

# Designing Effective Locally Managed Areas in Tropical Marine Environments



Helping to Sustain Community Benefits Through Management for Fisheries, Ecosystems, and Climate Change



**USAID** | FROM THE AMERICAN PEOPLE

**ASIA**



**CORAL TRIANGLE INITIATIVE**  
ON CORAL REEFS, FISHERIES AND FOOD SECURITY

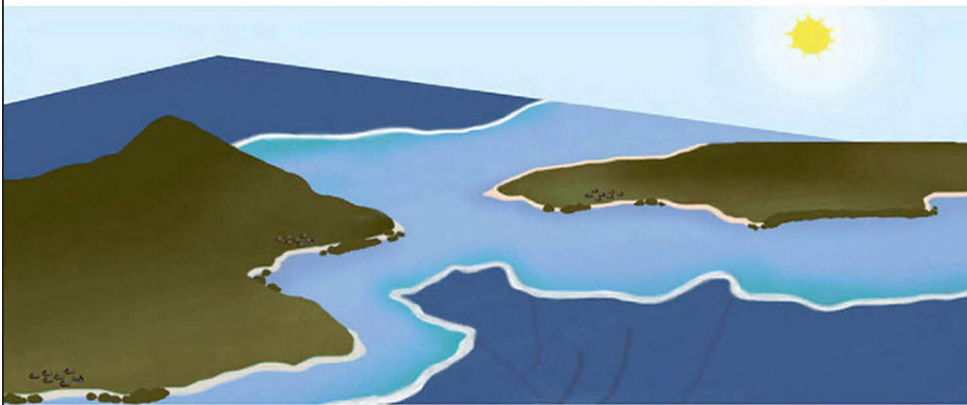
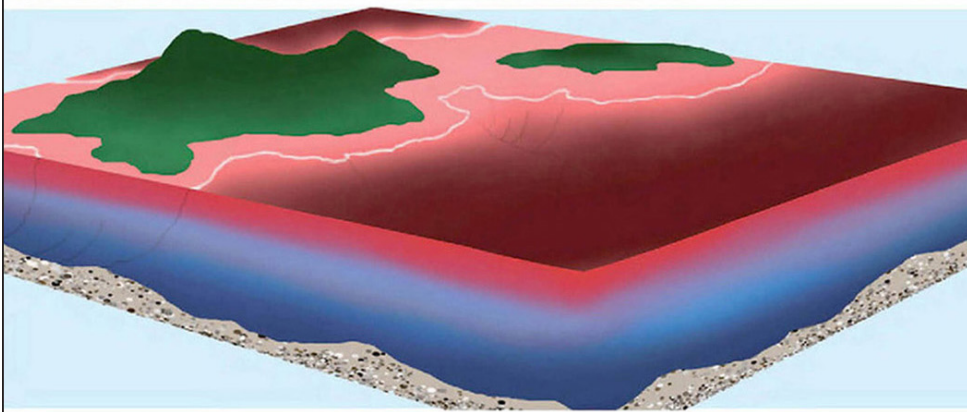
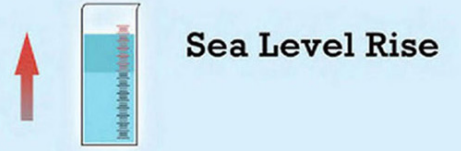
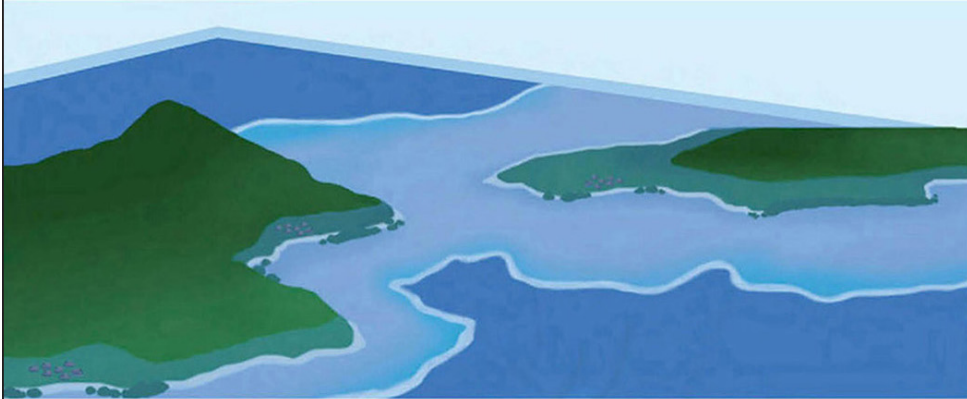
Features That Contribute to a Coastal Community Being Healthy and Benefiting from the Marine Environment



Features That Contribute to a Coastal Community Being Unhealthy



# How Will Climate Change Impact our Community and Its Resources?



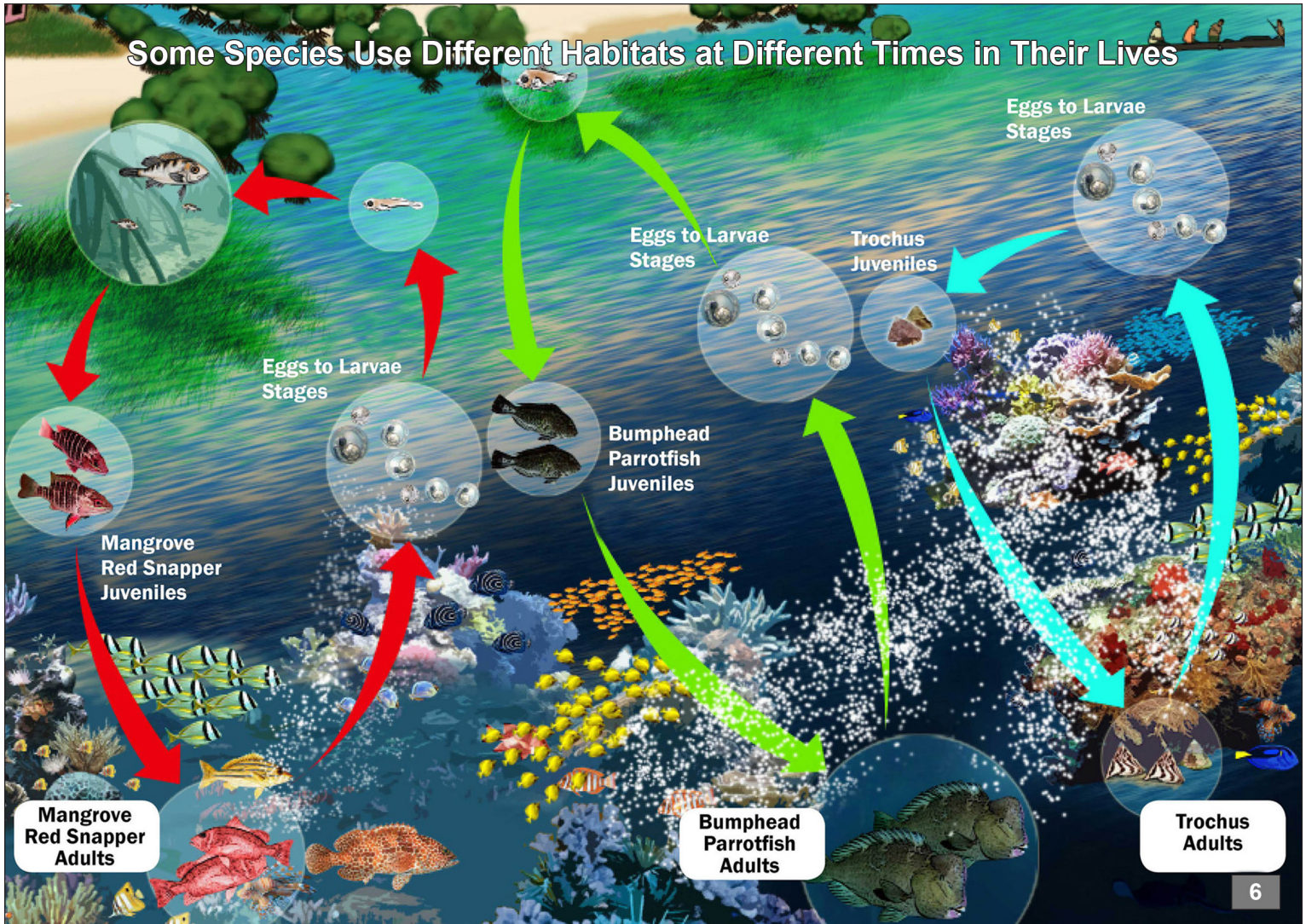
# LMAs Help to Maintain the Long-term Health and Abundance of Marine Resources



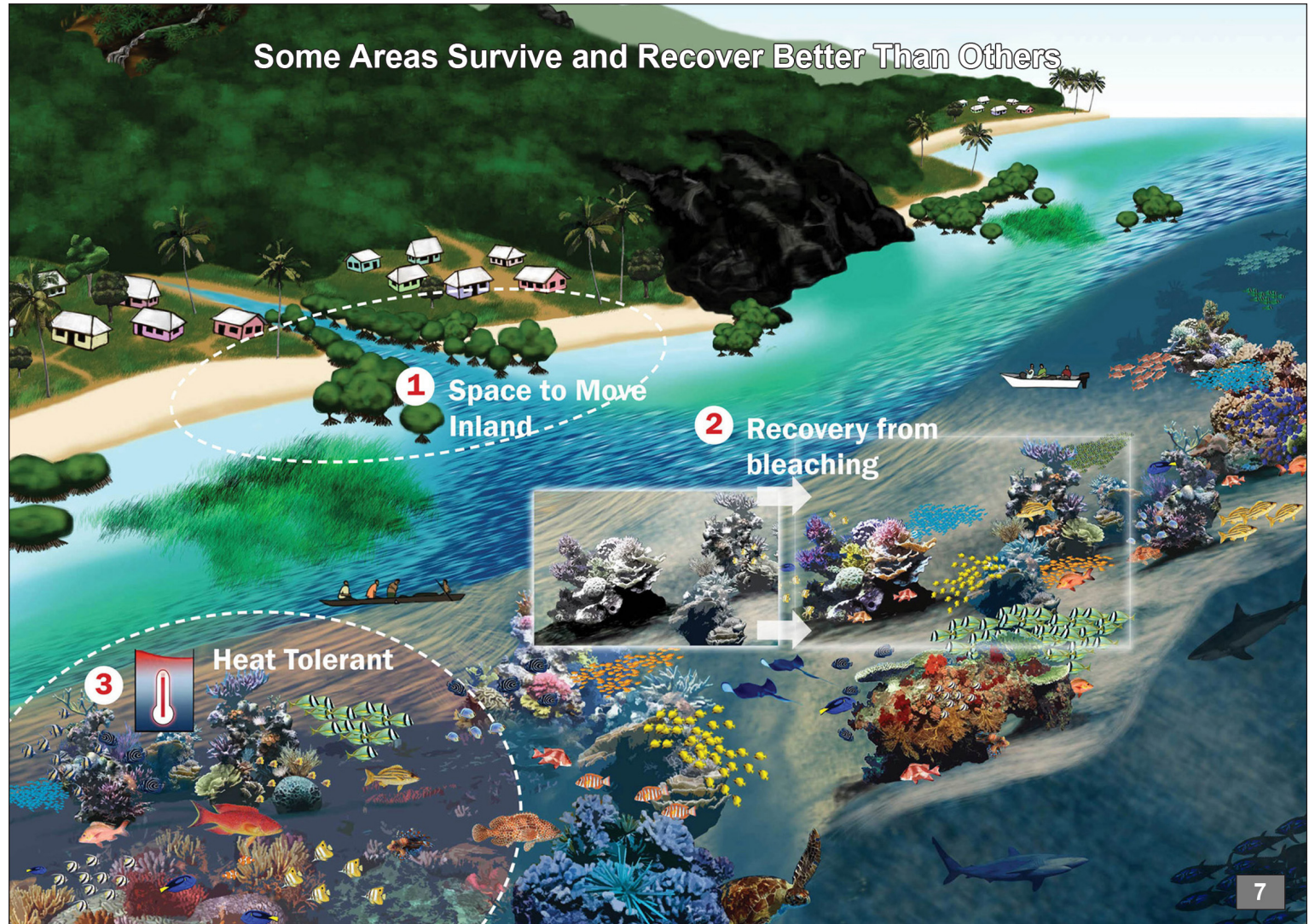
# Each Species Needs Different Healthy Habitats Where They Can Eat, Live, Grow, and Reproduce



# Some Species Use Different Habitats at Different Times in Their Lives



# Some Areas Survive and Recover Better Than Others



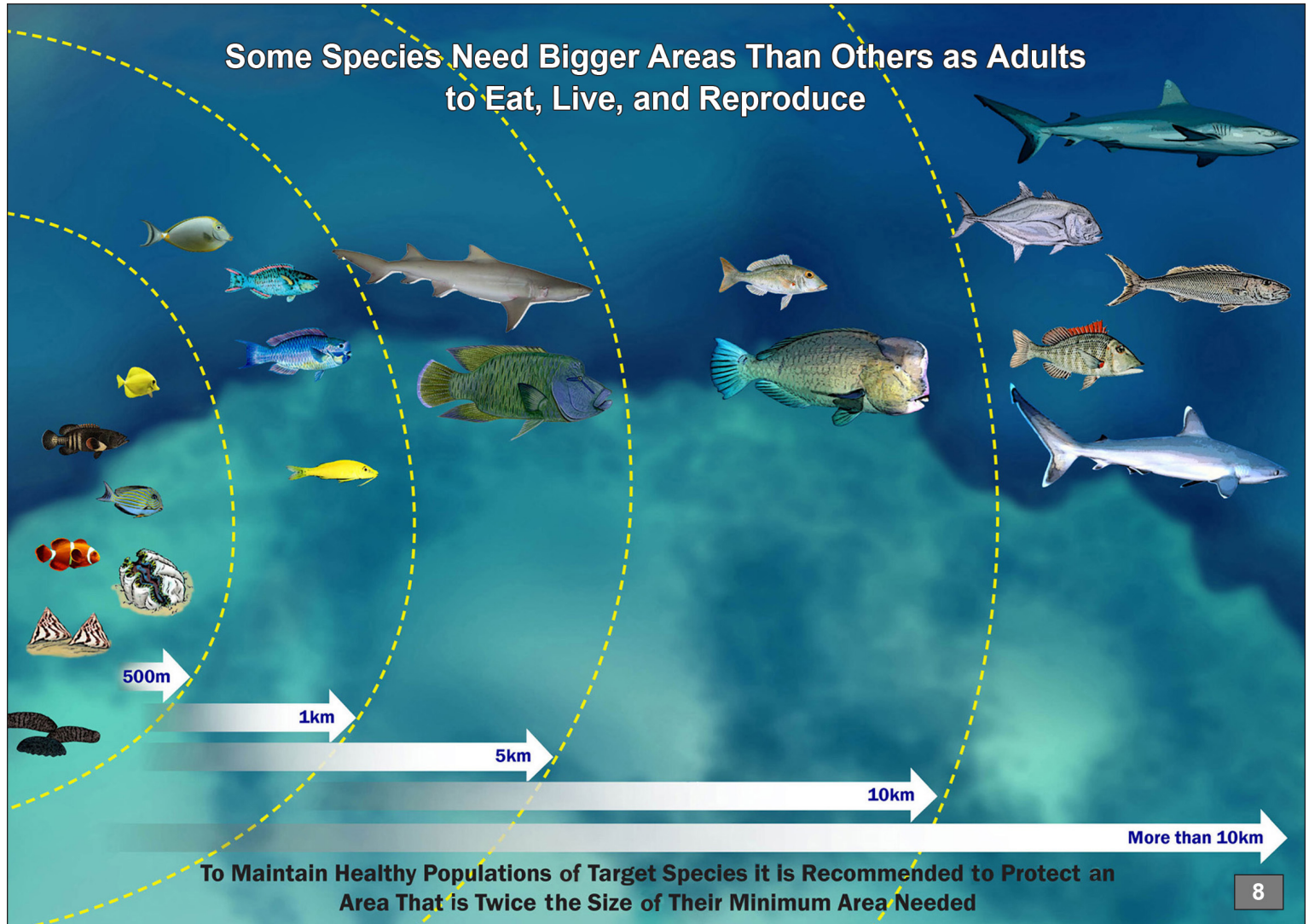
1 Space to Move Inland

2 Recovery from bleaching

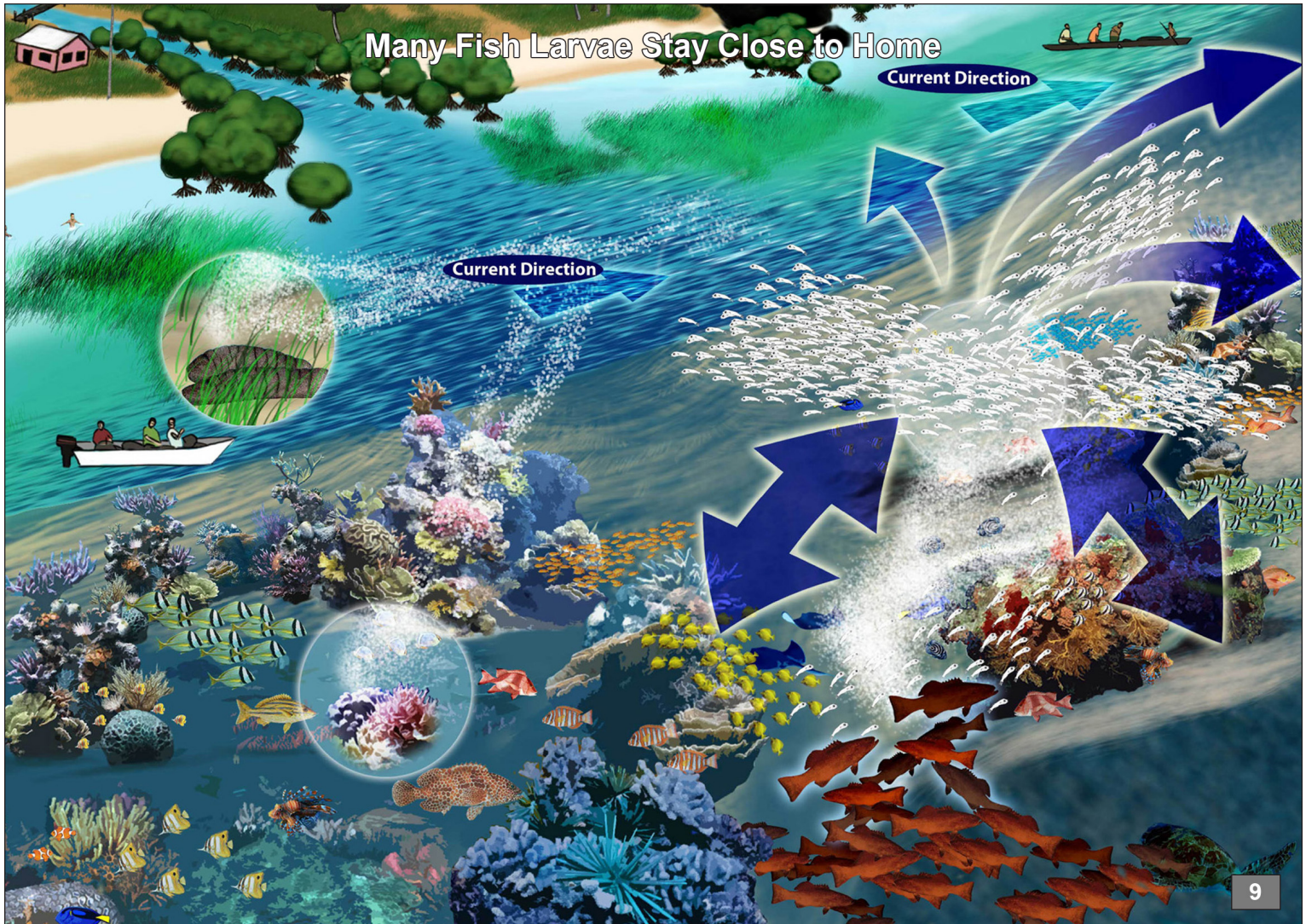
3 Heat Tolerant



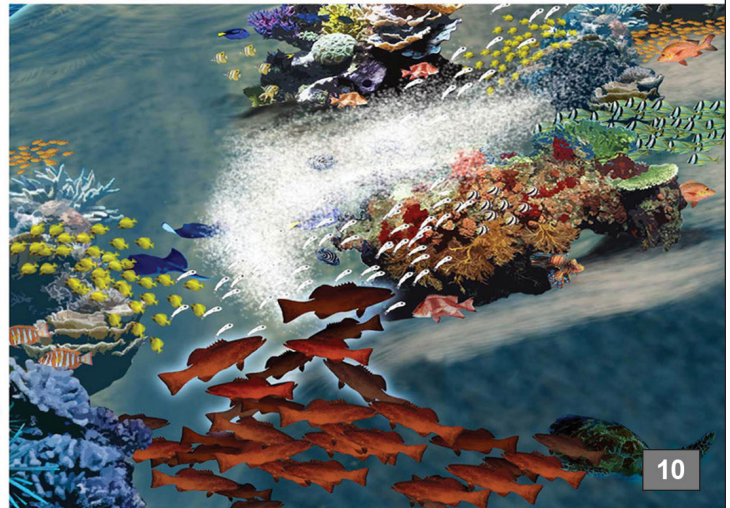
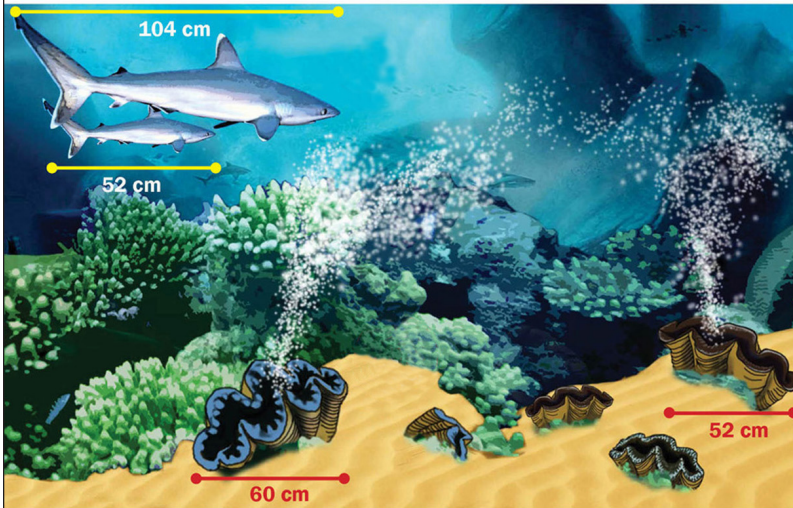
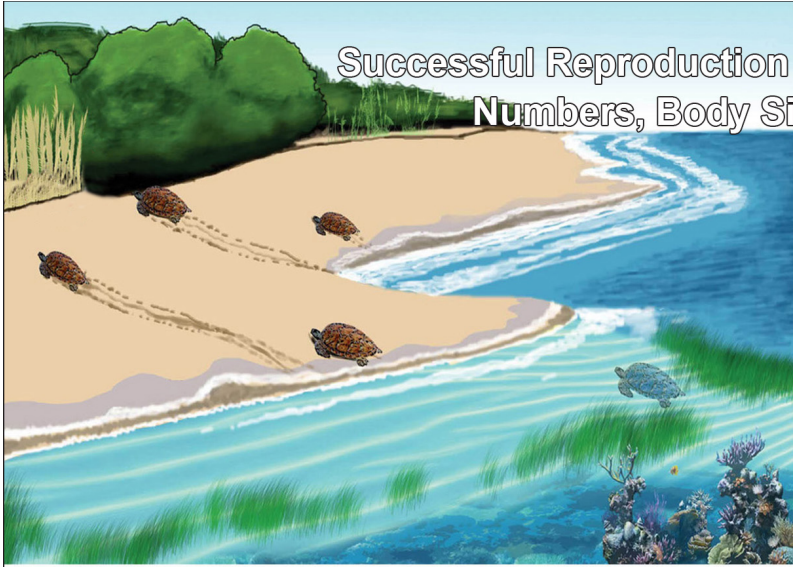
## Some Species Need Bigger Areas Than Others as Adults to Eat, Live, and Reproduce



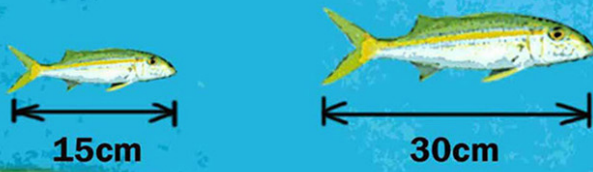
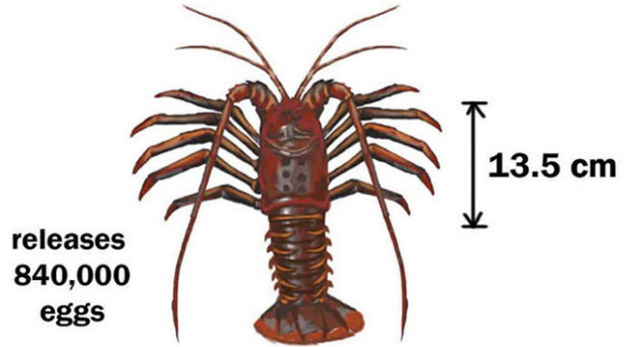
# Many Fish Larvae Stay Close to Home



Successful Reproduction Depends on Location,  
Numbers, Body Size, and Timing

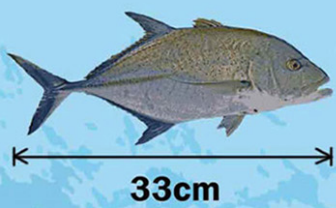
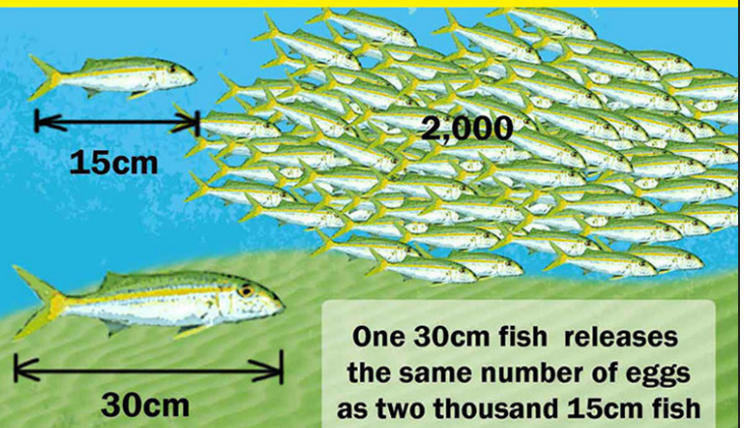


# Big Females Make More Eggs

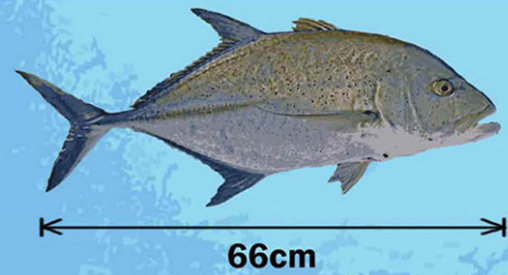


releases 90,000 eggs per year

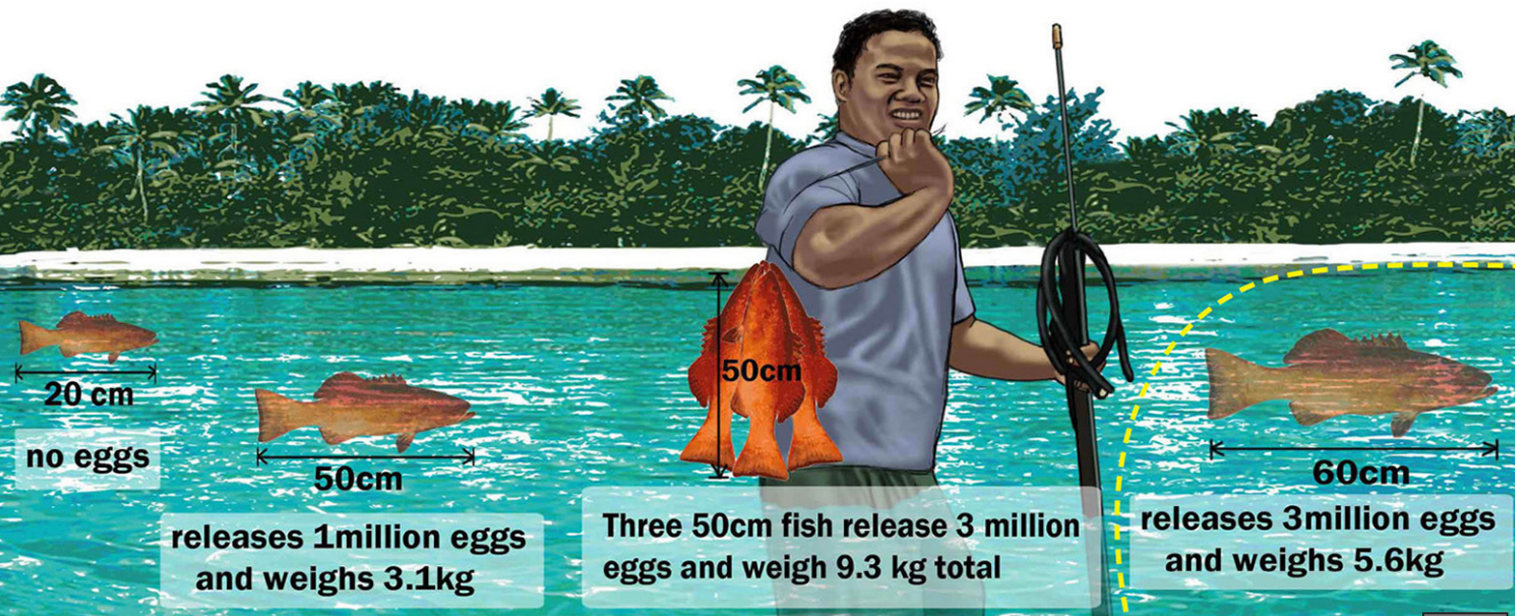
releases 180,000,000 eggs per year



releases 50,000 eggs

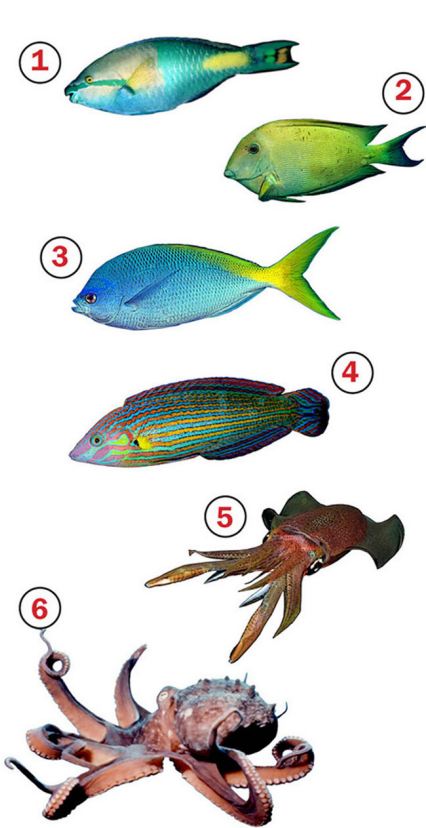


releases 4,300,000 eggs  
86 times more than the 33cm fish

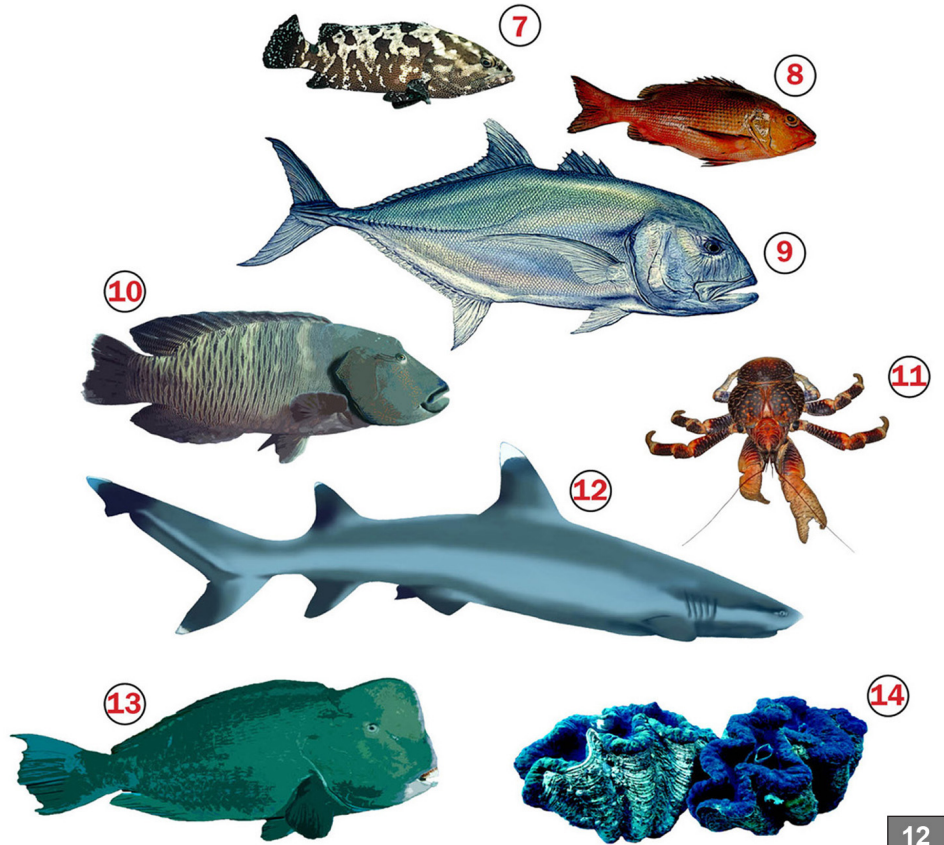


# Some Species are More Vulnerable and Recover More Slowly Than Others

**Less Vulnerable**  
Grow, Reproduce, and Recover Faster



**More Vulnerable**  
Grow, Reproduce, and Recover Slower



# Effective Management That Provides Community Benefits is Critical



# What are the Nine Essential Factors That Must Be Considered to Keep Resources Abundant and Resilient?

**1. Each Species Needs Different Healthy Habitats Where They Can Eat, Live, Grow, and Reproduce**

**2. Some Species Use Different Habitats at Different Times in Their Lives**

**3. Some Areas Survive and Recover Better Than Others**

**4. Successful Reproduction Depends on Location, Numbers, Body Size, and Timing**

**5. Many Fish Larvae Stay Close to Home**

**6. Some Species Need Bigger Areas Than Others as Adults to Eat, Live, and Reproduce**

**7. Big Females Make More Eggs**

**8. Some Species are More Vulnerable and Recover More Slowly Than Others**

**9. Effective Management That Provides Community Benefits is Critical**

**10. Heat Tolerant**

**11. Spreads to Move Inland**

**12. Recovery from bleaching**

**13. To Maintain Healthy Populations of Target Species It is Recommended to Protect An Area That is Twice The Size Of Their Minimum Area Needed**

**14. Less Vulnerable Grow, Reproduce, and Recover Faster**

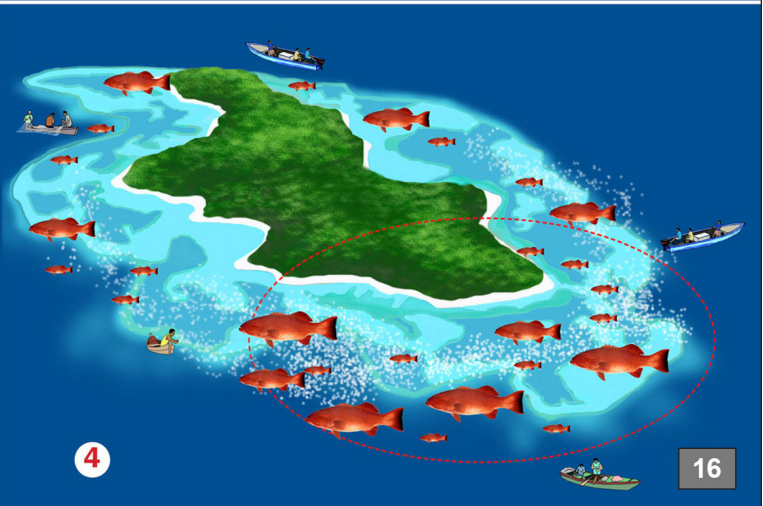
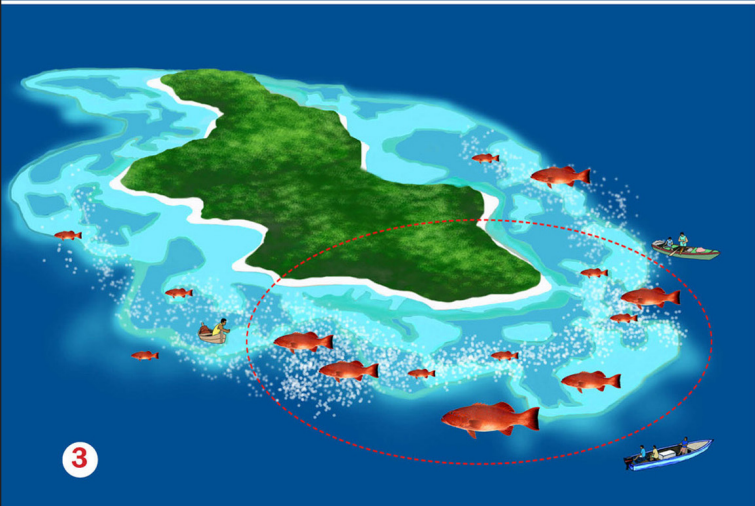
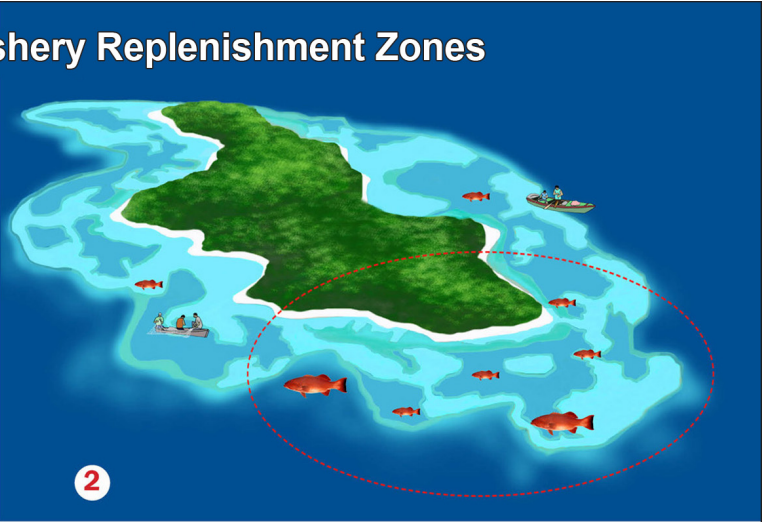
**15. More Vulnerable Grow, Reproduce, and Recover Slower**

# Effective LMA Zoning and Rules Maintain Health and Abundance of Marine Resources





# The Benefits of No-Take Fishery Replenishment Zones



## Practice Developing LMA Zones and Rules

