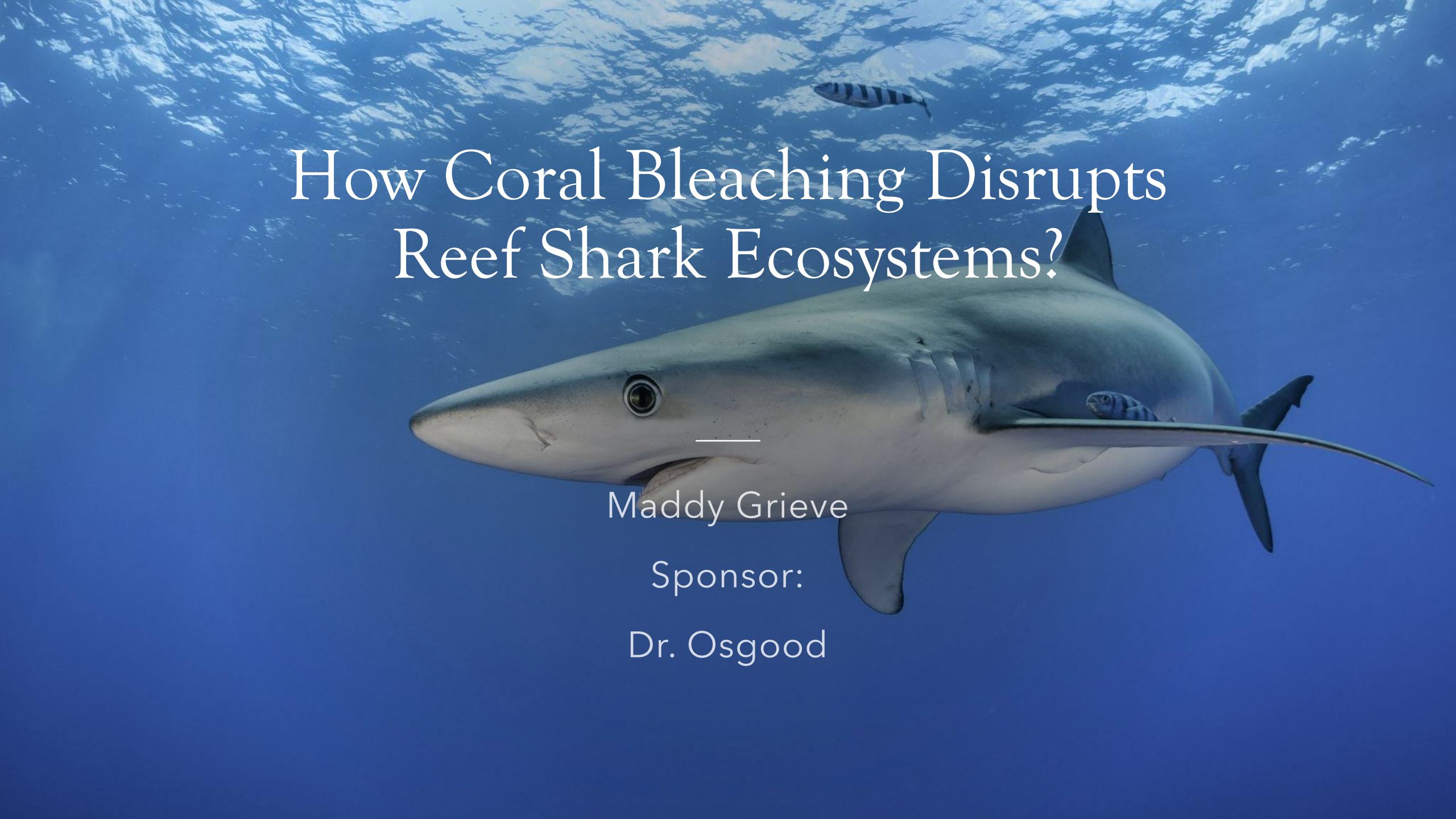

How Coral Bleaching Disrupts Reef Shark Ecosystems?

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Sponsor:

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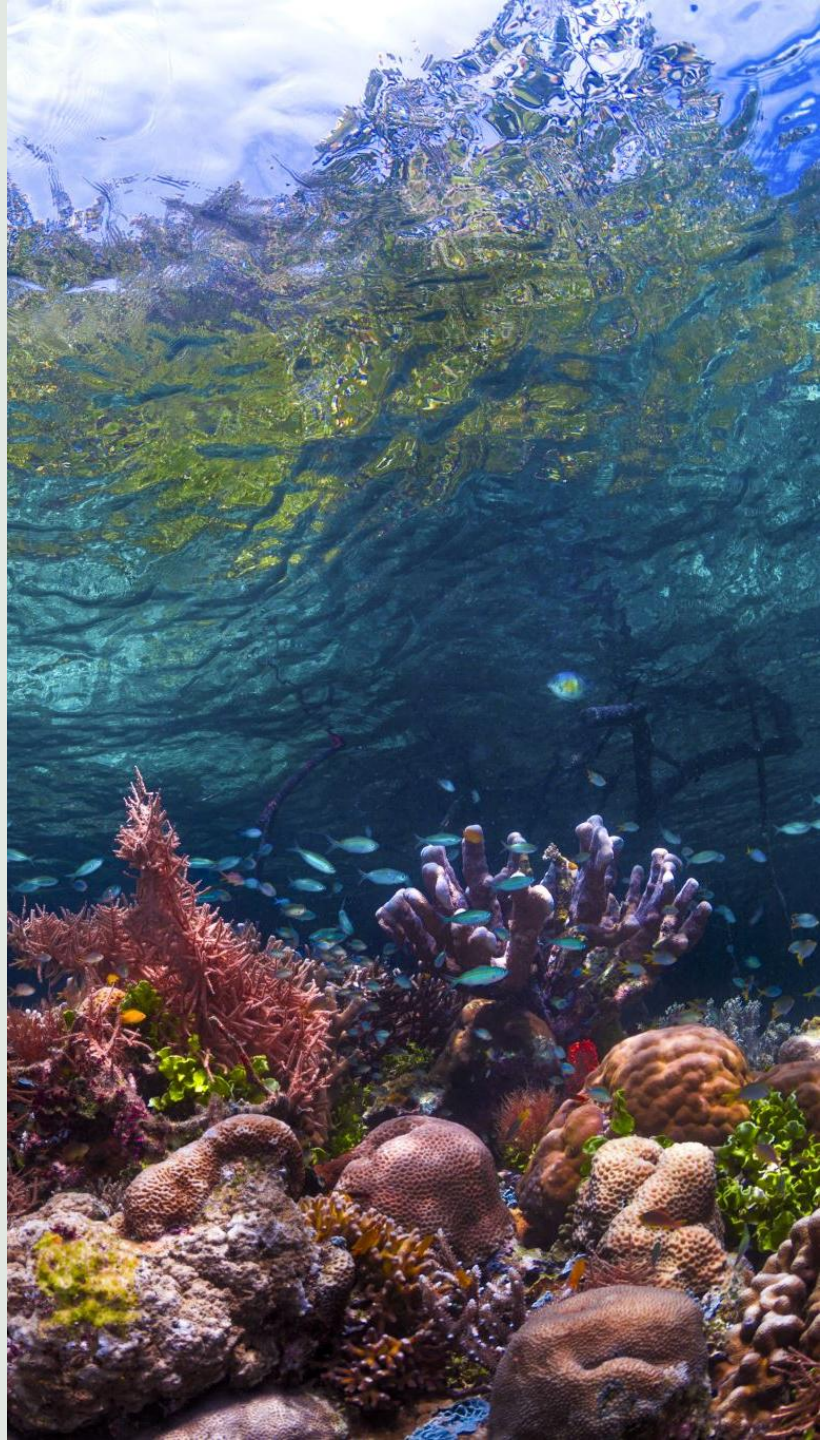
Outline

- Introduce what coral bleaching is.
- How does coral bleaching impact wildlife?
- What role do reef sharks play in a coral reef community?
- What effect does coral bleaching have on reef sharks?
- Where are reef sharks migrating to?
- Is there any change is reef sharks' behavior patterns?
- Possible solutions



What is Coral Bleaching?

When corals experience stress from shifts in temperature, light, or nutrient levels, they expel this symbiotic algae within their tissues, resulting in a complete loss of color and a ghost white appearance (Brayton, 2016).

Healthy coral in the Great Barrier Reef

Dead coral after a bleaching event in the Great Barrier Reef

This image shows a thriving healthy coral reef, on the left, compared to a coral reef that has gone through a coral bleaching event, on the right, both located in the Great Barrier Reef. From Coral Reef Education Institute.

How does coral bleaching impact wildlife?

- Loss of shelter, breeding grounds, and food sources for fish and small invertebrates.
- Large marine life such as reef fish, sea turtles, and crustaceans face increased competition for diminishing resources.
- Species must migrate or risk population declines.
- Predators' dependent on reef fish struggle to find food.
- Disruption of the entire food web (NOAA, 2019).

What role do reef sharks play in a coral reef community?

- Maintain the health and balance of coral reef ecosystems.
- Regulate populations of smaller predators/prevent overpopulation of certain species (Oceana, 2023).
- A thriving shark population = a thriving reef ecosystem.

What effect does coral bleaching have on reef sharks?

- Disrupts the balance of the ecosystems they rely on for food and shelter.
- Takes away breeding grounds and nurseries for juvenile reef sharks.

Where are reef sharks migrating to?

- Can travel to nearby reef systems that have been less affected by bleaching.

OR

- To open waters and deeper areas of the ocean where environmental conditions are more stable.

Is there any change is reef sharks' behavior patterns?

1. Altered Hunting and Foraging Patterns (Williamson et al. 2024)

- Expanded Range
- Shift in Prey Selection
- Temporal Changes

2. Increased Human Interactions (Clarke et al. 2023)

- Overdependence on human-provided food sources.
- Proximity to Humans

3. Changes in Territoriality and Movement Patterns (Baremore et al. 2021)

- Less territorial and share spaces they would otherwise defend
- Increased Migration

Is there any change is reef sharks' behavior patterns?

4. Reproductive and Social Behavior Alterations (NOAA Fisheries, 2023)

- Delayed Reproduction
- Altered Social Structures

5. Stress-Related Responses (Williamson et al. 2024)

- Elevated Stress / Immune System Levels
- Avoidance Behavior

Possible Solutions

- Reducing stormwater and fertilizer runoff or avoiding herbicides and pesticides (EPA, 2024).
- Stop deforestation.
- Help businesses, consumers, and cities transition to renewable energy.
- Guide governments toward climate-smart policies.

10 ways to protect CORAL REEFS

Corals are already a gift. Don't give them as presents.

It takes corals decades or longer to create reef structures, so leave them on the reef.

CHECK SUNSCREEN ACTIVE INGREDIENTS.

Seek shade between 10 a.m. and 2 p.m., use Ultraviolet Protection Factor (UPF) sunwear, and choose sunscreens with chemicals that don't harm marine life. For more information, visit *oceanservice.noaa.gov/sunscreen*.

Long-lasting light bulbs - ARE A - BRIGHT IDEA

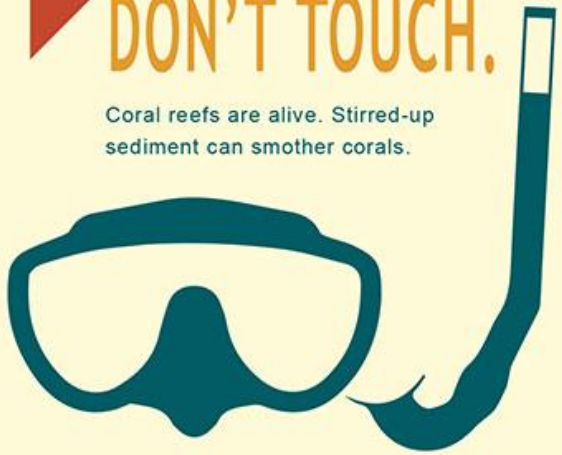
Energy efficient light bulbs reduce greenhouse gas emissions. Climate change is one of the leading threats to coral reef survival.

Choose sustainable seafood.

Learn how to make smart seafood choices at www.FishWatch.gov.

IF YOU DIVE DON'T TOUCH.

Coral reefs are alive. Stirred-up sediment can smother corals.



BE A MARINE DEBRIS CRUSADER.

In addition to picking up your own trash, carry away the trash that others have left behind.

CONSERVE WATER

The less water you use, the less runoff and wastewater that eventually find their ways back into the ocean.

Volunteer!

Volunteer in local beach or reef cleanups. If you don't live near the coast, get involved in protecting your watershed.

Don't send chemicals into our waterways.

Nutrients from excess fertilizer increases algae growth that blocks sunlight to corals.

Practice safe boating.

Anchor in sandy areas away from coral and sea grasses so that the anchor and chain do not drag on nearby corals.

oceanservice.noaa.gov