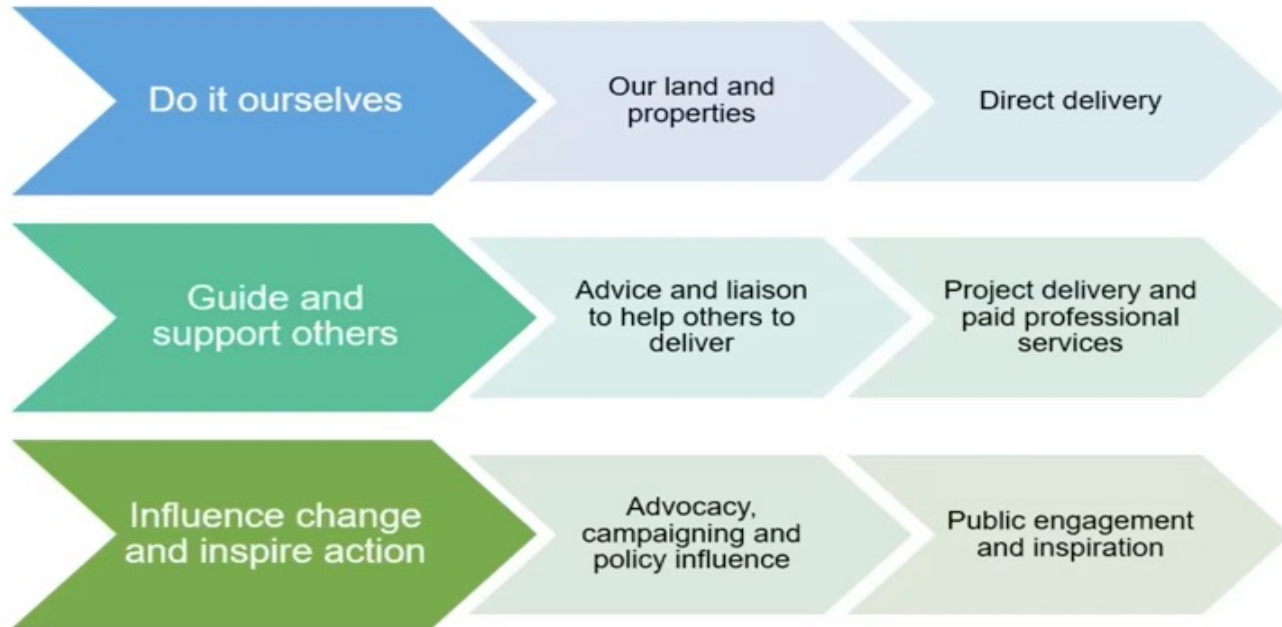


# OUR VISION FOR MARINE BIODIVERSITY



- We want broken **ecosystems restored**, missing biodiversity to return
- We want people to benefit from a **healthy ocean**
- We need more people on **nature's side** and more space for biodiversity to thrive....

# 3 MAIN DELIVERY STRATEGIES



Individuals tend to underestimate others' biospheric values, reducing their pro-environmental engagement.



Yet, when individuals learn that fellow group members strongly endorse biospheric values, this can boost their pro-environmental engagement.





DISCUSS ISSUES THAT ARE  
IMPACTING THEIR  
LIVELIHOOD



**TAKE** Action  
Charge

The sea off Teluk Bahang may have a high level of nickel while an oil slick has turned the Sungai Tengah river mouth pitch black. Until DoE's test results come in, the source cannot be ascertained. But one thing's for sure - fish farmers are suffering by the day. > See reports by ARNOLD LOFT & R. SEKARAN on page 4

**Star  
Exclusive**

Man & Ocean

# CHALLENGES



ENVIRONMENT | PLANET OR PLASTIC?

## This young whale died with 88 pounds of plastic in its stomach

The animal in the Philippines likely starved because its stomach was full of plastic, not food.



Researchers pulled nearly 90 pounds of plastic waste out of the stomach of a young cuvier beaked whale that died in the Davao Gulf of the Philippines on Saturday, March 16. The whale starved to death because of the plastic in its belly.

PHOTOGRAPH BY MARY GAY BLATCHLEY, D'BONE COLLECTOR MUSEUM



# CONSERVATION ISSUE

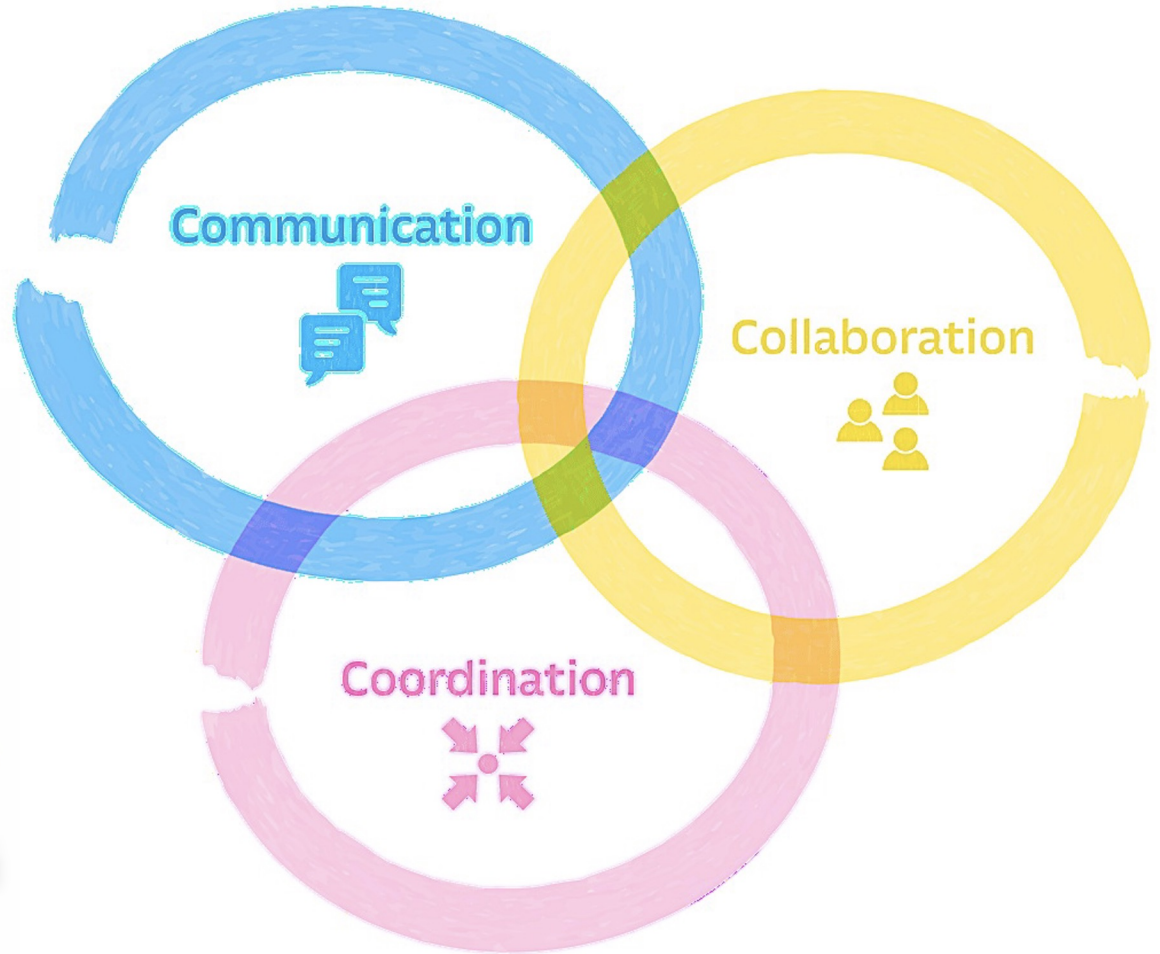


© Jordi Chias Pujol / Veolia Environnement Wildlife Photographer of the Year 2010

# BEHAVIOR CHANGE FOR BIODIVERSITY



**Motivate** the Change  
**Socialize** the Change  
**Ease** the Change





### Social Benefits

- Community Cohesion & Participation
- Decentralized Government/Management
- Marine & Coastal Resource Access
- Food & Land Security/Sovereignty
- Conservation Schemes based on IPLCs' Rights, Needs, Priorities & Aspirations
- Collective IPLC Decision-making Revival
- Reinforced IPLC Institutions & Land Tenure, Government & Legal Systems
- IPLCs' Well-being & Sense of Place
- IPLCs' Sustainable Development

### Ecological Benefits

- Long-term Biodiversity Conservation, Monitoring & Surveillance of Threats
- Biological Diversification
- Maintenance of Ecological Connectivity & Integrity of Biodiversity-rich & Ancient Ecosystems with Very Low Intervention
- Healthy & Resilient Populations of Native Species of Flora & Fauna & Ecosystems
- Adaptive & Holistic Management
- Achievement of National & International Biodiversity & Environmental Targets

### Cultural Benefits

- Strengthened Biocultural Practices
- Traditional Knowledge Safeguard
- Intergenerational Learning & Traditional Knowledge Transfer & Application
- Perpetuation of Traditions & Customs
- Biocultural Heritage & Language Diversity Preservation, Revitalization, Protection, Recognition & Promotion
- Women's Empowerment/Gender Equity
- Consolidated Socio-cultural Institutions
- Education in Indigenous Languages

### Economic Benefits

- Community-based Economies
- Place-based Cost-effective Biodiversity Conservation & Management
- Sustainable & Diversified Livelihoods
- Generation of Alternative Income
- Small-scale Ecotourism Activities
- Place-based Job Creation
- IPLCs' Financial Security/Sovereignty
- Multi-sectoral Financial Support from Private, Public & Philanthropic Funds
- Direct Economic Benefits



Wesley Methodist  
International School  
Jun 2019

# STEAM Education Hub

Students and Parents  
Programme – Nature  
Classroom  
Jun & Aug 2019

Permataku Kids College  
Mar 2019





# PUBLIC Awareness



Exhibition: Marine Plastic Pollution  
Shangri La's Rasa Sayang Resort Eco-Centre



Exhibition: Microplastics  
Occupy Beach Street – Unplastic Campaign

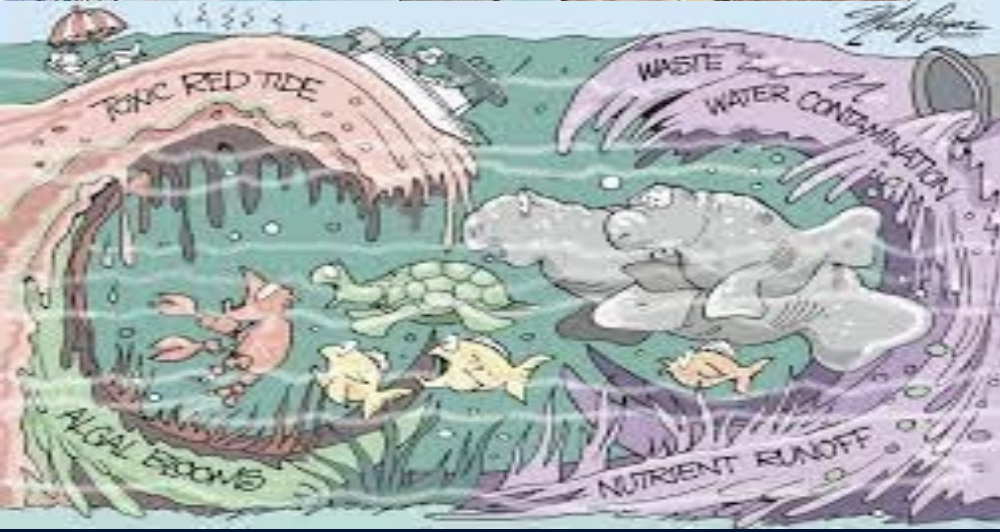


Exhibition: Plastics Pollution  
World Cleanup Day 2018

# EMPOWERMENT through stories







MIKE LUKOVICH  
ARANTA JOURNAL - OYSTERVH  
© 2015  
2-7-15



© image from Pedro Gonio

“THERE ARE  
MANY THINGS  
WE STILL DON'T  
KNOW ABOUT  
OUR VAST  
OCEANS”







The scariest part about the ocean isn't the presence of sharks anymore. It is the presence of rubbish and pollutants that harm the ocean.

- Abigail Joy, 142712

*The environment and its wealth are just a loan  
from our future generations to us. They owe us  
nothing but we owe them a well -kept  
environment and a pollution -free sea.*

- N . N J W





“ **THE JOURNEY OF EDUCATING & CREATING AWARENESS** is a long one and filled with many challenges....  
**IT REQUIRES COMMITMENT & COOPERATION FROM ALL** ”



**“It’s surely our responsibility to do everything within our power to create a planet that provides a home not just for us, but for all life on Earth”**

**- Sir David Attenborough**

**“As we realize biodiversity predicates current and future human health, we – the public as well as our governments – must push for greater collective action to conserve the sanctity, biodiversity and beauty of our environment for future generations to come”**



# THANK YOU.

