



# The Ecology and Economy of Coral Reefs: Considerations in Marketing Sustainability

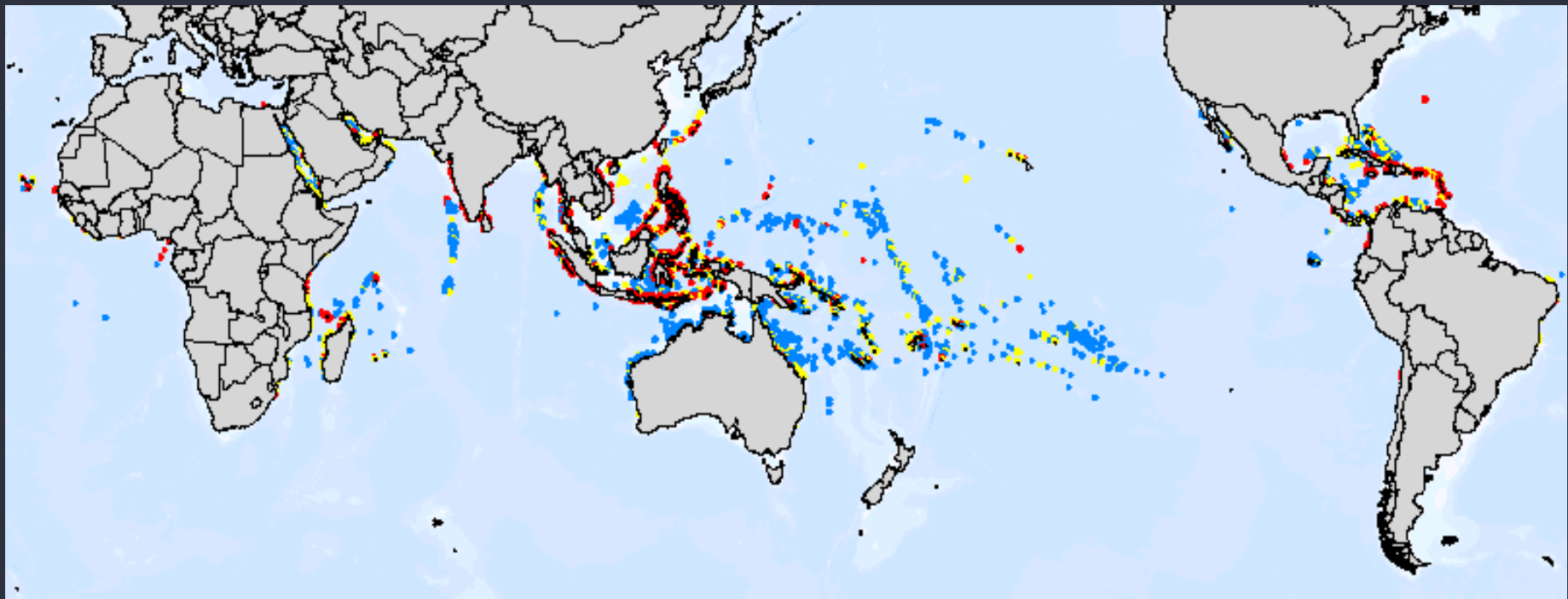


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# Coral Reefs in Peril: Worldwide Status

- **2004:** 70% of coral reefs “are under imminent risk of collapse through human pressures,” or “are under a longer term threat of collapse.” (Up from 58% in 2002.)



**RED** = high risk **YELLOW** = medium risk **BLUE** = low risk

# Almost two-thirds of Caribbean reefs are threatened

**RED** ≡ high risk **YELLOW** ≡ medium risk **BLUE** ≡ low risk

# Science says:

- Climate Change and CO<sub>2</sub>: bleaching and acidification
- Local threats undermine reef resilience to climate change
- MMAs lack resources and community support
- 50% of reefs could be destroyed by 2050

# Coral Reefs in Peril: Regional Status

- Caribbean reefs have suffered an 80% decline in cover during the past three decades.
- 80 to 90% of elkhorn and staghorn coral is gone.
- Currently, coastal development threatens 33% of the reefs, land-based sources of pollution 35%, and over-fishing more than 60%.

# *Why Should You Care?*

Coral reefs provide  
vital “ecosystem  
services”

# *The Importance of Coral Reefs: Biodiversity*

- Only a very tiny portion of the sea bottom is covered by coral reefs (0.09%) with a total area about the size of Arizona or the UK
- Yet, they're home or nursery ground for 25% of all known marine species and (probably over one million species).



# Biodiversity



# *The Importance of Coral Reefs: Medicine*

- 50% of current cancer medication research focuses on marine organisms found on coral reefs.

# *Importance of Coral Reefs: Food*

- Coral reefs worldwide yield a total value of over US\$100 billion per year from food alone
- Primary source of protein for over 1 billion people

Constanza et al. 1997  
*The Value of the World's Ecosystem Services and Natural Capital.*  
(Nature)

# *The Importance of Coral Reefs: Storm Protection*



# The Importance of Coral Reefs: Tourism

accounts for 11.4% of all  
consumer spending...

is the world's largest  
employer (accounting for  
more than 255 millions  
jobs—10.7% of the global  
workforce)...

# Coral Reef Tourism

Tourism income generated:

Great Barrier Reef US\$ 960 million (4x that of fisheries).

Florida US\$ 2.5 billion.

Caribbean region US\$ 140 billion.

Coastal tourism generates 85% of all tourism—a US\$ 385 billion dollar industry.

Worldwide, tourism generates 27 times more income than fisheries.

# An Economic Disconnect

- Coastal tourism (primarily to coral reef destinations) accounts for US\$ 385 billion dollars in revenue.
- Yet, the annual investment in research, monitoring and management is less than US\$100 million.

-Constanza et al. 1997  
The Value of the World's Ecosystem Services  
and Natural Capital. (Nature)

# To What Degree Will Tourists Support Conservation Efforts?

- “Willingness to Pay” surveys have documented that divers are willing to contribute an average of US\$25 per year to keep Caribbean reefs healthy. (Green & Donnelly, 2003).
- Multiply this by the number of divers visiting the Caribbean, and that’s a potential US\$90 million per year for reef conservation!  
(Reefs at Risk in the Caribbean, 2004)
- Yet, only about US\$1.5 million is collected worldwide.

# What is “sustainable tourism”?

- “The optimal use of natural and cultural resources for national development on an **equitable and self sustaining** basis to provide a **unique visitor experience** and an **improved quality of life** through partnership among government, the private sector and communities.”
  - Organization of Eastern Caribbean States

# *The Cost of Reef Degradation: Caribbean*

- Dive tourism is high-value tourism, with divers typically spending 60-80% more than other tourists. *By 2015 coral reef degradation could result in annual losses of US\$100 million to \$300 million to the Caribbean tourism industry.* Losses to particular areas within the Caribbean could be proportionately greater, as tourism shifts away from areas where coral reefs have become degraded and toward areas of remaining intact reefs.” (p.14)

(Source: 2004 *Reefs at Risk in the Caribbean* )

# CONDITIONS FOR HEALTHY CORAL REEFS

SUNLIGHT FOR PHOTOSYNTHESIS

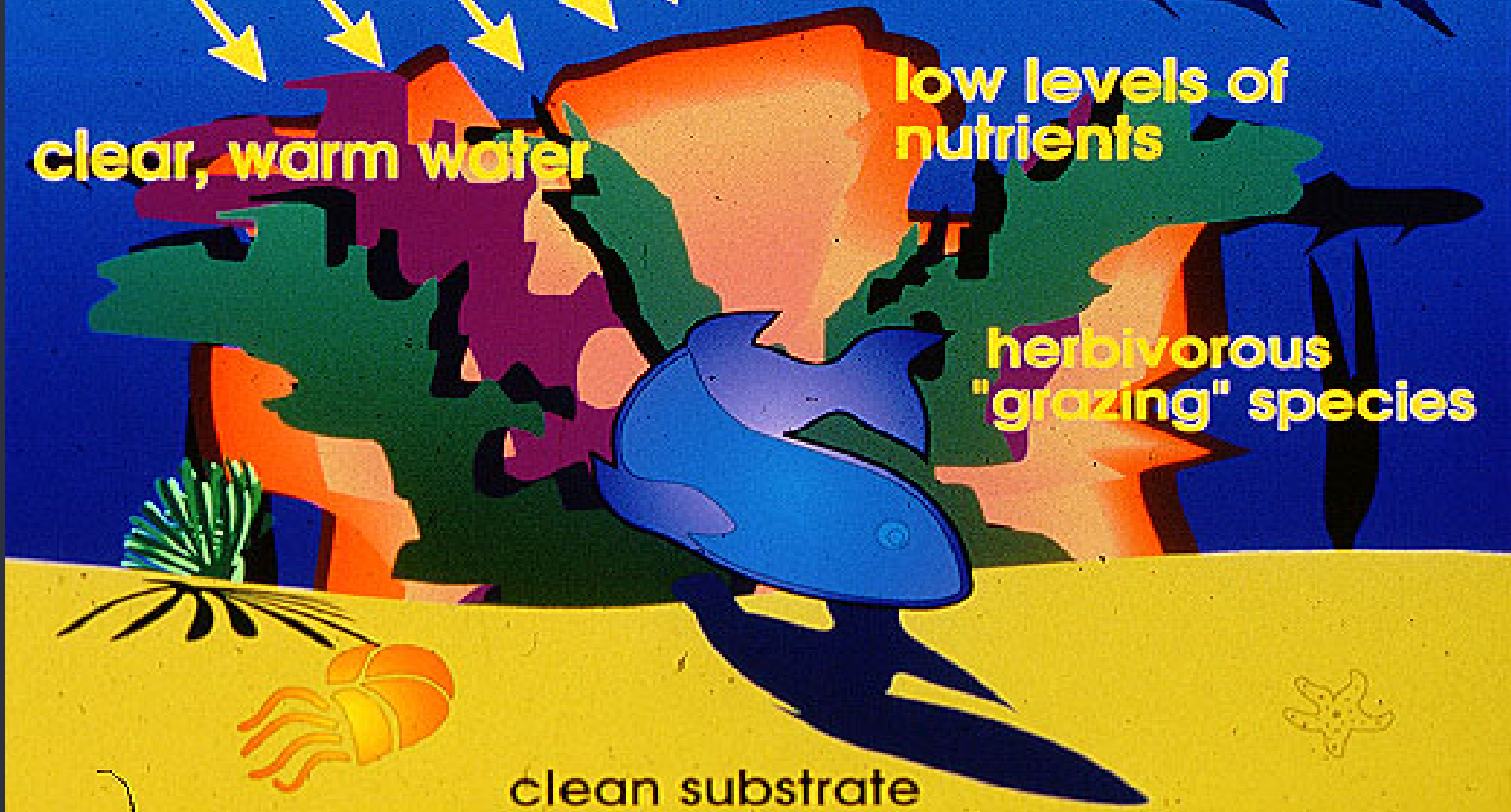


clear, warm water

low levels of nutrients

herbivorous "grazing" species

clean substrate



# Tourist Perceptions and Expectations

GBRMP-Miller, 2000

- Single most important factor in selecting a destination: **Quality of the underwater environment.**
- Specific considerations:
  - Megafauna (sharks, manta rays, turtles)
  - diverse, colorful, and healthy corals;
  - large fish;
  - good water quality and visibility

# Tourist Perceptions and Expectations

## Vanuatu-Howard, 1999

- Surveyed divers to determine “the importance of various factors in choice of dive destination.”
- Conclusion: “Despite the original introduction to scuba diving being social or adventure aspects, most divers now chose dive sites because they wanted to view spectacular natural scenes.” (p. 4)

Diversity of life forms	4.71
Visibility	4.20
Coral formations	3.94
Divers' recommendation	3.86
Access to dive sites	3.60
Cost	3.55
Lack of crowding	3.52
Historic wreck sites	3.42
Unusual marine species	3.39
Diving environment	3.26
Magazine article	2.50
Close to home	1.97

5 = very important    1 = not important

# Tourist Perceptions and Expectations

Roatan-Pendelton, 1999

- Most important factors in determining what a diver considered a “high-quality” reef:
  - amount of coral cover
  - fish diversity
  - clear water

# Tourist Perceptions and Expectations

Belize, CORAL, 2006

- Found that the two most significant factors influencing the enjoyment of visitors to Belize Marine Parks are:
  - quality of corals and fishes; and
  - **staff interactions**

# Tourist Perceptions and Expectations

Bonaire, DeMeyer 2002

Single most important factor in  
selecting Bonaire:

**Quality of the underwater  
environment.**

On a scale of 1 – 5:

- Water Clarity: **4.46**
- Fish diversity: **4.23**
- Fish abundance: **4.18**
- Coral Cover: **4.13**
- Coral Diversity: **4.10**

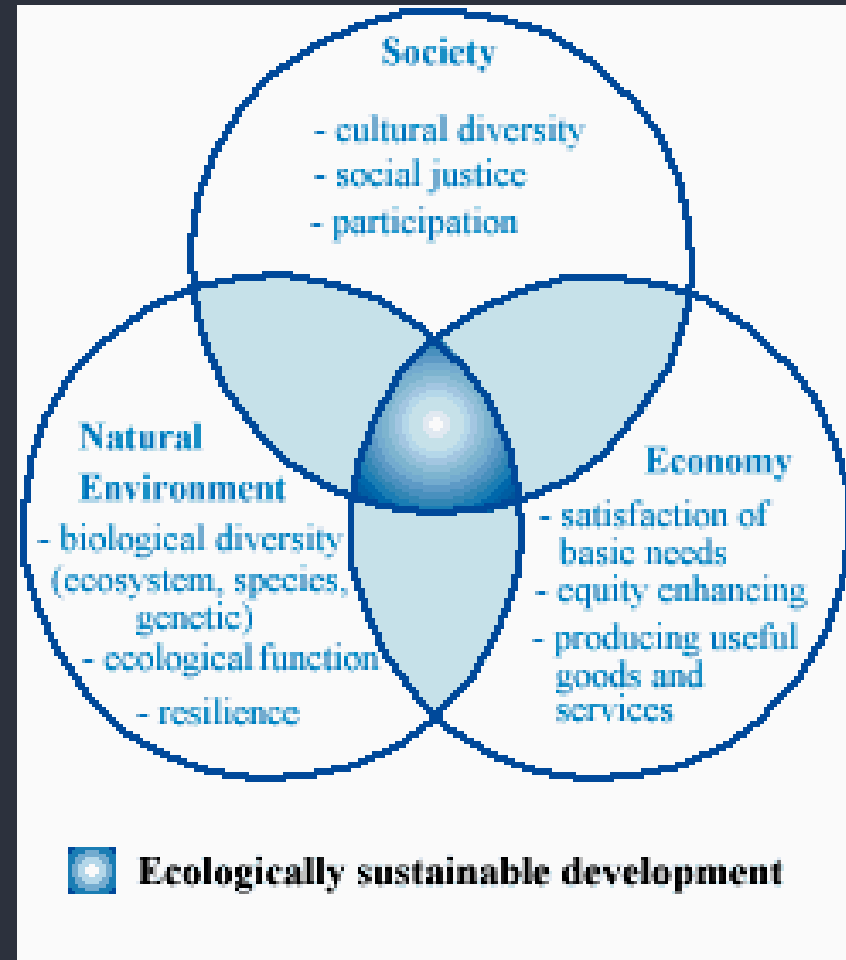
# Tourist Perceptions and Expectations

Barbados & Bonaire, Uyarra & Cote 2006

More than 80% of tourists in Barbados and Bonaire would be unwilling to return for the same holiday price in the event [of degraded coral reefs.]

# A Holistic Response

- Creating and expanding parks, reserves and sanctuaries that protect multiple ecosystems
- Sustainable businesses and development should strive for a “triple bottom line”
- *profitable*
- *environmentally sound*
- *and socially responsible*



*Is there any sign that “mass tourism” is listening?*

- Some important players are paying attention.



# Commitment Versus “Greenwashing”

The ploy of “greenwashing” may work in mass tourism, but not in any business model dependent on developing customer loyalty for return business.



Thank You