The heat is on for the Reef as reef fishes will become less abundant as opposed to是否是珊瑚礁的健康情况。科学家预测，如果气候继续按目前的速率变化，礁将会发生。我们选择?

旅游者购买低碳航班

购买可持续产品

种植树木，它们吸收二氧化碳

少用热水

自然晾衣，不使用烘干机

向你的能源供应商要求转换到低碳能源（这也有助于节省开支）

这些方法不仅有助于保护礁，还能改善健康，为我们的孩子和孙辈留下一个健康的地球。

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The heat is on for the Reef as reef fishes will become less abundant. Adopting a sustainable lifestyle will not only help the Reef, it will also help to improve health, save money, support local economies and leave a healthy planet for our children and grandchildren.

Confessions of a Reef Guide

With all the debates going on about climate change, people are wondering how to separate myths from facts. So what kind of questions are passengers likely to ask and what kind of answers can you give them?

Here are a few examples from interpretation specialist, Emily Smart, Fantasy Foundation's Marine Research Coordinator. “Guests often ask: ‘Why is there no colour? Why is the coral dead? It’s not as colourful as I thought it’d be.’ They think that all corals should be bright colours. I explain that 80 per cent of corals are normally brown and that when photos are taken, it’s usually at night when the tentacles are out and it’s more colourful.”

“If people ask ‘how can I help save the Reef?’ I encourage them to reduce their carbon footprint.”

“I hope to get more and more guests involved in coral watch activities – at this stage the kids appear to be more interested in participating than their parents. It’s a little difficult to get people involved because they’re on holidays.”

The real sea change

Climate change poses one of the greatest threats to coral reefs worldwide. The Great Barrier Reef (the Reef) is one of the largest and healthiest reef systems in the world. While it can cope with stress better than most reefs, it is not immune to the impacts of climate change.

Signs of a changing climate are already evident on the Reef. Sea temperatures increased by 0.4°C between 1871 and 2005 and are predicted to increase 1.1-1.2°C by 2050.

Coral bleaching in hot water

When the going gets tough... the algae get going.

While warmer water might be nice for swimmers, it is bad news for corals. Most corals live in partnership with single-celled algae (zooxanthellae). Corals are animals that provide protection and nutrients for the algae, and in return, the algae produce food for the coral and give it colour. When temperatures get too warm, corals become stressed and the tiny algae move out. When the algae leave, the coral ‘bleaches’ and its white skeleton becomes visible.

When many corals in an area bleach, this is called ‘mass’ coral bleaching. Increased frequency of mass coral bleaching is expected as temperatures rise.

A temperature increase of only 1.5-2°C lasting for six to eight weeks is enough to trigger mass bleaching.

When warm conditions do not persist for long, the algae return and the corals can recover. However, in extreme conditions, corals may die.

Worth a look:


Great Barrier Reef Tourism Climate Change Action Strategy 2009-2012
www.gbrmpa.gov.au/gbr/tourism/Climate_change_and_tourism_operators

Great Barrier Reef Outlook Report 2009

Carbon emission calculator for tourism operators
www.emissionscalculator.gbrmpa.gov.au

Carbon footprint calculator for individuals
www.wwf.org.au/footprint/calculator/


Great Barrier Reef Tourism Climate Change Action Strategy 2009-2012
www.gbrmpa.gov.au/gbr/tourism/Climate_change_and_tourism_operators

Great Barrier Reef Outlook Report 2009

Carbon emission calculator for tourism operators
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Carbon footprint calculator for individuals
www.wwf.org.au/footprint/calculator/

Sustainability home
events, when temperatures are high for long periods of time (eight to twelve weeks) corals will die. Recovery of severely damaged reefs can take decades. There have been a number of mass bleaching events on the Reef since 1979. The most severe mass bleaching events occurred in 1998 and 2002.

**Ocean acidification**

Our oceans act like giant sponges, absorbing about 30 per cent of the carbon dioxide (CO\textsubscript{2}) in the atmosphere. As oceans absorb more CO\textsubscript{2}, the pH of the seawater decreases and the level of acidity increases. In the last century, the pH of the ocean has decreased by 0.1 units. Increasing acidity in the ocean means the concentration of calcium carbonate is reduced which affects the ability for corals to build the structural framework of reefs and for marine species such as shellfish, sea urchins, starfish and phytoplankton to form shells.

**Changing weather patterns**

Current patterns of tropical cyclones around the world indicate an increase in frequency of severe tropical cyclones. Within Australia, although the number of cyclones was lower during the period 1970 to 1997, there was an increase in their severity. In 2009, one of the most severe cyclones ever recorded, Cyclone Hamish, caused extensive damage to the southern part of the Reef.

**What is the Great Barrier Reef Marine Park Authority doing to help?**

We are working to help make the Reef as resilient as possible. This means reducing all pressures on the Reef.

- Implement the Great Barrier Reef Climate Change Action Plan 2009-2012
- Improve the quality of water that flows from our rivers and streams out to the Reef
- Enforce Marine Park zoning which is designed to protect a diversity of habitats
- Predict, monitor and map coral bleaching and sea-surface temperatures in the Marine Park
- Provide public moorings and establish no anchoring areas.

**What are the tourism operators doing to help?**

A healthy Reef means a healthy tourism industry. Tourism industry leaders and protected area managers have worked in partnership to develop the Great Barrier Reef Marine Tourism Climate Change Action Strategy 2009-2012 (the Strategy). The Strategy outlines actions the tourism industry can take to help improve reef health and reduce the impacts of climate change. It also acts as a framework for management actions and provides guidelines to help the tourism industry prepare for and adapt to climate change.

You, like other operators, may already be working hard to implement the Strategy by:

- Reducing energy use
- Recycling
- Switching to alternative fuels
- Offsetting emissions
- Participating in coral reef health monitoring programs such as Eye on the Reef and BeachWatch.

**What can your guests do to help?**

Everyone can do their bit to help protect the Reef (no matter where they live). By reducing their carbon footprints, individuals help reduce the impact of climate change on the Reef and protect the amazing environment they are here to enjoy. Here are some ideas you can share with your guests so they can help be part of the solution:

- Reduce, re-use and recycle
- Switch to ‘green electricity’ produced from renewable sources
- Use energy efficient lights and turn off lights and electrical devices around your home or business – at the switch is best!
- Heat and cool houses naturally using ventilation and insulation.