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SUMMARY OF RESILIENCE STRATEGIES

WWF Florida Program



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CHALLENGE FOR US TODAY

- How can we take advantage of resilience and conserving reefs in face of climate change?
- What can we do to increase resilience?
- How can we reduce perturbations to these sensitive systems?





WHY IS IT A CHALLENGE?

- Problem is global, complex, and controversial.....need to act with many uncertainties.
- Difficult to promote less than a full win.....Buying time vs Full Recovery.....need to accept some decline.
- User groups vary in terms of buy in and willingness to engage in a comprehensive solution.





WHAT DO WE KNOW?



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SO WHAT WE HAVE LEARNED?

- What resilience is....and how to address it in Florida reefs
- Which areas are showing higher resilience
- Experience of shifting baselines
- Some of the driving forces that cause disturbances (temperature, variability, light intensity)
- Adaptation and management strategy lessons from partners
- The political and climate “timing” is now
- Need to reduce localized stressors to increase resilience so we can “BUY TIME”
- Need to work together- increase connectivity
- Need for resilience based management strategies





FRRP Questions...

- 1) **WHAT??** Under a global climate change scenario, are there reef areas/coral populations that are destined to become the ‘winners’¹ and others destined to become the ‘losers’?

1. Loya Y, Sakai K, Yamazato K, Nakano Y, Sambali H, Van Woesik R (2001) *Ecology Letters* 4: 122-131





FRRP Questions...

- 2) **WHY?** If so, what are some of the driving factors influencing this pattern?
- 3) **HOW?** If so, how will reef ecosystem services (fishing, diving, etc.) be affected?
- 4) **WHAT NEXT?** Are there management strategies that can confer/enhance resistance/tolerance/recovery to S. Florida reefs?





RECAP
WHAT IS RESILIENCE?
“Reef Insurance”

The ability of systems to absorb disturbances and bounce back...

Three components:

- 1) **Resistance** is the ability of corals to resist negative impacts of stress,
- 2) **Tolerance** is the ability of corals that suffer negative impacts to rebound and live, and
- 3) **Recovery** is the replacement of corals that die by new corals as apposed to a different type of organism (such as macroalgae).

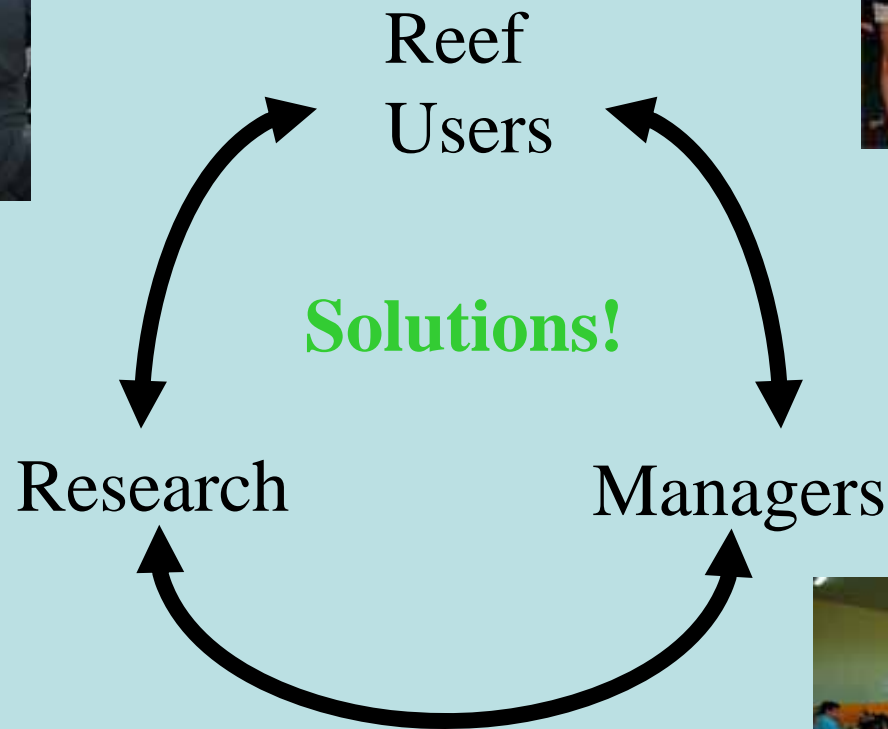


"I know the human being and fish can coexist peacefully." —Presidential candidate George W. Bush, Saginaw, Mich., Sept. 29, 2000

“In the near future with reef resilience strategies and legislation to reduce green house gases, the human being and corals can coexist peacefully”



WORKING ON RESILIENCE STRATEGIES TOGETHER





POSSIBLE RESILIENCE STRATEGIES

1. Education, Outreach, Awareness and Appreciation Strategies
2. Research and Monitoring Strategies
3. "Best Reef Use Practices" Strategies
4. Management Strategies
5. Regulatory Strategies





1. Education, Outreach, Awareness and Appreciation Strategies

- Incorporate key communication reef resilience and climate change themes, and more specific messages aligned with them, into the full spectrum of existing communication vehicles





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2. Research and Monitoring Strategies

- Formalize and implement the "South Florida Coral Bleaching Response Plan" (BRP)
- Better integrate DRM monitoring with other ongoing and new research and monitoring to improve overall understanding of coral responses to stress and linkages to the south Florida socio-ecological system
- Better integrate DRM analysis with other ongoing and new research and monitoring to improve overall understanding of coral responses to stress and linkages to the south Florida socio-ecological system





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3. "Best Reef Use Practices" Strategies

- Avoid stressed/bleached/diseased coral reefs to reduce further negative impacts
- Use trip-rigged grapnel anchors and manual anchor placement when and where conditions and safety considerations allow
- Notify trap fishermen/authorities of accidentally cut trap lines via a new reporting system
- Significantly reduce greenhouse gas emissions through voluntary action of individuals, industries and governments
- **Best Practices for diving**
- **Best Practices for fishing on or near reefs**





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4. Management Strategies that do not require new regulation

Potential general management strategies

- Increase navigational aids for boaters
- Refine the mooring buoy system and expand it to places where mooring buoys are not yet used
- Focus law enforcement effort on resilient reef areas and highly vulnerable but valuable reef areas
- In the FKNMS, use existing authority to temporarily close highly stressed, bleached or diseased reefs

Potential fishing management strategies

- Reduce ghost traps
- Develop a reporting system for boaters to notify trap fishermen/authorities of accidentally cut trap lines
- Fully implement the lobster trap reduction plan



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5. Regulatory Strategies

- Potential general regulatory strategies
 - (rotate closure, boating license, regulations to reduce GHG emissions)
- Potential tourism-oriented regulatory strategies
 - (required environmental education, best practices license)
- Potential zoning-oriented strategies
 - (marine zones on resilience concepts)
- Potential coastal construction-oriented regulatory strategies
 - (timing of sediment producing construction, no dredging , no beach renourishment)
- Potential water quality-oriented regulatory strategies
 - (centralized sewer, storm water treatment, pesticides)
- Potential law enforcement strategies
 - (focus on resilient reefs, increase presence, undercover inspectors)





CHALLENGE FOR US TODAY

With the information we have learned over the past two days what strategies are most likely to benefit Florida's reefs and take advantage of the concept of resilience

Think outside our individual “boxes”, “interest”, and “comfort” zones.

Develop a common “language” and “understanding” of these concepts and strategies that will move all interests towards a solution as opposed to polarizing the issues.

