U.S. Coral Reef Task Force Strategy FY2016-2021

"Half the coral reefs are still in pretty good shape, a jeweled belt around the middle of the planet. There's still time, but not a lot, to turn things around." – Sylvia Earle, 2009

Introduction

Coral reef ecosystems are in decline globally (Gardner et al. 2003; Burke et al. 2011). Coral reefs in all U.S. and U.S.-affiliated jurisdictions are under threat; coral coverage in some areas has already decreased by more than 90 percent (Jackson et al. 2014). Scientists project that in a business-as-usual world, coral reefs as we know them may disappear within a matter of decades (Frieler et al. 2013).

It is clear that strategies to date, including the work of the U.S. Coral Reef Task Force (USCRTF), are not reversing this trend. Therefore, the USCRTF is adjusting our strategy moving forward to preserve and protect the biodiversity, health, heritage, and social and economic value of U.S. coral reef ecosystems and the marine environment against the environmental and social impacts that are causing their decline.

This strategy outlines what is at stake if coral reef ecosystems continue to decline, why coral reefs have been declining, and what threats coral reefs will face in the future, as well as USCRTF roles and authorities and what the USCRTF can do to address threats to coral reef ecosystems.

This strategy is not a comprehensive action plan. Rather, it is a framework to inform future USCRTF collaboration, facilitation, information sharing, and actions, including USCRTF resolutions and work plans. This strategy is intended to guide the actions and initiatives of the USCRTF during the next 5 years, given its authorities and roles, to keep coral reef ecosystems alive and resilient in the face of both local and global stressors.

What is at Stake

Healthy coral reefs are among the most biologically diverse and economically valuable ecosystems on Earth. They provide vital ecosystem services that support adjacent communities, related economies, and ways of life (Costanza et al. 2014). Tropical coral reef ecosystems are a source of food security and livelihoods for millions of people worldwide. Approximately 500 million people globally depend on coral reef ecosystems for food, coastal protection, and income from tourism and fisheries; this includes 30 million people who are almost totally dependent upon coral reef ecosystems for their livelihoods (Wilkinson 2008).

Valuations of the economic worth of coral reef ecosystems around the world vary, but they are nearly always measured in billions of dollars. By one estimate, the total net benefit per year of the world's coral reef ecosystems is $29.8 billion (Cesar, Burke and Pet-Soede 2003;

Conservation International 2008). A study recently published by the National Oceanic and Atmospheric Administration (NOAA) Coral Reef Conservation Program, conservatively estimates the total economic value of U.S. coral reef ecosystems to be over $3.4 billion per year (estimates based on 2007 dollar) (Brander and Van Beukering 2013; Edwards 2013). According to this report, this value should be considered a partial estimate due to: (1) the limited geographical coverage of some state and territory level estimates, and (2) the limited set of ecosystem services that are valued for some states and territories. These limitations highlight the relative complexity of capturing the total economic value of coral reef ecosystems. This is in part due to challenges in estimating all the additional ecological benefits and services provided by these ecosystems (non-use benefits) along with a paucity of funding allocated to natural resource valuation studies. The importance of healthy functioning coral reefs is expected to be even more relevant in the face of sea level rise with respect to the role reefs play in protecting important coastal infrastructure and economic industry such as coastal tourism (Ferrario et al. 2014). Some examples of the intrinsic and economic values of coral reefs (coastal protection, medicine, cultural) are presented below.

Healthy coral reef ecosystems are havens for biological diversity and abundance, providing important habitat, spawning areas, and nursery grounds for fish, crustaceans, algae, and other species. Coral reef ecosystems cover less than 1 percent of the Earth's surface, yet they support a disproportionate amount of marine species, providing habitat for one-quarter of the world's marine organisms. Their three-dimensional physical complexity supports high biodiversity and productivity. Reef structures support over 600 species of calcifying corals, 4,000 species of fish, as well as high diversity of invertebrates, macroalgae, and marine megafauna (Wilkinson 2008).

Coral reefs strengthen our coastlines and protect them from storms, tsunamis, and erosion (Ferrario et al. 2014). This protection is especially important to mitigate the impact of climate change as sea level rises and the threat of coastal inundation during extreme events increases. Coral reefs protect the shorelines of more than 93,000 miles worldwide, sheltering villages and big cities alike (Burke et al. 2011).

Coral reef ecosystems are a promising source of new medicines with potential for treatment of malaria, human immunodeficiency virus (HIV), and certain cancers (Bruckner 2002; Tacio 2008). They also are of great cultural importance in many regions around the world (Burke et al. 2011).

Yet, coral reef ecosystems are in jeopardy. Approximately 75 percent of reefs around the world have been rated as threatened by local stressors such as overfishing, pollution, and habitat degradation (Burke et al. 2011). These local stressors then interact with and are exacerbated by global factors, including climate change-related stressors such as increased sea surface temperatures (which result in coral bleaching) and other large-scale changes like ocean acidification (Burke et al. 2011). In 2014, after extensive analysis of existing threats to coral reefs, NOAA listed 20 species of coral as threatened under the Endangered Species Act. In addition to the 20 species that are listed as threatened, two species are recognized as being endangered, based on the likelihood of extinction by 2100 (NOAA 2014). By 2030, 90 percent of all coral species will be threatened, or likely to become endangered, with this number rising to nearly 100 percent by 2050, if we do nothing (Burke et al. 2011).

Further loss or degradation of coral reef ecosystems creates significant social, cultural, economic, and ecological impacts on people and communities in the U.S. and around the world. Like the reefs themselves, many of these communities are confronting additive effects of both local and global challenges to their economies and ways of life.

What is Behind Coral Reef Decline

Decades of scientific research have demonstrated that the threats to coral reefs arise from both local and global sources (Melillo et al. 2014). The impacts from local stressors, including nutrients and other forms of pollution, overfishing, and poorly managed coastal development, are well documented and account for a portion of the damage to coral reefs that has occurred over the past several decades (Bellwood et al. 2004).

More recent research has given us a better understanding of impacts from global stressors, such as increased sea surface temperatures and associated coral bleaching, and ocean acidification resulting from the ocean's absorption of carbon dioxide (CO_2) emissions. Both coral bleaching and ocean acidification are projected to worsen over time as CO_2 levels in the air increase. Coral bleaching could degrade many of the world's existing coral reefs within a matter of decades, especially where it occurs in combination with local stressors. Meanwhile, ocean acidification will increase reef erosion and decrease coral reef framework stability. Coral reef ecosystems which face overfishing and excessive nutrients or pollution will fare the worst in the face of global stressors, and will degrade the quickest (Melillo et al. 2014).

Local Stressors

Over the past 20 to 40 years, many monitored coral reefs have shown marked degradation due to habitat destruction, overfishing, coastal development, sediment, nutrients, sewage, and other land-based sources of pollution, sometimes in combination with coral bleaching resulting from increased sea temperatures (Spalding et al. 2001). In some cases, the changes over time have been stark. For example, coral reef cover across the Caribbean has declined by half since 1970 (Jackson et al. 2014). In the 1980s and 1990s, Caribbean coral reefs experienced a marked reduction in coral cover due to massive coral bleaching and coral disease (Aronson and Precht 2006). These impacts to coral reefs were the impetus for Executive Order (EO) 13089, which created the USCRTF in 1998, and led to the various strategies and action plans that the USCRTF has since developed.

Development and technology have expanded human influence into the far corners of the globe, altering coral habitat. Coral reef ecosystems can be damaged or destroyed directly by marine construction, dredging, quarrying for building materials, and destructive fishing practices and gear, or indirectly through poorly managed coastal development. The loss of connected nursery habitat, primarily mangrove and seagrass habitats, also leads to a depletion of reef related species (Ogden 1988).

Land-based sources of pollution are one of the chief threats to coral reef ecosystems. Land-based sources of pollution that degrade coral reefs include: sediment, nutrients, pesticides, trace metals, hydrocarbons, pathogens, and emerging pollutants such as microplastics and pharmaceuticals (Engler 2012; Hall et al. 2015). The most widespread documented land-based impacts to coral reef ecosystems have come from sediment and nutrients. Excessive marine sedimentation can result from accelerated erosion associated with human activities (e.g., construction, quarrying, or agriculture) where inadequate prevention and mitigation measures are employed. Once in the water, sediment can be re-suspended during storms and cause recurrent damage to coral reefs (Field et al. 2008). Sediment from land-based sources also can carry nutrients (e.g. phosphorous). Nutrients such as nitrogen and phosphorous originate from fertilizer runoff, human sewage (even with secondary treatment), animal waste, and other natural and anthropogenic sources, and are transported in dissolved form or, as noted above, attached to sediment. Excessive nutrients cause damage to coral by stimulating the growth of algae which can outcompete and replace coral following coral mortality events. Excessive nutrients lower the bleaching threshold for corals, making corals more susceptible to impacts associated with ocean acidification in coastal waters (Wooldridge 2009).

Overfishing and species-based, instead of ecosystem-based, fisheries management has had a severely negative impact on certain reefs. Overfishing alters the balance between predator fish and prey, causing cascading effects throughout the ecosystem (McClanahan et al. 1999). For example, overfishing of herbivorous fish that graze macroalgae from the reef surface can result in uncontrolled growth of macroalgae that can outcompete corals, which leads in turn to fewer fish (McClanahan et al. 1999). Single-species fisheries management does not adequately take into account regional habitats – like coral reefs – that require a diverse fish community to maintain a healthy ecosystem.

In some areas, a lack of awareness and appreciation by local residents and visitors and unmanaged human use of coral reefs pose risks to coral reef ecosystems. Addressing the harmful cumulative impacts of individual actions that impact increasingly vulnerable coral reefs, while also respecting historical and cultural ties to the reef system is a continuous struggle for resource managers.

Global Stressors

Increased sea surface temperatures and ocean acidification are causing harm to coral reefs worldwide. In 2016, the third ever global-scale coral bleaching event was underway.

Coral bleaching is a stress response. The main cause of bleaching is heat stress from high sea surface temperatures that cause corals to expel the symbiotic algae, known as zooxanthellae, living in their tissue. These symbiotic algae give the coral much of their color and, through photosynthesis, support coral metabolism and calcification. Loss of zooxanthellae results in the coral turning white (e.g., bleached appearance), the onset of starvation, and a compromised immune system that renders them more susceptible to diseases. Coral reefs can recover from a bleaching event of mild or moderate severity and duration, but this recovery process can take many years. If the thermal stress is more extreme (e.g., resulting from significantly elevated water temperature), of long duration, or if compounded by other impacts to the reefs, such as overfishing, nutrients, or sediments, then bleached corals are significantly more likely to die (NOAA 2015). The impacts from climate change and ocean acidification are expected to increase in both scope and extent into the future (Melillo et al. 2014). As bleaching events increase in frequency and severity, corals will not have adequate time to recover, and mortality will increase (Baker et al. 2008).

According to NOAA, the 2014-2016 bleaching event represents the worst coral bleaching event since 1997-98, when 15 to 20 percent of the world's coral reefs were functionally lost. Almost the entire Florida Reef Tract experienced either moderate or severe bleaching in 2014 and 2015 (Florida Reef Resilience Program 2015). In Florida, an unprecedented coral disease outbreak was exacerbated by the multi-year thermal stress resulting in the death of thousands of corals near Miami and Fort Lauderdale.

In addition to increased sea surface temperatures, the ocean's chemistry is changing as it absorbs CO_2 that is accumulating in the atmosphere. The ocean has absorbed about one-third of all the CO_2 created by burning fossil fuels, becoming more acidic in the process (Feely et al. 2004). The ocean is about one-third more acidic now than it was a century ago, making it harder for corals and other marine organisms (e.g. shrimp, oysters, lobsters) to develop and survive (Orr et al. 2005). This increased acidity also exacerbates the bio-erosion of coral reefs caused by marine sponges and algae (Enochs et al. 2015). As CO_2 levels increase, the ocean may acidify to the point that existing coral reefs will begin to dissolve (Melillo et al. 2014). Ultimately the vast coral structures, which provide shelter and food for thousands of reef organisms, will degrade.

Compounding this on a local level, nutrient inputs from human activities can lower the pH of coastal waters, exacerbating the impact of ocean acidification in a process referred to as "coastal acidification." Coral reefs impacted by ocean acidification could suffer more damage where nutrients from fertilizer or human waste enter the ocean. Preliminary data show that reefs adjacent to major inlets in southeast Florida are already experiencing coastal acidification at levels projected for the end of the century under the most extreme "business-as-usual" emission scenarios (Camp et al. 2016).

Atmospheric CO_2 levels have now passed 400 ppm, up from 285 ppm when global industrialization began (Burke et al. 2011). According to the 2011 study, Reefs at Risk Revisited, "if CO_2 levels are allowed to reach 450 ppm (predicted to occur by 2030-2040), reefs will be in rapid and terminal decline world-wide from the synergistic impacts of mass coral bleaching, ocean acidification, and other environmental impacts." By 2100, CO_2 levels in the atmosphere are projected to be between 500 and 1000 ppm; the Intergovernmental Panel on Climate Change (2013) and the National Climate Assessment (2014) predict 800 ppm under the "business as usual" model.

Reasons for Hope

Coral reefs can be resilient. Corals continue to thrive in remote areas largely untouched by human activity, where ecosystems and food chains are largely intact (Cinner et al. 2016). Although areas remote from human activity are becoming rare, in areas with human activity coupled with management controls that reduce coral reef stressors, we find healthy coral (Smith and Marx 2016; Wooldridge and Done 2009). Given a chance, coral reefs can rebound. Some reefs have shown a remarkable ability to recover from bleaching, particularly when other threats were low. Bermuda and Bonaire are examples of areas in the Caribbean where active management of parrotfish and water quality have had a positive impact on coral reef health and resilience (Jackson et al. 2014).

On the local level, actions by the USCRTF and its members have helped to reduce impacts to coral reefs. The establishment of ecosystem-based marine protected areas and actions to reduce or eliminate eroded sediments and pollution from entering near shore waters have improved conditions to support better coral health in the U.S. and its territories.

On a global level, projections of impacts expected over the next few decades represent our best estimates, but are not a certainty. Of the many species of coral, some may tolerate, or recover from, the effects of warmer water or ocean acidification better than others. The good news is that some "refugia" have been found where coral species tolerate either increased sea surface temperatures that would normally cause bleaching, or decreases in pH predicted to corrode coral's structural integrity (Baker et al. 2008). The bad news is that it is unclear whether corals can adapt to the levels of warming and ocean acidification or the rapid pace of change predicted for the future.

If coral reefs are kept as resilient as possible by reducing local stressors, then the global community has more time to reduce carbon emissions, and for at least some corals to acclimate to new conditions before CO_2 levels become too high for their continued survival. If scientists are provided more time to better understand the mechanisms allowing some corals to survive better than others, coral reef managers may help reproduce those mechanisms. However, coral reefs may be defenseless against the worst climate scenarios, and if CO_2 levels continue to accelerate, coral reefs as we know them may disappear from much of the planet in the lifetime of a person born today.

U.S. Coral Reef Task Force Roles and Authorities

The USCRTF was established in 1998 by Presidential Executive Order (EO) 13089 "to preserve and protect the biodiversity, health, heritage, and social and economic value of U.S. coral reef ecosystems and the marine environment."

The USCRTF is chaired by the Department of the Interior and the Department of Commerce through NOAA. USCRTF members include senior representatives from 12 federal agencies and Governors of the seven coral reef states, territories, and commonwealths of the U.S., plus representatives from the Freely Associated States: Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau. Since its inception, the USCRTF has been instrumental in furthering national policy and priorities for coral reefs and building partnerships and strategies for on-the-ground action to conserve them.

The USCRTF has worked in partnership with its members as well as with nongovernmental organizations and commercial interests to support the design and implementation of additional management, education, monitoring, research, and restoration efforts to conserve coral reef ecosystems.

EO 13089, "Coral Reef Protection," establishes a policy framework to guide federal action on coral reefs. It mandates that Federal agencies shall: (1) identify their actions that may affect U.S. coral reef ecosystems, (2) utilize their programs and authorities to protect and enhance the conditions of U.S. coral reef ecosystems, and (3) to the extent permitted by law, ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems.

The USCRTF, in accordance with Section 5 of EO 13089, is charged with:

- Mapping and monitoring U.S. coral reefs;
- Researching the causes and consequences of coral reef degradation;
- Developing, recommending, and seeking or securing implementation of measures to reduce and mitigate coral reef degradation from pollution, over-fishing, detrimental alteration of temperature, and other causes as well as restore damaged coral reefs. In developing these measures, the USCRTF shall review existing legislation and recommend legislation as appropriate;
- Evaluating existing navigational aids to determine if the locations of specific coral reefs should be enhanced to minimize physical damage from ship groundings and anchors; and
- Assessing the U.S. role in international trade and protection of coral reef species and implementing strategies to promote conservation and sustainable use of coral reefs internationally.

What the Task Force Can Do

The USCRTF looks to EO 13089 to inform both its strategic goals and its overall strategy to attain those goals. Although EO 13089 did not anticipate ocean acidification or bleaching on a global scale, its scope is sufficiently broad to accommodate consideration of these environmental threats within its goals. In addition, by incorporating bleaching and ocean acidification into our strategic goal and overall strategy, the USCRTF is acting consistently with Executive Order 13653, "Preparing the United States for the Impacts of Climate Change." EO 13653 states that federal agencies "should promote: (1) engaged and strong partnerships and information sharing at all levels of government; (2) risk-informed decision-making and the tools to facilitate it; (3) adaptive learning, in which experiences serve as opportunities to inform and adjust future actions; and, (4) preparedness planning."

As the combination of global and local stressors increases the threat to coral reefs, the challenge for the USCRTF is for our members to apply their limited resources more strategically within our existing authorities. The best overall approach the USCRTF can take to help reduce local impacts to coral reefs is to **promote effective collaboration and facilitation among our members** and **disseminate information regarding tools and initiatives** that could be used under existing authorities. It is particularly important to **reduce local impacts on** those coral reefs that are proving more resistant and resilient to climate change, **while the global community works to reduce carbon emissions**. The USCRTF can and should adapt and adjust its approach as more light is shed on threats to coral reefs, including emerging stressors, degrees of interrelatedness of stressors, and the effectiveness of and capacity for responses.

The USCRTF brings together representatives from both the federal and state, territory, and commonwealth governments and interacts with the academic community, the public, and other stakeholders during business meetings and in the course of other work. The USCRTF has no authorized budget, yet the opportunities it provides for collaboration and communication are priceless. The USCRTF meets in-person twice a year and its Steering Committee and working groups have calls every month, ensuring continuity and continued collaboration.

USCRTF Strategic Goal

"Keep coral reefs as resilient as possible in the face of climate-related challenges." A simpler way to say this would be: "**Keep corals alive**."

USCRTF Strategy

1. **Coral reef stressors & management** – Protect coral reef ecosystems from local stressors, such as land-based pollution, especially nutrients and sediments, and overfishing; make strategic adjustments to all management activities based on effectiveness and accounting for the effects of climate change on these stressors.
    a. **Place-based focus**: Continue the watershed-based approach to protect site-specific coral reefs.
    b. **Land-based pollution**: Work with local partners and stakeholders to reduce land-based pollution in USCRTF jurisdictions, including sediments, nutrients, pathogens, pesticides, hydrocarbons, trace metals, microplastics/marine debris, and pharmaceuticals.
    c. **Overfishing**:
        i. Help prevent overfishing of coral reefs by partnering with and supporting the work of local governments.
        ii. Work with fisheries management entities at all levels to educate them on the need for ecosystem-based management for coral reefs.
    d. **Climate change and ocean acidification**:
        i. Support the analysis of data on reef health to determine the relative resilience of specific reef sites and then prioritize conservation of these sites based on their ability to resist and recover from the impacts of global climate change, including possible interactions with other stressors.
        ii. Encourage and support USCRTF members' actions to reduce negative impacts to coral reefs, such as those from greenhouse gases.
            1. Support individual federal agency and local jurisdiction efforts to reduce CO_2 emissions.
        iii. Bring attention to climate change and ocean acidification in actions to protect coral at the local level; for example encourage use of "climate-smart" design in protecting watersheds or use a resilience-based management approach; ensure that marine planning and management efforts consider climate change.
        iv. Bring positive attention to entities that are making concerted efforts to reduce impacts to coral reefs and coral reef ecosystems, for example by developing an award to be given out by the USCRTF.
    e. **Injury and mitigation:**
        i. Broadly share the "Handbook on Coral Reef Impacts: Avoidance, Minimization, Compensatory Mitigation, and Restoration."[1]

[1] The Handbook on Coral Reef Impacts: Avoidance, Mitigation, Minimization, Compensatory Mitigation, and Restoration is a characterization of the federal mandates; review of existing policies and federal agency, state, and territory roles and responsibilities; and a compendium of best practices, science-based methodologies for quantifying ecosystem functions or services and protocols available for use when assessing, mitigating, and restoring coral reef ecosystems.

ii. Work with the scientific community and those agencies with authority and funds to develop and implement research aimed at exploring innovative methods for reef restoration (e.g. such as coral gardening, outplanting of lab-reared corals) and upscale efforts to mitigate climate change impacts (e.g. shading, generating capillary waves during periods of thermal stress to decrease bleaching risk). Currently these approaches are only feasible at small scales, but future research should focus on making mitigation and restoration projects viable at the site or ecosystem level.

f. **Enforcement**: Support capacity building for enforcement of local laws and regulations related to fishing, pollution, illegal coral harvest and trafficking, and physical damage on coral reefs.

g. **Local coral reef management capacity**: Help improve and build local coral reef management capacity at the jurisdiction level.

i. Work with the U.S. All Islands Coral Reef Committee to sustain and codify the coral reef management fellowship program.

ii. Work to identify ways in which the USCRTF can help meet cross-cutting capacity needs in the jurisdictions (see NOAA Coral Reef Conservation Program "A Synthesis of Issues Affecting the Management of Coral Reefs and Recommendations for Long-Term Capacity Building in U.S. Jurisdictions").

2. **Outreach/Education and Communication –** Increase awareness, internally and externally, of the status of coral reef ecosystems, the threats to coral reef ecosystems from climate change and other stressors, and what people can do to reduce negative impacts.

a. Use the collective voice of the USCRTF members to advance awareness, internally and externally, of the **connection between human activities and impacts to coral reefs**, including climate change and the demise of coral reefs as well as over-fishing, trafficking, and demand for coral products; strive to make this connection commonly understood.

b. Conduct, facilitate, and support robust and targeted outreach on **the importance of coral reef ecosystems** to students K-12, recreational ocean users, elected officials, and communities in tropical coastal areas.

i. Explore applications for using “sentinel” sites to help inform target audiences about coral reef ecosystems and coral reef responses to changing environmental conditions.

ii. Partner with non-governmental organizations working to protect coral reefs locally and to strengthen related outreach and education messaging and efforts.

c. Share information, internally and externally, on the **status of coral reefs, ocean acidification, coral bleaching,** and **implementation of the National Ocean Policy**, through inter- and intra-agency and jurisdiction efforts.

i. Provide updates of mass coral bleaching, disease outbreaks, and ocean acidification at USCRTF meetings as well as more frequently through Steering Committee or working group announcements or meetings to continue improving awareness of the status of global stressors.

ii. Vet, summarize, and disseminate information describing successful pilot projects improving coral reef health resilience or enhanced community stewardship.
iii. Publish in journals/reports, present at conferences/meetings, and develop outreach materials (e.g., video documentaries, web presence, educational tools).

3. **Research and Monitoring** – Continue to better understand the threats to coral and potential responses to inform effective management.
    a. Invite exchanges with the scientific community to receive the most recent information on threats and potential responses.
    b. Use working group, steering committee, and USCRTF meetings as opportunities for science-based updates on coral.
    c. Support scientific research and interpretive material focusing on risks from emerging threats, including pollutants such as microplastics and pharmaceuticals, natural disasters, and disease outbreaks, and develop appropriate responses as individual or collective member authorities allow.
    d. Continue to monitor the status of coral reefs and the impacts from multiple stressors in order to inform effective management and widely publish results for effective dissemination of information.
    e. Identify and track key coral reef metrics to assess status and trends.
    f. Continue to support research to advance remote sensing technologies, models, and algorithms for improved observations and measurements of coastal ecosystems (e.g. coral reefs), regional and local stressors (e.g. SST, water quality), and climate variability.
4. **Legislation** – In accordance with the Executive Order, review and make recommendations as appropriate on existing legislation, rules, and policy.
    a. Review existing legislation, regulations, and policies to determine if they can yield additional protection for coral or capacity for coral-related issues.
    b. Review existing legislation to determine whether additional legislation is necessary to complement the policy objectives of the USCRTF strategic goal, and if so, recommend such legislation.
5. **International** – Advance coral reef protection internationally.
    a. Encourage and support USCRTF members who work internationally to protect coral reefs.
    b. Support partnerships and information sharing with international organizations that protect coral reefs, such as the International Coral Reef Initiative and the United Nations Environment Programme's coral reef unit.
    c. Support USCRTF members who work internationally to combat illegal coral harvest and trafficking.
6. **USCRTF** – Ensure effective function of the USCRTF to meet its mission and achieve its goals.
    a. Strengthen partnerships and collaboration.
    b. Use outcomes from previous actions to help guide future actions.

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