

TULANE ENVIRONMENTAL LAW JOURNAL

VOLUME 31

SUMMER 2018

ISSUE 2

Cooperative Conservation: Strengthening U.S.- Cuba-Mexico Relations Through Joint Management of Marine Protected Areas in the Gulf of Mexico

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I. INTRODUCTION

The United States and Cuba have a tumultuous history. After decades without a formal political relationship, U.S. President Barack Obama and Cuban President Raul Castro entered into formal diplomatic relations in December 2014.¹ Americans and Cubans alike generally had positive reactions to this news, including several American businesses eager to establish themselves in Cuba.² However, the recent spate of “health incidents” involving possible sonic exposure to American officials in Cuba causing hearing and memory loss and nausea, along with President Donald Trump’s decisions to draw back on Obama’s loosening of restrictions and to oust several Cuban diplomats from Washington, D.C., has created much uncertainty about the future direction of U.S.-Cuba relations.³

As both countries explore their emerging cooperative relationship, one key opportunity for future collaboration is environmental protection. Some environmentalists are concerned about the environmental effects of expanded business activities on the island nation.⁴ Cubans generally take pride in the health of their natural environment, and Cuba’s limited

1. *Charting a New Course on Cuba*, WHITE HOUSE: PRESIDENT BARACK OBAMA, <https://obamawhitehouse.archives.gov/issues/foreign-policy/cuba> (last visited May 15, 2017).

2. See Claire Felter et al., *U.S.-Cuba Relations*, COUNCIL ON FOREIGN REL., <http://www.cfr.org/cuba/us-cuba-relations/p11113> (last visited Feb. 24, 2018); Erica Goode, *Cuba’s Environmental Concerns Grow with Prospect of U.S. Presence*, N.Y. TIMES (July 1, 2015), <https://www.nytimes.com/2015/07/2/science/earth/cubas-environmental-concerns-grow-with-prospect-of-us-presence.html>.

3. Christopher Woody, *The Response to ‘Health Attacks’ on US Diplomats in Cuba Suggests Nobody Knows What’s Going on*, BUS. INSIDER (Oct. 5, 2017), <http://www.businessinsider.com/cuba-and-us-dont-know-perpetrator-of-health-attacks-on-us-diplomats-2017-10>.

4. Goode, *supra* note 2.

development and tourism has helped preserve these resources, including its coastal ecosystems.⁵ The Cuban economy is expanding, and tourism is a key element of this growth. In recent decades, the country has promulgated several environmental laws, and the question is whether these laws will hold up as American businesses and tourists come to the region.⁶

One environmental challenge in need of immediate attention is the preservation of coral reefs and their corresponding marine ecosystems between the United States and Cuba in the Gulf of Mexico. These reefs are subject to several serious and immediate threats, including the impacts of climate change, such as coral bleaching and ocean acidification; emerging coral diseases; land-based sources of pollution; harmful fishing practices; habitat loss and degradation; and the introduction of invasive species such as the Pacific lionfish.⁷

The threats to coral reefs and the two countries' shared marine resources bring into focus two 2015 agreements between the United States and Cuba. First, the November 18 Memorandum of Understanding (MOU) calls for a cooperative relationship on both countries' marine protected areas (MPAs).⁸ Second, the broader November 24 Joint Statement calls for cooperation on a broad range of environmental issues, including the protection of marine and coastal areas.⁹ The agreements' implementation sparks important questions about whether the Trump administration will continue to promote improved U.S.–Cuba relations, and how the two countries can build a working relationship that not only achieves the goal of MPA conservation but also advances the cause of diplomatic reconciliation.

5. *Id.*

6. *Id.*

7. NOAA, CORAL HEALTH AND DISEASE IN THE PACIFIC: VISION FOR ACTION (S.B. Galloway et al. eds., 2009), [https://cdhc.noaa.gov/_docs/NOAA%20TM%20NOS-NCCOS%2097%20and%20CRCP%207%20\[2009\]compressed.pdf](https://cdhc.noaa.gov/_docs/NOAA%20TM%20NOS-NCCOS%2097%20and%20CRCP%207%20[2009]compressed.pdf); Mark A. Albins & Mark A. Hixon, *Worst Case Scenario: Potential Long Term Effects of Invasive Predatory Lionfish (Pterois Volitans) on Atlantic and Caribbean Coral Reef Communities*, 96 ENVTL. BIOLOGY FISHES 1151 *passim* (2013).

8. *U.S. and Cuba to Cooperate on Sister Sanctuaries*, NOAA, <http://sanctuaries.noaa.gov/news/nov15/us-and-cuba-to-cooperate-on-sister-sanctuaries.html> (last visited Feb. 24, 2018); Memorandum of Understanding on Cooperation and Conservation and Management of Marine Protected Areas, U.S.-Cuba, Nov. 18, 2015, <http://sanctuaries.noaa.gov/about/us-cuba-mou-english.pdf> [hereinafter *Sister Sanctuaries MOU*].

9. Joint Statement on Cooperation on Environmental Protection, U.S.-Cuba, Nov. 24, 2015, <https://www.edf.org/sites/default/files/us-cuba-joint-statement-on-environmental-cooperation.pdf>.

This Article explores the potential for using the MOU on MPAs to protect shared Gulf resources, especially coral reefs, and to make marine conservation a leading catalyst in forging closer relations between the United States and Cuba. It also will discuss the potential for expanding beyond the U.S.-Cuba agreements to seek trilateral ocean conservation and management programs, involving Mexico, through sister sanctuary and marine protected area initiatives. Part II of this Article focuses on the historical relationships between the United States and Cuba and also provides background on each country's environmental movements. Part III discusses the current ecosystem concerns in marine protected areas of the Gulf of Mexico. Part IV of this Article examines the current legal framework that exists in the United States and Cuba to jointly manage MPAs. In particular, Part IV will specifically focus on the U.S. and Cuba Sister Sanctuaries and Twins, including the laws that are in place to manage these regions. Part V analyzes the potential for expanding the collaborative effort to include Mexico. This Part will discuss the need for multilateral cooperation in the Gulf to effectively manage MPAs and valuable marine resources like coral reefs. Finally, Part VI concludes with recommendations for future Gulf resource cooperation beyond coral reefs.

II. U.S.-CUBA HISTORICAL BACKGROUND IN THE CONTEXT OF JOINT MARINE CONSERVATION, RESEARCH, AND MANAGEMENT

Fidel Castro came to power during the Cuban Revolution in 1959.¹⁰ U.S.-Cuba relations grew tense as Castro aligned his country with the Soviet Union, nationalized properties owned by the United States, and increased taxes on American products.¹¹ The United States ultimately cut off diplomatic relations with Cuba in 1961 and secretly tried to overthrow the Castro regime through covert operations like the Bay of Pigs invasion.¹² Not only were these attempts unsuccessful at expelling Castro, but they also increased Cuban mistrust of the United States and pushed Cuba closer to the Soviet Union.¹³ Cuba even allowed the Soviet Union to place missiles on Cuban territory.¹⁴ With Cuba only ninety miles away from American shores, this led to an intense standoff between the United States and the Soviet Union in October 1962 known as the

10. Felter et al., *supra* note 2.

11. *Id.*

12. *Id.*

13. *Id.*

14. *Id.*

Cuban Missile Crisis.¹⁵ Tensions de-escalated without incident, however, when the Soviet Union agreed to remove its missiles from Cuba in exchange for a U.S. promise not to invade Cuba and to remove American missiles from Turkey.¹⁶

In the years that followed, the United States attempted to isolate Cuba by refusing to engage in diplomatic or economic activities. This isolation policy persisted even after the fall of the Soviet Union in 1991.¹⁷ The Cuba Democracy Act in 1992 and the Helms-Burton Act in 1996 strengthened economic sanctions against Cuba and prevented the lift of the trade embargo until Cuba implemented a democratic government and elected new leaders.¹⁸

A. *U.S. and Cuban Environmental Movements*

Both the United States and Cuba underwent environmental reforms during the 20th century. The modern environmental movement in the United States is often said to have begun in 1962 when Rachel Carson published the novel *Silent Spring*.¹⁹ Through her book, Americans became more aware of the dangers of the insecticide DDT and its accumulation in the human body.²⁰ Over the next two decades, Congress strengthened existing environmental laws and enacted several new ones.²¹ In the context of marine protection, President Nixon and Congress created the National Oceanic and Atmospheric Administration (NOAA) in 1970 in part to manage U.S. ocean and coastal resources.²² In 1972, Congress passed the Marine Mammal Protection Act²³ and the Coastal Zone Management Act.²⁴ Congress also enacted the National Marine Sanctuary Act in 1972, which gave NOAA the authority to establish and manage marine sanctuaries.²⁵

15. *Id.*

16. *Id.*

17. *Id.*

18. *Id.*

19. *The Modern Environmental Movement*, PBS: AM. EXPERIENCE, <http://www.pbs.org/wgbh/americanexperience/features/earth-days-modern-environmental-movement/> (last visited July 23, 2017).

20. *Id.*

21. *Id.*

22. *Id.*; see also *NOAA History: A Science Odyssey*, NOAA, <http://www.history.noaa.gov/legacy/act6.html> (last updated June 8, 2006).

23. 16 U.S.C. §§ 1361-1423h (2012).

24. *Id.* §§ 1451-1466.

25. *Id.* § 1433.

Cuba's focus on environmental conservation, and marine conservation in particular, can be partly attributed to the work of French oceanographer and filmmaker Jacques Cousteau. Cousteau's work heavily influenced Fidel Castro, who was an avid fisher.²⁶ Castro and Cousteau became friends in 1985 when Cousteau visited Cuba to film his documentary, *Cuba: Waters of Destiny*.²⁷ The visit profoundly impacted both men: Cousteau marveled over Cuba's pristine coral reefs, and Castro took action to protect the environment.²⁸ At the Rio Earth Summit in 1992, Castro emphasized the urgent need for environmental protection and sustainable development, famously remarking that "[t]omorrow will be too late to do what we should have done a long time ago."²⁹ Following the Summit, Cuba amended its Constitution and passed several environmental laws, all aimed at protecting the country's natural environment.³⁰

When the United States cut off relations with Cuba in the 1960s, there was no ability for U.S. and Cuban environmental agencies to work together on marine conservation.³¹ Even in isolation from the United States, Cuban scientists pushed for the preservation of local coastal resources to sustain sources of food and income.³² Cuba hosts tourists from places like Europe, Canada, and Australia without seriously degrading the environment, and Cuban scientists have emphasized the importance of preserving coastal resources to continue to attract tourists, which are vital to Cuba's economy.³³

26. David Guggenheim, *How Castro and Cousteau's Legendary Friendship Preserved Cuba's Oceans*, ECOWATCH (Dec. 5, 2016), <https://www.ecowatch.com/castro-cousteau-kennedy-cuba-2128503553.html>.

27. *Id.*; Jean-Michel Cousteau et al., *The Gulf of Mexico Sister Sanctuary Network*, OCEAN FUTURES SOCIETY (July 18, 2017), <http://oceanfutures.org/exploration/films/gulf-mexico-sister-sanctuary-network> (hosted on YOUTUBE).

28. Guggenheim, *supra* note 26.

29. Fidel Castro, Address at the Rio Earth Summit: Tomorrow Will Be Too Late (June 12, 1992) (transcript available in *Fidel Castro at Earth Summit*, GREENLEFT WKLY. (June 24, 1992), <https://greenleft.org.au/content/fidel-castro-earth-summit>).

30. Goode, *supra* note 2.

31. Kevin Wadlow, *Cuba and the Keys Teaming Up for Marine-Resource Protection*, MIAMI HERALD (Oct. 14, 2015, 1:15 PM), <http://www.miamiherald.com/news/local/community/florida-keys/article39096687.html>.

32. Goode, *supra* note 2.

33. *Id.*

B. Transitioning to Cooperative Conservation

U.S. President Barack Obama and Cuban President Raul Castro announced their intent to improve relations on December 17, 2014.³⁴ The following year, several important events took place toward realizing this goal. The countries reopened embassies in each other's capital cities in July 2015.³⁵ Later that year, the United States and Cuba created a Bilateral Commission in September, and on November 18, the United States and Cuba signed a MOU that fosters "a cooperative relationship dedicated to the science, stewardship, and management of the countries' existing MPAs."³⁶

The MOU has set the stage for cooperation on marine protection, while fostering a healthier diplomatic relationship. The MOU also created a Sister Sanctuaries Program that encourages "conservation and understanding of natural marine resources in both countries, sharing technical and scientific data, and promoting education and outreach initiatives."³⁷ Cuba's Sister Sanctuaries specifically named in the MOU are Guanahacabibes National Park and the Banco de San Antonio reefs located offshore.³⁸ In the United States, the Sister Sanctuaries include Flower Garden Banks National Marine Sanctuary, Florida Keys National Marine Sanctuary, Dry Tortugas National Park, and Biscayne National Park.³⁹ The United States and Cuba may add additional sisters to the family in the future.⁴⁰

Under the MOU, the United States and Cuba agree to develop a biennial work plan to determine areas of focus for cooperation.⁴¹ However, cooperative activities carried out under the MOU are subject to the availability of funding.⁴² While financing is an important hurdle for successful implementation of the MOU, this agreement nevertheless provides the framework for the United States and Cuba to work together toward the mutual goal of protecting coral reefs.

34. *Charting a New Course on Cuba*, *supra* note 1.

35. *Id.*

36. *Id.*

37. *U.S. and Cuba to Cooperate on Conservation and Management of Marine Protected Areas*, NOAA (Nov. 18, 2015), <http://www.noaanews.noaa.gov/stories2015/111815-us-and-cuba-to-cooperate-on-conservation-and-management-of-marine-protected-areas.html>; Sister Sanctuaries MOU, *supra* note 8, at 2.

38. Sister Sanctuaries MOU, *supra* note 8, at 4.

39. *Id.*

40. *U.S. and Cuba to Cooperate on Sister Sanctuaries*, *supra* note 8; Sister Sanctuaries MOU, *supra* note 8, at 4.

41. Sister Sanctuaries MOU, *supra* note 8, at 5.

42. *Id.*

Additionally, the United States and Cuba issued a Joint Statement on environmental issues.⁴³ In it, the two governments pledge to cooperate “on a range of environmental issues such as protection of marine and coastal areas, disaster risk reduction, and oil spill prevention and response.”⁴⁴ The countries agreed to revisit this document within two years and as needed thereafter.⁴⁵ Unlike the MOU, this agreement speaks to environmental protection more generally. While the Joint Statement has potential to provide additional protection for marine and coastal areas in the future, it has so far taken a backseat to the MOU.

In December 2016, the countries signed additional MOUs concerning environmental issues. These MOUs included agreements to cooperate on seismic research,⁴⁶ wildlife conservation and terrestrial protected areas,⁴⁷ and weather and climate issues.⁴⁸ On January 18, 2017, the United States and Cuba signed a “Twinning Agreement” under the MOU on Wildlife Conservation and Terrestrial Protected Areas.⁴⁹ Similar to the Sister Sanctuary MOU, the Twinning Agreement pairs Everglades National Park in the United States with Ciénaga de Zapata National Park in Cuba, which share similar ecosystems.⁵⁰ The countries intend to use this Agreement to better manage both parks by sharing

43. Joint Statement on Cooperation on Environmental Protection, *supra* note 9.

44. *Charting a New Course on Cuba*, *supra* note 1.

45. Joint Statement on Cooperation on Environmental Protection, *supra* note 9.

46. *Cuba and the United States Sign a Memorandum of Understanding in the Field of Seismology*, CUBA DIPLOMATICA: BILATERAL REL. (Dec. 20, 2016), <http://www.cubadiplomacia.cu/EN/BilateralRelations/tabid/12156/ctl/Details/mid/19921/ItemID/66521/Default.aspx>, reprinted in CUBADEBATE (Dec. 21, 2016), <http://en.cubadebate.cu/news/2016/12/21/cuba-and-united-states-sign-memorandum-understanding-field-seismology/>.

47. *Cuba and the United States Sign a Memorandum of Understanding on Wildlife Conservation and Terrestrial Protected Areas*, CUBA DIPLOMATICA: BILATERAL REL. (Dec. 20, 2016), <http://www.cubadiplomacia.cu/EN/BilateralRelations/tabid/12156/ctl/Details/mid/19921/ItemID/66516/Default.aspx>, reprinted in CUBA MINREX (Dec. 20, 2016), <http://www.minrex.gob.cu/en/cuba-and-united-states-sign-memorandum-understanding-wildlife-conservation-and-terrestrial-protected>.

48. *Cuba and the United States Agree to Cooperate in the Field of Meteorology and Climate*, CUBA DIPLOMATICA: BILATERAL REL. (Dec. 21, 2016), <http://www.cubadiplomacia.cu/EN/BilateralRelations/tabid/12156/ctl/Details/mid/19921/ItemID/66527/Default.aspx>, reprinted in CUBA MINREX (Dec. 12, 2016), <http://www.minrex.gob.cu/en/cuba-and-united-states-agree-cooperate-field-meteorology-and-climate>.

49. *Cuba and the United States Sign Twinning Agreement Between Ciénaga de Zapata and Everglades National Parks*, CUBA DIPLOMATICA: BILATERAL REL. (Jan. 18, 2017), <http://www.cubadiplomacia.cu/EN/BilateralRelations/tabid/12156/ctl/Details/mid/19921/ItemID/66815/Default.aspx>, reprinted in CUBA MINREX (Jan. 18, 2017), <http://www.minrex.gob.cu/en/cuba-and-united-states-signed-twinning-agreement-between-cienaga-de-zapata-and-everglades-national> [hereinafter *Twinning Agreement*].

50. *Id.*

information about resource management and related scientific knowledge.⁵¹

Under the Trump administration, it is unclear whether the United States will continue to work toward mending relations with Cuba. President Trump appears to be taking a hard stance on Cuba, but the extent to which the Obama initiatives will be reversed remains unclear. In June 2017, the Trump administration scaled back some of the Obama-era policies.⁵² Additionally, the “health incidents” involving American officials in Cuba led President Trump to expel several Cuban diplomats from its Washington, D.C., embassy.⁵³ Nevertheless, it remains unlikely the United States would revert to isolation, because President Trump kept the embassies open and preserved some of the Obama administration’s economic reforms.⁵⁴ Moreover, Raul Castro stepped down on April 19, 2018, and was replaced by Miguel Díaz-Canel Bermúdez.⁵⁵ Trump has also left the environmental agreements in place. However, it is likely that there will be less interest in the initial cooperative ventures undertaken in November 2015.

Set against this backdrop, the Sister Sanctuaries MOU marks an important pivot point in U.S.-Cuba relations and the future of Gulf resource cooperation. It lays the framework for such cooperation, not only on MPAs and the environment in the United States and Cuba, but also on broader Gulf region economic and social issues. The remainder of this Article explains the need for joint conservation initiatives of coral reefs in the Gulf of Mexico, the scope of the current U.S.-Cuba Sister Sanctuaries MOU, the steps that the United States and Cuba have taken to carry out its terms, Mexico’s interest in cooperative conservation, and the promise for future action. Using coral reef conservation as an example, this Article sets the stage for more expansive efforts and agreements that address additional resources and activities of common interest to the three countries.

51. *Id.*

52. Julie Hirschfeld Davis, *Trump Reverses Pieces of Obama-Era Engagement with Cuba*, N.Y. TIMES (June 16, 2017), <https://nytimes.com/2017/06/16/us/politics/cuba-trump-engagement-restrictions.html>.

53. Woody, *supra* note 3.

54. *Id.*

55. Mimi Whitefield & Nora Gómez Torres, *Cuba’s New President Is the First Non-Castro in 42 Years. How Much Power Will He Have?*, MIAMI HERALD (Apr. 19, 2018), <http://www.miamiherald.com/news/nation-world/world/americas/cuba/article209246054.html>.

III. CORAL CONSERVATION ISSUES IN THE GULF OF MEXICO AND THE CARIBBEAN SEA

Coral reef ecosystems are formed by the aggregate living complexes of millions of tiny coral polyps, an invertebrate animal distantly related to the jellyfish.⁵⁶ The stunning underwater reef landscapes that exist today have been slowly sculpted over millions of years by the skeletons of whole communities of these creatures, living and growing together as a unit and community.⁵⁷ Coral reefs cover only 1% of the ocean floor, yet they support approximately 25% of all ocean life.⁵⁸ They represent some of the most biodiverse and valuable ecosystems on the planet, with Caribbean reefs alone providing an estimated US\$4.6 billion in annual economic value through fisheries, tourism, and ecosystem services.⁵⁹ Healthy reefs serve as a buffer for delicate tropical coastlines across the globe, provide direct sustenance for approximately 500 million people, and serve as nurseries to support and sustain countless marine species.⁶⁰

A variety of human pressures on the environment over the past several decades have resulted in both direct harm to coral reefs and significant alterations to global climate and ocean chemistry that impact coral health.⁶¹ Major anthropogenic impacts including pollution, destructive fishing, coastal development, bleaching, hurricanes, and diseases have cumulatively resulted in the widespread degradation and loss of coral reef ecosystems across the globe.⁶² Indeed, an estimated 75% of coral reefs are threatened, and an estimated 50% have already been lost in an exceptionally short geologic timeframe of only thirty years.⁶³

56. *What Is a Coral Reef Made of?*, NAT'L OCEAN SERV., NOAA, <https://oceanservice.noaa.gov/facts/coralmadeof.html> (last visited Feb. 24, 2018).

57. RACHEL WOOD, REEF EVOLUTION (1999).

58. Ocean Portal Team, *Corals and Coral Reefs*, SMITHSONIAN NAT'L MUSEUM NAT. HIST., <http://ocean.si.edu/corals-and-coral-reefs> (last visited May 30, 2017).

59. Laretta Burke & Jonathan Maidens, *Reefs at Risk in the Caribbean*, WORLD RES. INST. 1, 13 (2004), http://pdf.wri.org/reefs_caribbean_full.pdf.

60. *Coral Reefs: One of Earth's Most Diverse Ecosystems*, NOAA, <http://www.noaa.gov/explainers/coral-reefs-essential-and-threatened> (last visited June 1, 2017).

61. Ernesto Weil, *Coral Reef Diseases in the Wider Caribbean*, in CORAL HEALTH AND DISEASE 35-68 (E. Rosenberg & Y. Loya eds., 2004).

62. Mark D. Spalding et al., *World Atlas of Coral Reefs*, 77 Q. REV. BIOLOGY 354, 354 (2002).

63. Laretta Burke et al., *Reefs at Risk Revisited in the Coral Triangle*, WORLD RES. INST. 1 (2012), https://www.wri.org/sites/default/files/pdf/reefs_at_risk_revisited_coral_triangle.pdf.

In just the past few decades, researchers have identified yet another emerging threat to coral reefs that has already resulted in widespread and dramatic consequences for ecosystem health: coral disease.⁶⁴ Outbreaks of coral disease have occurred across the globe and are believed to have multifactorial causes, making it particularly challenging to understand the interplay of ecological factors influencing coral disease in order to predict or prevent outbreaks.⁶⁵ The Caribbean region harbors only about 8% of the coral reef area worldwide, yet 66% of all coral disease reports up to the year 2000 came from thirty-eight Caribbean nations.⁶⁶ Thus, Caribbean reefs have emerged as a premiere “disease hot spot,” due to this alarming and swift rise in virulent coral diseases associated with outbreaks and high coral mortality.⁶⁷ Thus, these reefs present a unique and urgent opportunity for advancing this important and emerging area of study.

The disease phenomenon is a threat to the health of the entire coral ecosystem throughout the wider Caribbean region. Indeed, recent disease epidemiology surveys demonstrate that a variety of common water-borne coral diseases, which were once thought to have limited, localized distribution, are in fact surprisingly widespread across the wider Caribbean, including the associated areas in the Gulf of Mexico and Florida.⁶⁸ Therefore, there is a clear and urgent need for expansion of capacity and funding for coral reef research focusing on collaborative efforts between Caribbean nations and the United States to study and protect our shared and mutually valued coral ecosystems.

It must also be recognized that some exceptional examples of pristine, intact, and largely flourishing reefs still exist in localized regions around particular Caribbean island nations that have implemented regulations to protect their reefs.⁶⁹ Cuba, in particular, is home to several such pristine reefs, including those of Jardines De La Reina, Banco de San Antonio, and Guanahacabibes National Park. Ongoing research into the ecological conditions that promote resiliency in these reefs, despite the devastating global trends in coral reef degradation, are timely and essential. Collaborative research efforts between the United States and

64. Weil, *supra* note 61.

65. Spalding et al., *supra* note 62.

66. Weil, *supra* note 61.

67. *Id.*

68. *Id.*

69. *Cuba: Unspoiled Cuban Reefs Awe Scientists*, NATURE CONSERVANCY, <https://www.nature.org/ourinitiatives/regions/caribbean/cuba/cubas-unspoiled-coral-reefs.xml> (last visited Nov. 6, 2017).

Cuba will help provide important insight into the conditions that promote coral reef health, which could guide and empower efforts to protect vulnerable reefs in the United States.⁷⁰

Marine ecosystems do not conform to the arbitrary rules of national boundaries or other fabricated, man-made delineations between territories or regions. Instead, they are intimately connected by their relatively close proximity, continuous geographic features, shared shipping and fisheries traffic, species dispersal and migration, and major ocean currents.⁷¹ Thus, it is imperative that scientists and governments launch collaborative and coordinated scientific, regulatory, and public outreach programs to address the key threats to the reefs of the Gulf of Mexico and the Caribbean and secure their protection. The global urgency of the coral reef condition and its implications for the human existence should transcend political and cultural differences and underscore the importance of international efforts to combat coral reef threats, restore environmental quality, and preserve these precious ecosystems for future generations.

IV. THE SISTER SANCTUARIES AND RELEVANT LAWS UNDER THE MOU

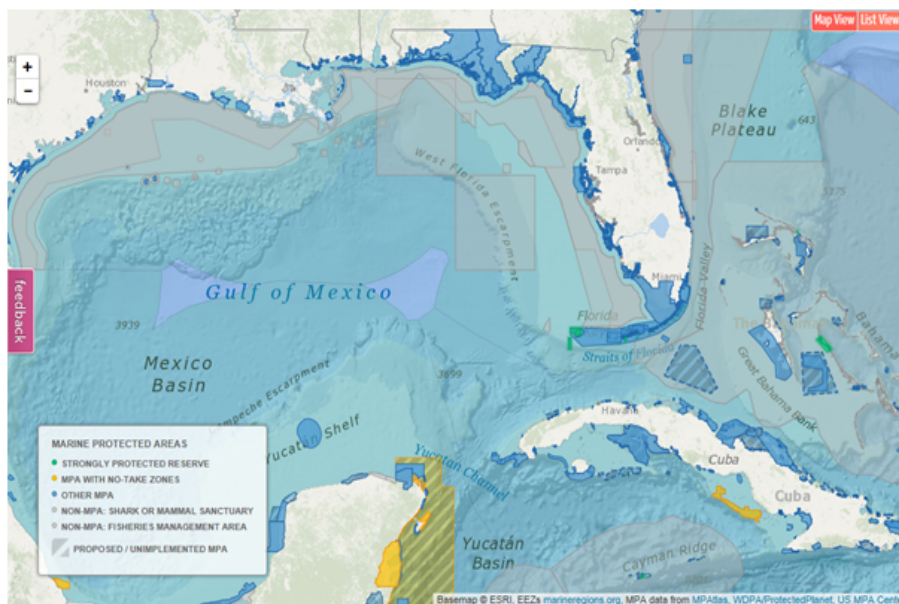
The MOU recognizes that the health of the coral reefs and other marine ecosystems in Cuba and the United States are interconnected. Joint cooperation is necessary to manage them effectively. The MOU does not create binding law and cannot force the parties to act.⁷² Still, the MOU can be a persuasive tool to encourage the United States and Cuba to work together to protect coral reefs within their borders. This Part discusses the sister sanctuaries covered under the MOU and the relevant laws in each country that govern their management.

70. See G. Machlis et al., *US-Cuba Scientific Collaboration Emerging Issues and Opportunities in Marine and Related Environmental Sciences*, 25 OCEANOGRAPHY 227, 228-29 (2012).

71. Eric A. Treml et al., *Modeling Population Connectivity by Ocean Currents, A Graph-Theoretic Approach for Marine Conservation*, 23 LANDSCAPE ECOLOGY 19 (2008); K.H. MANN & RN LAZIER, DYNAMICS OF MARINE ECOSYSTEMS: BIOLOGICAL PHYSICAL INTERACTIONS IN THE OCEANS (2003); F.E. Allen, *Distribution of Marine Invertebrates by Ships*, 4 AUSTRALIAN J. MARINE FRESHWATER RES. 307-16 (1953).

72. Sister Sanctuaries MOU, *supra* note 8, at 2.

Image 1: Map of Gulf Region Showing Different Types of Established Marine Protected Areas in the United States, Cuba, and Mexico⁷³



A. *Sister Sanctuaries and Twins in Cuba*

1. The MPAs in Cuba

The primary environmental issues in Cuba's coastal areas are water pollution and biodiversity loss.⁷⁴ In Cuba, the two sister sanctuaries are Guanahacabibes National Park and Banco de San Antonio. Ciénaga de Zapata is recognized as the Cuban twin under the Twinning Agreement.⁷⁵ Guanahacabibes National Park is among the largest protected areas in Cuba.⁷⁶ UNESCO declared Guanahacabibes National Park a Biosphere Reserve in 1987.⁷⁷ The National Park is home to diverse marine and coastal habitats, and it is an important site for sea turtles to come ashore

73. *Map of MPAs in Gulf of Mexico*, ATLAS MARINE PROTECTION, <http://www.mpatlas.org/explore/#> (last visited Mar. 15, 2018) (zoom in to Gulf of Mexico region to view region MPAs as shown in map).

74. Daniel J. Whittle et al., *International Tourism and Protection of Cuba's Coastal and Marine Environments*, 16 TUL. ENVTL. L.J. 533, 539-40 (2003).

75. *Twinning Agreement*, *supra* note 49.

76. *U.S. and Cuba to Cooperate on Conservation and Management of Marine Protected Areas*, *supra* note 37.

77. *Id.*

and lay eggs.⁷⁸ It also provides a habitat for over 200 species of fish, 40 species of corals, and 1000 species of mollusks (including ten that live only on this peninsula).⁷⁹

Banco de San Antonio is just offshore from the Guanahacabibes National Park.⁸⁰ It has some of the region's healthiest and most pristine coral reefs.⁸¹ Like Guanahacabibes, the Banco de San Antonio is also very diverse, providing habitat for over 100 species of fish, 15 species of coral, and 40 species of sponges.⁸² This area is important to the health of corals in the Gulf of Mexico and South Florida because Banco de San Antonio reefs are located where currents meet and flow from the Caribbean into the Gulf.⁸³ American and Cuban scientists have already begun to study the healthy corals here and compare them with corals in the United States to understand how humans and climate change are affecting these ecosystems.⁸⁴ They have also been examining bluefin tuna species in Cuba with the aim of improving the species' stock assessments for the region.⁸⁵

Located on Cuba's southern coast, Ciénaga de Zapata National Park contains a variety of ecosystems, including coral reefs, seagrass beds, keys, mangrove forests, and an underwater canyon.⁸⁶ The Park is home to "one of the most important, naturally preserved wetlands in the world."⁸⁷ A diverse array of creatures lives in Ciénaga de Zapata, including multiple threatened and endangered endemic species like the Cuban crocodile, bee hummingbird, Cuban kite, and Cuban solenodon.⁸⁸ With over 190 species of birds (including eighteen endemic to the region), the

78. *Id.*

79. *U.S. and Cuba to Cooperate on Sister Sanctuaries*, *supra* note 8.

80. *U.S. and Cuba to Cooperate on Conservation and Management of Marine Protected Areas*, *supra* note 37.

81. *United States and Cuba Open Doors to Marine Science Cooperation*, NOAA (Mar. 17, 2016), <http://www.noaa.gov/news/united-states-and-cuba-open-doors-to-marine-science-cooperation>.

82. *U.S. and Cuba to Cooperate on Sister Sanctuaries*, *supra* note 8.

83. *U.S. and Cuba to Cooperate on Conservation and Management of Marine Protected Areas*, *supra* note 37.

84. *United States and Cuba Open Doors to Marine Science Cooperation*, *supra* note 81.

85. *Id.*

86. *La Ciénaga de Zapata Biosphere Reserve*, LA CIÉNAGA DE ZAPATA.COM, <http://www.lacienagadezapata.com/en/biosphere-reserve/> (last visited Nov. 5, 2017).

87. *Id.*

88. *Id.*

Ciénaga de Zapata is especially popular for bird-watching.⁸⁹ The Ciénaga de Zapata was declared a UNESCO Biosphere Reserve in 2001.⁹⁰

2. Relevant Laws in Cuba

As discussed above, Cuba has recognized the importance of environmental conservation for decades. As amended, Chapter I, Article 27 of the Cuban Constitution charges the government with protecting the country's environment and natural resources, and it charges the people with aiding in that goal.⁹¹ Cubans recognize that this protection shares a "close link with the sustainable economic and social development for making human life even more sensible, and for ensuring the survival, welfare, and security of present and future generations."⁹² Since the Rio Earth Summit in 1992, Cuba has issued a number of environmental laws.⁹³ The country's environmental ministry is also well-respected and fairly powerful within Cuba.⁹⁴ Given its geography, coastal resources are important to the country. This is evidenced by the fact that Cuba strives to protect a fourth of its offshore ecosystems as marine reserves.⁹⁵ In this effort, Cuba is learning from the mistakes and lack of conservation elsewhere in the Gulf of Mexico and the Caribbean, where coastal ecosystems are suffering severely in the face of extensive development.⁹⁶

Cuba's Ministry of Science, Technology, and Environment (CITMA) is the government body primarily charged with overseeing environmental issues.⁹⁷ CITMA administers Cuba's National System of Protected Areas of Cuba (SNAP), which protects land and marine ecosystems.⁹⁸ As part of SNAP, the Cuban Subsystem of Marine

89. *What to Do in La Ciénaga de Zapata*, LA CIÉNAGA DE ZAPATA.COM, <http://www.lacienagadezapata.com/en/what-to-do-in-la-cienaga-de-zapata/> (last visited May 16, 2017).

90. *Id.*

91. CONSTITUCIÓN DE LA REPÚBLICA DE CUBA [CUBA CONSTITUTION] 1976, amend. 2002, art. 27.

92. *Id.*

93. Goode, *supra* note 2.

94. *Id.*

95. Wadlow, *supra* note 31. A recent analysis determined that Cuba's framework for national Marine environmental policies determined that country's ocean and coastal resources "is relatively strong," but with a "marked bias toward terrestrial ecosystems and issues" and that "too little attention is paid to the inclusion of precautionary and adaptive approaches." José L. Gerhartz-Muro et al., *An Evaluation of the Framework for National Marine Environmental Policies in Cuba*, 94 BULL. MARINE SCI. 1 (2017), <https://doi.org/10.5343/>.

96. *Id.*

97. Law No. 81 (Del Medio Ambiente) [Environmental Law] art. 83, GACETA OFICIAL DE LA REPÚBLICA DE CUBA [GO] (July 11, 1997).

98. Sister Sanctuaries MOU, *supra* note 8, at 2-3.

Protected Areas (SAMP) focuses on protecting the country's coastal and marine environments.⁹⁹ The National Center for Protected Areas (CNAP), directs, coordinates, and controls implementation of SNAP (and SAMP).¹⁰⁰ In total, Cuba has established 104 MPAs through SNAP, but some of these MPAs lack administration and enforcement.¹⁰¹

Additionally, there are several specific Cuban authorities for the MOU, including Environmental Law 81/1997, Decree Law 201/1999, CITMA Resolution 17/1999, and CITMA Resolution 159/2014.¹⁰² Environmental Law 81 is the principal environmental law in Cuba.¹⁰³ It creates the framework that "provides the central nervous system for a large body of specific substantive and procedural environmental laws and resolutions needed to implement the country's environmental protection goals."¹⁰⁴ Among other things, it grants authority in articles 89 and 90 for the establishment of protected areas through SNAP.¹⁰⁵ To implement Environmental Law 81, Cuba has established several decree laws, resolutions, and other legal instruments, including Decree Law 201, CITMA Resolution 17, and CITMA Resolution 159.¹⁰⁶

The Decree Law 201 System of Protected Areas creates classification and subclassification schemes that determine appropriate safeguards for protected areas.¹⁰⁷ National parks, like Guanahacabibes and Ciénaga de Zapata, are the second most protected areas after natural reserves.¹⁰⁸ This means that national parks are "managed primarily for the preservation of the area's natural and scenic resources and 'ecological integrity,' but the law allows educational, recreational, and tourism related activities in a manner consistent with the ecological objectives of

99. REINALDO ESTRADA ESTRADA ET AL., NAT'L CTR. FOR PROTECTED AREAS, THE NATIONAL SYSTEM OF MARINE PROTECTED AREAS IN CUBA 1, 2 (2004), https://www.edf.org/sites/default/files/3692_mpasCubaIngles.pdf.

100. Sister Sanctuaries MOU, *supra* note 8, at 3.

101. Goode, *supra* note 2.

102. Sister Sanctuaries MOU, *supra* note 8, at 3.

103. Whittle et al., *supra* note 74, at 566.

104. *Id.*

105. Law No. 81 (Del Medio Ambiente) [Environmental Law] art. 89-90, GACETA OFICIAL DE LA REPÚBLICA DE CUBA [GO] (July 11, 1997).

106. *See* Whittle et al., *supra* note 74, at 567-68.

107. MINISTRY OF SCI., TECH. & ENV'T, CUBA, ENVIRONMENTAL DEFENSE, TULANE INST. FOR ENVTL. LAW & POLICY, DECREE-LAW NO. 201 DECEMBER 24, 1999, NATIONAL SYSTEM OF PROTECTED AREAS, ENVIRONMENTAL LAW IN CUBA SERIES 1, 3-5 (Teresita Borges et al. trans., 2005) [hereinafter DECREE LAW 201], https://www.edf.org/sites/default/files/9620_Cuba_Decree-Law_201.pdf.

108. Whittle et al., *supra* note 74, at 580-81.

the area.”¹⁰⁹ Banco de San Antonio, on the other hand, falls under the fourth category: “outstanding natural element.”¹¹⁰ These areas “hav[e] one or more natural characteristics that are outstanding or exceptional in value due to its uniqueness and representative or aesthetic qualities,” and they will be managed to preserve these features.¹¹¹ The Cuban government can use this law to stringently regulate the effects of tourism in Guanahacabibes and Ciénaga de Zapata, since these are highly protected areas. For example, the Cuban government could permit ecotourism activities in these areas if it chose, but instead focuses on maintaining the “ecological integrity” of the parks. Banco de San Antonio, while falling lower on the protection scale, still must be maintained to preserve its unique characteristics.¹¹² Located offshore from the more strictly protected Guanahacabibes National Park, Banco de San Antonio could also reap some of these stronger protections.

Decree Law 201 also allows the creation of buffer zones for protected areas, regardless of the protected areas’ classification.¹¹³ As a result, development is limited around these sister sanctuaries and other legally protected coastal areas. Moreover, this law anticipates low-impact tourism and recreational activities in protected areas like the sister sanctuaries and dictates that activities in protected areas must be consistent with the objectives of the protection.¹¹⁴ In MPAs, activities include “scuba diving and other low-impact ecotourism opportunities centered on the area’s magnificent reefs and mangrove forests.”¹¹⁵ Nevertheless, with a spike in tourism, even these “low-impact” activities could lead to significant damage of the fragile coral reefs. CITMA Resolution No. 17 also provides authority for the joint MOU. This law is more general, laying out the mission and activities of CNAP.¹¹⁶ Likewise, CITMA Resolution No. 159 is fairly straightforward, approving the current SNAP plan.¹¹⁷

109. *Id.*

110. Sistema Nacional de Áreas Protegidas de Cuba, SNAP, www.snap.cu (last visited May 16, 2017).

111. DECREE LAW 201, *supra* note 107, at 9.

112. *See id.* (describing protections for “outstanding natural element” sites).

113. Whittle et al., *supra* note 74, at 581.

114. *Id.* at 582.

115. *Id.*

116. Sister Sanctuaries MOU, *supra* note 8, at 3.

117. *Id.*

In addition to these laws explicitly cited in the MOU, Cuba's Decree Law 212 is relevant to coral reef protection. Under this law, CITMA works together with the land use agency—the Ministry of Economy and Planning—to manage development in coastal areas.¹¹⁸ Decree Law 212 creates two zones to help limit coastal development. First, the “coastal zone” generally prohibits erecting permanent structures within twenty to forty meters off the coast.¹¹⁹ The primary exception to this prohibition is for structures whose “purpose does not allow location outside the coastal zone, such as ports, piers, drilling platforms, navigation signals, and national defense works.”¹²⁰ Additionally, all coastal zones are open to the public.¹²¹

The second zone, called the “protection zone,” extends these limits an additional twenty to forty meters inland but allows placing “light structures such as concession stands, which can be easily removed and that have adequate waste treatment systems,” within the zone.¹²² Decree Law 212 places additional development restrictions on the Cuban keys.¹²³ This law, therefore, will help protect Cuba's sisters and twin from encroaching developments as Cuba's tourism sector grows. Together, Cuba's environmental laws can help limit coastal development and the overall impact of increased tourism on Cuba's coastal resources.

B. *Sister Sanctuaries and Twins in the United States*

1. The MPAs in the United States

The United States has four sisters under the MOU: Flower Garden Banks National Marine Sanctuary, Florida Keys National Marine Sanctuary; Biscayne National Park; and Dry Tortugas National Park.¹²⁴ Additionally, Everglades National Park is the U.S. twin under the Twinning Agreement.¹²⁵ The NOAA in the Department of Commerce administers national marine sanctuaries,¹²⁶ whereas the National Park Service (NPS) in the Department of the Interior administers the national

118. Oliver A. Houck, *Environmental Law in Cuba*, 16 J. LAND USE & ENVTL. L. 1, 44 (2000).

119. *Id.* at 43.

120. *Id.* (internal quotation marks omitted).

121. *Id.*

122. *Id.* at 44.

123. *Id.* at 45.

124. Sister Sanctuaries MOU, *supra* note 8, at 4.

125. *Twining Agreement*, *supra* note 49.

126. 16 U.S.C. § 1433 (2012).

parks.¹²⁷ Together, these five protected areas represent some of the most diverse ecosystems in the region.

Flower Garden Banks National Marine Sanctuary was created under 15 C.F.R. § 922(L).¹²⁸ It is composed of coral reefs developed on salt domes offshore from Texas and Louisiana in the Gulf of Mexico.¹²⁹ The reefs contain spectacular communities of corals, sponges, and algae and are home to a wide assortment of fish and other wildlife.¹³⁰ Flower Garden Banks National Marine Sanctuary encompasses East Flower Garden Bank, West Flower Garden Bank, and Stetson Bank.¹³¹ These banks contain some of the only coral reefs in the area, and they are among the healthiest coral reefs left in the world.¹³²

The Florida Keys National Marine Sanctuary is another U.S. national marine sanctuary sister under the MOU.¹³³ This Sanctuary protects more than 6000 species of marine life, including a large barrier reef.¹³⁴ Florida Keys National Marine Sanctuary regulations at 15 C.F.R. § 922(P) include general provisions for the entire sanctuary and regulations specific to certain zones.¹³⁵ The Sanctuary regulations use “marine zoning” to protect corals and certain other habitats, while allowing divers and anglers to use the areas.¹³⁶ The general focus of these regulations is to protect habitats, minimize threats to water quality, and lessen the anthropogenic impact on the ecosystem.¹³⁷

Biscayne National Park, created under 16 U.S.C. § 410gg, is also located in southern Florida.¹³⁸ This National Park covers four distinct ecosystems that make up unique “ecotones” in the regions where ecosystems converge.¹³⁹ Like the previous sites, Biscayne National Park hosts a diverse group of species, including over 100 types of fish,

127. 54 U.S.C. § 100101 (2012).

128. 15 C.F.R. §§ 922.120-.123 (2017).

129. *Flower Garden Banks—About Your Sanctuary*, NOAA, <http://flowergarden.noaa.gov/about/about.html> (last visited May 16, 2017).

130. *Flower Garden Banks National Marine Sanctuary*, NOAA, http://flowergarden.noaa.gov/document_library/aboutdocs/fgbnmsflyer.pdf (last visited May 16, 2017).

131. *Flower Garden Banks—About Your Sanctuary*, *supra* note 129.

132. *Flower Garden Banks National Marine Sanctuary*, *supra* note 130.

133. *Sister Sanctuaries MOU*, *supra* note 8, at 4.

134. *Florida Keys National Marine Sanctuary*, NOAA, <http://floridakeys.noaa.gov/about/welcome.html?s=about> (last visited May 16, 2017).

135. 15 C.F.R. §§ 922.163-.164 (2017).

136. *See id.* § 922.164 (setting out regulations specific to certain Sanctuary areas).

137. *Florida Keys National Marine Sanctuary*, *supra* note 134.

138. 16 U.S.C. § 410gg (2012).

139. *Nature—Biscayne National Park*, NAT'L PARK SERV., www.nps.gov/bisc/learn/nature/index.htm (last visited May 16, 2017).

multiple plants exclusive to the area, and many other marine species like manatees and sea turtles.¹⁴⁰ Development from nearby urban areas, among other things, currently threatens the Park.¹⁴¹

Dry Tortugas National Park was established under 16 U.S.C. § 410xx.¹⁴² The Park encompasses seven keys at the southern end of the Florida Keys, making it “closer to Cuba than the American mainland.”¹⁴³ Here, the coral and seagrass ecosystems are some of the most pristine in the Florida Keys.¹⁴⁴ It is an important site for sea turtle nesting and home to over 300 bird species.¹⁴⁵ A Research Natural Area, created in the Park in 2007, protects marine resources, allowing for observation and study as well as for rejuvenation of aquatic species and habitat.¹⁴⁶

Everglades National Park “twins” with its ecologically similar Cuban neighbor, Ciénaga de Zapata National Park.¹⁴⁷ Everglades National Park was created under 16 U.S.C. § 410 and is managed closely with Dry Tortugas National Park.¹⁴⁸ Congress created Everglades National Park in 1934 “to preserve the subtropical ecosystem and everything that lives within it.”¹⁴⁹ One of the largest national parks in the United States, Everglades is located in southern Florida and covers 1.5 million acres, including a variety of marine and land ecosystems.¹⁵⁰ It is home to a number of diverse species, including several that are listed as federally threatened or endangered.¹⁵¹ Everglades National Park was the first federal land that the government protected “for its abundance of

140. *Id.*

141. *Information About the Current and Developing General Management Plans—Biscayne National Park*, NAT'L PARK SERV., www.nps.gov/bisc/learn/management/information-about-the-current-and-developing-general-management-plans.htm (last visited May 16, 2017).

142. 16 U.S.C. § 410xx.

143. *Nature—Dry Tortugas National Park*, NAT'L PARK SERV., www.nps.gov/drto/learn/nature/index.htm (last visited May 16, 2017).

144. *Id.*

145. *Id.*

146. *Id.*

147. 16 U.S.C. § 410; *Twinning Agreement*, *supra* note 49.

148. *Ecological Sciences for Sustainable Development*, UNESCO, <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/europe-north-america/united-states-of-america/everglades-dry-tortugas/> (last visited Feb. 24, 2018); *Superintendent Annual Park Report*, NAT'L PARK SERV., <https://www.nps.gov/ever/learn/management/superintendent-annual-park-report.htm> (last visited Mar. 16, 2017).

149. *Why Protect Everglades National Park*, NAT'L PARK SERV., <https://www.nps.gov/ever/learn/nature/ccintropurposeenp.htm> (last visited May 16, 2017).

150. *Id.*; *Everglades: Basic Information*, NAT'L PARK SERV., <https://www.nps.gov/ever/planyourvisit/basicinfo.htm> (last visited May 16, 2017).

151. *Why Protect Everglades National Park*, *supra* note 149; *Nature*, NAT'L PARK SERV., <https://www.nps.gov/ever/learn/nature/index.htm> (last visited May 16, 2017).

diverse plant and animal species rather than for its scenic views.”¹⁵² The Park’s flat topography and proximity to the coast make it especially susceptible to climate change and sea level rise.¹⁵³

In addition to these five areas identified in the MOU and Twinning Agreement, there are numerous other MPAs in the region. As discussed in the next Section, President Clinton issued Executive Order 13158 (EO 13158) in 2000 to establish a national system of MPAs.¹⁵⁴ To qualify for inclusion in the national system, the area must be in the ocean (open ocean, coastal areas, estuaries, inter-tidal areas) or Great Lakes and be reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.¹⁵⁵ Currently, there are 437 designated MPAs within the system, 34 of which are in the Gulf of Mexico and 12 of which are in the Caribbean.¹⁵⁶ While most of these areas are not covered by the MOU, they offer the potential to expand conservation initiatives emerging from the U.S.-Cuba initiative in the future.

2. Relevant Laws in the United States

U.S. laws governing national parks, marine sanctuaries, national wildlife refuges, and MPAs under EO 13158 are particularly relevant to the MOU and future expansion of conservation efforts of the marine area between the United States and Cuba. The National Park System represents the natural, scenic, cultural, and historic heritage of the United States.¹⁵⁷ Though the public typically thinks of National Parks as landlocked, they can be part of, or adjacent to, a water source, coastline, or ocean.¹⁵⁸ Of the 417 National Park System units, 88 are ocean or coastal parks, including 8 on the Gulf, 6 on the Caribbean, and 1 in South Florida.¹⁵⁹

152. *Why Protect Everglades National Park*, *supra* note 149.

153. *Everglades: Climate Change*, NAT’L PARK SERV., <https://www.nps.gov/ever/learn/nature/climatechange.htm> (last visited Mar. 16, 2017).

154. Exec. Ord. 13,158, 65 Fed. Reg. 34,909 (May 26, 2000).

155. *Id.*

156. Donald C. Baur et al., *Putting “Protection” into Marine Protected Areas*, 28 VT. L. REV. 497, 524-29 (2004).

157. 54 U.S.C. § 100101 (2012).

158. *Id.* § 100501.

159. See *Ocean and Coastal Resources*, NAT’L PARK SERV., <https://www.nature.nps.gov/water/oceancoastal/> (last visited Feb. 24, 2018).

National Park System units are managed under three levels of authorization: (1) the Organic Act and general authorities applicable to all areas in the System; (2) the enabling legislation or other legal authority establishing the unit, and (3) the regulations and other administrative authorities and policies issued by the Executive Branch that govern the entire Park System and individual units.¹⁶⁰ There is also authority to extend protection outside the boundaries of individual parks.

Section 1 of 54 U.S.C. § 100101, called the NPS Organic Act, states that the purpose of the National Park System is to “conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”¹⁶¹ In formulating the § 1 mandate in 1916, Congress explained that, unlike national forests, which are established to promote multiple use values, units of the Park System are intended to address “the question of the preservation of nature as it exists.”¹⁶² In addition, Congress has declared that all NPS units “are united through their interrelated purposes and resources into one National Park System as cumulative expressions of a single national heritage” in § 1a-1 of the Organic Act, enacted in 1976.¹⁶³ Thus, the “promotion and regulation” of these areas should be guided by “the purpose established by subsection(a).”¹⁶⁴ Section 1a-1 also provides that “[t]he authorization of activities . . . shall not be exercised in derogation of the values and purposes” set forth in § 1 and the statutory provisions governing a given unit of the System “except as directly and specifically provided by Congress.”¹⁶⁵ Importantly, § 1a-1 applies to any action of the Secretary of the Interior, including agencies other than NPS.¹⁶⁶ For example, if oil and gas development outside an NPS unit would be in derogation of that unit’s values or purposes, it would be prohibited unless mitigated.

160. Baur et al., *supra* note 156, at 524-29.

161. 54 U.S.C. § 100101(a).

162. H.R. REP. NO. 64-700, at 3 (1916); *see also* Nat’l Rifle Ass’n of Am. v. Potter, 628 F. Supp. 903, 910 (D.D.C. 1986), *aff’d* 775 F.2d 1151 (11th Cir. 1984) (citing this legislative history in support of the “protectionist” goal of wildlife management in units of the Park System); *Organized Fishermen v. Watt*, 590 F. Supp. 805, 812-13 (S.D. Fl. 1984) (upholding the Secretary of the Interior’s power to close Everglades to commercial fishing).

163. 54 U.S.C. § 100101.

164. *Id.*

165. *Id.*

166. *Id.*

Thus, to determine what activities are permissible in an NPS unit, it is necessary to look to § 1 and the other provisions of the Organic Act that govern all areas, as well as to the laws applicable to each area individually. If permission to conduct an activity is not found in either of these authorities, and it would be contrary to the § 1 mandate or the values and purposes of the unit, then that action is presumed to be prohibited.

The statutory provisions individually applicable to each Park System area are important for two reasons. In addition to defining permissible uses of the unit, the statutory provisions also help define the activities that are generally prohibited in the Park System. The enabling law for the Biscayne National Park provides that Congress established the Park to “preserve and protect . . . [Biscayne’s] rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty.”¹⁶⁷ The enabling law for Dry Tortugas declares a purpose to “preserve and protect . . . significant natural, historic, scenic, marine and scientific values in South Florida” and declares a management purpose to “protect and interpret a pristine subtropical marine ecosystem, including an intact coral reef community.”¹⁶⁸

Express congressional authorization of certain consumptive use activities in some units creates a presumption that such activities are prohibited in all other units where such authorization does not exist. Thus, for example, commercial fishing is generally prohibited in national parks, unless specifically allowed by the enabling law.¹⁶⁹ The enabling laws for Everglades and Dry Tortugas do not allow commercial fishing, whereas Biscayne’s law expressly allows fishing under Florida law.¹⁷⁰

Finally, NPS supplements Park System statutory requirements with regulations promulgated under the authority of § 3 of the Organic Act.¹⁷¹ The regulations set forth general requirements applicable to all units of the System¹⁷² and area-specific regulations that are tailored to the unique resource management needs of particular units.¹⁷³ The regulations for the

167. 16 U.S.C. § 410gg (2012).

168. *Id.* § 410xx.

169. 36 C.F.R. § 2.3(d)(4) (2015); *Organized Fishermen v. Watt*, 590 F. Supp. 805, 812 (S.D. Fla. July 6, 1984).

170. 16 U.S.C. § 410gg-2.

171. 54 U.S.C. § 102101.

172. 36 C.F.R. §§ 1.1-3.19 (2017). Included in part 1 are general requirements to guide NPS’ administration of the system. *Id.* § 1.2. Part 2 contains regulations for a host of activities ranging from hunting and trapping, *id.* § 2.2, to collecting scientific research specimens, *id.* § 2.5, to political demonstrations, *id.* § 2.51.

173. *Id.* §§ 7.1-100.

NPS areas in the region include provisions that protect coral resources. General NPS regulations for all parks prohibit destroying and possessing wildlife and fossils, touching wildlife, or gathering specimens.¹⁷⁴ In addition, specific areas can be closed to protect resources.¹⁷⁵ For example, the regulations for the Dry Tortugas National Park close sensitive coral areas to public use and prohibit any actions that would harm coral, including handling, standing on, touching, or removing coral.¹⁷⁶ Even boats are prohibited from operating and anchoring in any way that would damage coral.¹⁷⁷

Congress established the National Marine Sanctuary Program in 1972 through the Marine Protection Reserve and Sanctuary Act; later renamed the National Marine Sanctuary Act (NMSA).¹⁷⁸ The NMSA authorizes NOAA to implement and enforce the permanent protection and long-term management of areas of national significance residing within the marine environment of the United States, defined to include “coastal and ocean waters, and the Great Lakes and their connecting waters.”¹⁷⁹ The NMSA creates an ecosystem-based approach to solving problems facing the destruction and degradation of the oceans.¹⁸⁰ This comprehensive approach allows for a system that incorporates the concept of multiple uses for the purposes of the long-term benefit and enjoyment of the public.

Like national parks, national marine sanctuaries are subject to the same three levels of management authority: the NMSA, sanctuaries establishment authorities, and regulations.¹⁸¹ Currently, the Sanctuary System consists of thirteen national marine sanctuaries and the Papahānaumokuākea and Rose Atoll marine national monuments, totaling more than 600,000 square miles.¹⁸²

174. *Id.* §§ 2.1-2, 2.4-.5.

175. *Id.* § 1.5.

176. *Id.* § 7.27(c).

177. *Id.* § 7.27(h).

178. 16 U.S.C. §§ 1431-1445c-1 (2012).

179. *Id.* § 1432(3).

180. *Id.* § 1434.

181. Jason Patlis et al., *The National Marine Sanctuary System: The Once and Future Promise of Comprehensive Ocean Governance*, 44 ENVTL. L. REP. 10932, 10936-40 (2014).

182. *Sea to Shining Sea—The National Marine Sanctuary System’s Newsletter*, NOAA, <https://sanctuaries.noaa.gov/news/newsletter.html> (last visited Nov. 11, 2017).

Although not part of the MOU, national wildlife refuges are relevant to marine ecosystem conservation. Congress passed the National Wildlife Refuge System Administration Act of 1966,¹⁸³ providing “a uniform set of management principles [to] govern the National Wildlife Refuge System” to be managed by the U.S. Fish and Wildlife Service (FWS).¹⁸⁴ This Act allows the Secretary of the Interior to issue regulations “permit[ting] the use of any area within the System for any purpose, including but not limited to hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which such areas were established.”¹⁸⁵ The National Wildlife Refuge Improvement Act of 1997 further provides additional management guidance for the System.¹⁸⁶ The Improvement Act establishes a process for determining compatible uses of refuges and adopts an overall mission of the Refuge System to conserve fish, wildlife, plants, and their habitats.¹⁸⁷ The FWS permits a variety of secondary uses, including both recreational and commercial.¹⁸⁸ Approximately 140 of the more than 560 national wildlife refuges are located in marine and coastal areas.¹⁸⁹

As noted above, MPAs are another way to protect designated areas. On May 26, 2000, President Clinton signed EO 13158 into law with the purpose to:

- (a) strengthen the management, protection, and conservation of existing marine protected areas and establish new or expanded MPAs; (b) develop a scientifically based, comprehensive national system of MPAs representing diverse U.S. marine ecosystems, and the Nation’s natural and cultural resources; and (c) avoid causing harm to MPAs through federally conducted, approved, or funded activities.¹⁹⁰

The EO defines a MPA as “any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein,” and the marine environment as “areas of coastal and ocean waters, the Great Lakes and their connecting waters,

183. 16 U.S.C. §§ 668dd-668ee.

184. Patlis et al., *supra* note 181, at 10949.

185. 16 U.S.C. § 668dd(d)(1)(A).

186. National Wildlife Refuge System Improvement Act of 1997, Pub. L. No. 105-57, 111 Stat. 1252, 1254-56 (1997) (amending 16 U.S.C. §§ 668dd-668ee).

187. *Id.* at 1254.

188. Patlis et al., *supra* note 181, at 10949.

189. *Id.* at 10935, 10949.

190. Exec. Ord. 13,158, 65 Fed. Reg. 34,909 (May 26, 2000).

and submerged lands thereunder, over which the U.S. exercises jurisdiction, consistent with international law.”¹⁹¹ The EO also drives federal agencies to adopt better protections for MPAs, as seen in § 5, which requires each federal agency to identify its actions that “affect the natural or cultural resources that are protected by an MPA.”¹⁹² Although EOs are not legally enforceable, § 5 issues a strong directive that all federal agencies “to the extent permitted by law and to the maximum extent practicable . . . shall avoid harm to the natural and cultural resources that are protected by the MPA.”¹⁹³ This requirement applies outside of MPAs, as well as within their boundaries.

These general principles define the legal framework within which the MOU MPAs are managed. As discussed above, each Sister National Park and National Marine Sanctuary is subject to separate controlling legal authorities intended to protect the unique resources and values that served as the basis for setting aside that area.¹⁹⁴ Thus, the specific laws, regulations, and policies applicable to each sister sanctuary area must be considered in addition to the general mandates of the NPS Organic Act and the NMSA.

For example, the laws for the Florida Keys National Marine Sanctuary provide a reference for the application of MPA-specific requirements to protect marine resources, in general, and coral reefs, in particular.¹⁹⁵ The NMSA prohibits actions that destroy or injure sanctuary resources, which in the case of Florida Keys and Flower Garden Banks, include corals.¹⁹⁶ It is also unlawful to possess, sell, or transport protected sanctuary resources.¹⁹⁷ Certain activities can be prohibited in sanctuaries, and permitted uses must be compatible with the purposes for which the sanctuary is designated, which include coral protection for the U.S. sister sanctuaries.¹⁹⁸

NOAA has applied these broad mandates through specific regulations. For example, under its unit-specific regulations, the “Florida Keys National Marine Sanctuary established the nation’s first comprehensive network of marine zones in 1997 . . . [that] includes five types of zones with varying levels of protection: Ecological Reserves,

191. *Id.*

192. Patlis et al., *supra* note 181, at 10941.

193. Exec. Ord. 13,158, 65 Fed. Reg. 34,909.

194. *See supra* text accompanying notes 171-195.

195. 15 C.F.R. §§ 922.163-.164 (2017).

196. *See* 16 U.S.C. § 1436(1) (2012).

197. *Id.* § 1436(2).

198. *Id.* §§ 1433-1434, 1441.

Sanctuary Preservation Areas, Wildlife Management Areas, Existing Management Areas, and Special-use Areas.¹⁹⁹ Establishing zones allow for compatible use while protecting the sensitive and important parts of the Sanctuary. These zones provide a means to compromise with resource users and protect special habitats. For instance, Sanctuary Preservation Areas and Ecological Reserves prohibit touching any live or dead coral, while Special-use Areas specifically prohibit entering the area without a permit and touching coral.²⁰⁰ Existing management areas prohibit personal watercrafts, as they particularly harm marine environments.²⁰¹ While all the zone-specific regulations are enforced in their respective areas, the general regulations divide the marine sanctuary into specific regulations found in 15 C.F.R. § 922 subpart P, that prohibit dredging, bottom trawling, and removing any live or dead coral.²⁰²

In addition to these site-specific management legal authorities, several other U.S. laws are potentially applicable. These include the Coral Reef Conservation Act of 2000,²⁰³ Marine Mammal Protection Act of 1972,²⁰⁴ Endangered Species Act of 1973,²⁰⁵ Magnuson-Stevens Fishery Conservation and Management Act,²⁰⁶ the Coastal Zone Management Act,²⁰⁷ the Clean Water Act,²⁰⁸ the Outer Continental Shelf Lands Act,²⁰⁹ and the Ocean Dumping Act.²¹⁰ Together, these laws provide the basis for U.S. federal agencies to collaborate on sister site projects and marine-ecosystem conservation with the Cuban government.

199. *Florida Keys National Marine Sanctuary Regulations*, NOAA (July 23, 2015), <http://floridakeys.noaa.gov/regs/welcome.html>.

200. *Id.*

201. *Id.*

202. 15 C.F.R. § 922.164 (2017).

203. 16 U.S.C. §§ 6401-6409 (funding coral reef conservation projects).

204. *Id.* §§ 1361-1423h (creating programs to protect marine mammals and prohibiting the take of marine mammals).

205. *Id.* §§ 1531-1543 (protecting plants and animals from extinction and promoting recovering, including the prohibitions on take and jeopardy to the species and adverse modification of critical habitat).

206. *Id.* §§ 1801-1891d (promoting sustainable management of fisheries).

207. *Id.* §§ 1451-1466 (seeking broadly to conserve U.S. coastal areas by requiring federal consistency with state plans).

208. 33 U.S.C. §§ 1251-1388 (2012) (controlling pollutant discharges and protecting wetlands from dredge and fill).

209. 43 U.S.C. §§ 1331-1356b (2012) (managing offshore energy development, including declaring certain areas off limits to development and implementing environmental safeguards).

210. 33 U.S.C. §§ 1401-1445 (regulating the transportation of waste material transported for the purpose of dumping into ocean waters).

V. EXPANDING THE U.S.-CUBA BILATERAL AGREEMENTS TO
MULTILATERALLY MANAGE VALUABLE GULF RESOURCES

A. *Potential for United States and Cuba to Use the MOU and Joint
Statement as a Building Block for Coral Reef Protection*

Both Cuba and the United States can already use the Sister Sanctuaries MOU and Joint Statement to protect coral reefs while improving diplomatic relations. To achieve their conservation goals, the countries will first and primarily employ research and education strategies, as outlined in the MOU and Joint Statement.²¹¹ These strategies can be powerful tools for coral reef protection.

Each country's government should continue joint efforts to research coral reef ecosystems in the sister sanctuaries in accordance with the MOU and Joint Statement, increasing the collective scientific understanding of ocean issues and resources.²¹² It will be crucial to share findings and implement policies based on those findings.²¹³ Cuban and American researchers should also share ideas for better coral reef management in each country. Additionally, it will be important to continue monitoring reefs in each of the sister sanctuaries for improvement or deterioration and act accordingly.

On the education front, both countries should teach the public and communities surrounding the sister sanctuaries the importance of coral reefs and their fragile nature. Scientists could organize workshops and community events to get the public excited about coral reefs and marine ecosystems, while teaching people simple ways to help preserve them. These organizations could also encourage regular beach, inshore, or reef cleanups to collect litter from the coastal habitats. It will also be essential for both countries to continue to educate local tourism businesses, especially those involving activities on the water or around reefs, about the importance of the coral reefs, their delicate nature, and best practices for sustainable tourism. For example, some useful information to teach Americans and Cubans alike include the importance of not anchoring on the reef, dumping garbage in the water, standing on the reefs, or harassing marine species.

211. Sister Sanctuaries MOU, *supra* note 8, at 4; Joint Statement on Cooperation on Environmental Protection, *supra* note 9.

212. *U.S. and Cuba to Cooperate on Conservation and Management of Marine Protected Areas*, *supra* note 37.

213. *Id.*

Cuba can learn from past U.S. mistakes pertaining to the mistakes of past U.S. coral reef management practices and establish better practices to limit the effects of increased tourism on Cuba's coral reefs, especially the ones noted in the MOU. As indicated above, Cuba could use Decree Law No. 212 to enforce limits on development along coastlines of its protected areas.²¹⁴ Cuba should also create infrastructure to prevent runoff from increased coastal development and pollution and prohibit destructive fishing practices in the sister sanctuaries. Additionally, the country should prohibit tourists and locals from collecting pieces of corals or other species inhabiting the reefs. In turn, the United States should learn from Cuba's success in protecting and maintaining the integrity of its coral reefs. The United States would also benefit from access to Cuba's data and scientific expertise on marine ecosystems.

Perhaps one of the biggest barriers to implementing the MOU and Twinning Agreement is funding. Cuba's Decree Law No. 201 states general appropriations allocated to the administering agency should fund protected areas, and it encourages agencies to seek supplemental funding from outside sources.²¹⁵ The law further allows agencies to charge fees to visitors and those who use protected areas.²¹⁶ These fees then help fund conservation efforts and management of the particular protected area.²¹⁷ Cuba has typically not charged fees in the past, but this could be a useful tool to fund conservation efforts as tourism increases.²¹⁸ In both countries, governments should encourage adding additional coral reef and coastal ecosystems as sister sanctuaries under the MOU.²¹⁹

Some of these steps are already included in the MOU Workplan, entered into in July 2016 between NOAA's Office of National Marine Sanctuaries and CNAP.²²⁰ The Workplan calls for several collaborative activities, including a joint mission to explore deepwater areas of Cuba using the remotely operated vehicle owned by the National Marine Sanctuary Foundation to characterize the connections between the

214. See Whittle et al., *supra* note 74, at 576.

215. DECREE LAW 201, *supra* note 107, art. 61.

216. Whittle et al., *supra* note 74, at 583.

217. *Id.*; DECREE LAW 201, *supra* note 107, art. 63.

218. Whittle et al., *supra* note 74, at 583.

219. See Sister Sanctuaries MOU, *supra* note 8, at 4 (noting that "[a]dditional sister MPA relationships may be developed in the future").

220. Workplan for Cooperation in Conservation and Management of Marine Protected Areas, U.S.-Cuba, Aug. 29, 2016 (on file with author). The Workplan is currently going through its early stage of implementation. Initial products are proposed to be a satellite mapping program for important habitat areas and the preparation of baseline condition reports.

mesophilic reef ecosystems of Cuba and the Florida Keys.²²¹ In addition, the Workplan calls for workshops on tourist management, pollution control, coral restoration, and vessel traffic.²²²

These measures would be important first steps to establishing a cooperative relationship between the United States and Cuba on coral reef protection. Taking such steps should only be the beginning. Going forward, the two countries could take even stronger actions, individually and together, for coral reefs and broader environmental concerns. These actions should include building coastal community resilience to respond to sea level rise, enforcing domestic and international pollution and fishing requirements, managing invasive species such as lionfish, and careful planning for offshore energy and coastal development.

B. Beyond the U.S.-Cuba Bilateral Agreements—Including Mexico in Cooperative Conservation and Management of Marine Protected Areas

Moving forward, the cooperative management of the Gulf's coral reef ecosystems and other marine resources should also include the region's other key player—Mexico. As one of the most popular tourist destinations in the world, Mexico has experienced less success than its neighbor Cuba in preserving its coral reefs.²²³ American tourism became a major contributor to the Mexican economy following World War II in the late 1940s.²²⁴ In response, Mexico created a Department of Tourism and built infrastructure, including “thousands of miles of highways . . . airports, hotels, and skilled service workers.”²²⁵ This development resulted in several environmental impacts, and Mexico enacted its first significant environmental law in 1972.²²⁶ In 1982, the Mexican

221. *Id.*

222. *Id.*

223. See David Ginsburg and Alanna Waldman, *Effectiveness of Marine Protected Areas in Mexico—the Actam Chuleb Example*, SCI. AM. (June 18, 2013), <https://blogs.scientificamerican.com/expeditions/investigating-the-effectiveness-of-marine-protected-areas-in-mexico-using-actam-chuleb-as-a-primary-example/> (noting that Mexico's reefs have suffered as a result of poor enforcement and prioritizing economic development over conservation).

224. Renata Keller, *U.S.-Mexican Relations from Independence to the Present*, OXFORD RES. ENCYCLOPEDIAS: AM. HIST. (Mar. 2016), <http://americanhistory.oxfordre.com/view/10.1093/acrefore/9780199329175.001.0001/acrefore-9780199329175-e-269?print.pdf>.

225. *Id.*

226. CONSERVATION AND ENVIRONMENTALISM: AN ENCYCLOPEDIA (Robert Paehlke ed., 1995).

government strengthened the law and created an environmental cabinet called Secretaria de Desarrollo Urbana y Ecologia (SEDUE).²²⁷

Today, Mexico has multiple federal agencies overseeing marine protection. The Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) houses the Comisión Nacional de Áreas Naturales Protegidas (CONANP), which is charged with regulating Mexico's MPAs.²²⁸ However, the Comisión Nacional de Acuacultura y Pesca (CONAPESCA) under the Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SAGARPA) maintains control over fisheries, including those in protected areas.²²⁹

While the two agencies are required to work together to manage protected areas, their division between secretariats SEMARNAT and SAGARPA has resulted in little cooperation.²³⁰ Additionally, Mexico's laws have generally favored resource extraction over environmental protection, which further complicates the relationship between CONAPESCA and CONANP.²³¹ For example, as a general matter, Mexico has not imposed stringent restrictions on fishing in protected areas.²³² Moreover, while CONANP is the primary agency responsible for Mexico's protected areas, it does not have enforcement authority.²³³ Instead, enforcement falls under the control of Procuraduría Federal de Protección al Ambiente (PROFEPA), also under SEMARNAT.²³⁴ Shared agency oversight of MPAs has the potential to result in an inefficient approach to MPA management.²³⁵ In an effort to encourage interagency cooperation on marine resource issues, Mexico created the Comisión Intersecretarial para el Manejo Sustentable de Mares y Costas (CIMARES) in 2008.²³⁶ CIMARES includes multiple secretariats that govern ocean and coastal issues, including SEMARNAT, and it has been working to integrate the government's approach to marine resources.²³⁷

227. *Id.*

228. Harriet L. Nash & Richard J. McLaughlin, *A Policy Approach to Establish an International Network of Marine Protected Areas in the Gulf of Mexico Region*, 6 AUSTRALIAN J. MAR. & OCEAN AFF. (2014).

229. *Id.* at 6-7.

230. *Id.* at 16.

231. *Id.*

232. *Id.*

233. *Id.*

234. *Id.*

235. *Id.*

236. *Id.* at 7.

237. *Id.* at 7, 13.

Similar to Cuba's Environmental Law 81, Mexico has a general, overarching environmental law, the General Law of Ecological Equilibrium and Environmental Protection (LGEEPA), which was promulgated in 1988 and amended in 1996.²³⁸ The law authorizes local governments to regulate environmental matters not specifically reserved for the federal and state governments.²³⁹ It also encourages public participation in creating these regulations.²⁴⁰ In the context of marine protection, LGEEPA provides the basis for establishing and managing Mexico's MPAs.²⁴¹ Despite LGEEPA's decentralization of environmental regulation, the federal government is still largely responsible for implementing and enforcing environmental laws due to minimal resources at the local level.²⁴² However, the federal-level enforcement would benefit from additional support.

To protect the Gulf's coral reef ecosystems and other marine resources, it will be essential to involve all three Gulf countries in managing these ecosystems. Mexico has multiple reefs that would make valuable additions to the U.S.-Cuba family of MPAs. One potential Sister Sanctuary in Mexico includes Arrecife Alacranes National Park located offshore from the Yucatan Peninsula.²⁴³ The National Park is made up of five small islands and coral reefs spanning 326 kilometers—the Gulf of Mexico's largest coral structure.²⁴⁴ It also provides habitat for over 136 species of marine life.²⁴⁵ Arrecife Alacranes is an important MPA in Mexico, and UNESCO added it to the Network of Biosphere Reserves in 2006.²⁴⁶ Other important sites Mexico may want to add as sisters include Veracruz National Park, Isla Contoy National Park, the Tiburon Ballena Biosphere Reserve, Lobos-Tuxpan National Park, Yum Balam Flora and Fauna Reserve, and the Isla Mujeres, Punta Cancun,

238. Ley General de Equilibrio Ecológico y Protección al Ambiente [LGEEPA] [General Law of Ecological Balance and Environmental Protection], Diario Oficial de la Federación [DOF] 28-1-1988, amend. Jan. 7, 2000 (Mex.) (English version available at www.wipo.int/edocs/lexdocs/laws/en/mx/mx028en.pdf).

239. Nash, *supra* note 228, at 6.

240. *Id.*

241. See LGEEPA, art. 20 BIS 6.

242. Nash, *supra* note 228, at 6.

243. *Id.*; *Alacranes Reef: Natural Habitat for Hundreds of Marine Species*, YUCATAN TIMES (May 14, 2015), <http://www.theyucatanimes.com/2015/05/alacranes-reef-natural-habitat-for-hundreds-of-marine-species/>.

244. *Alacranes Reef: Natural Habitat for Hundreds of Marine Species*, *supra* note 243; *Arrecife Alacranes a la Vanguardia*, YUCATAN TIMES (May 14, 2015), <http://arrecifealacranes.conanp.gob.mx/>.

245. *Alacranes Reef: Natural Habitat for Hundreds of Marine Species*, *supra* note 243.

246. *Arrecife Alacranes a la Vanguardia*, *supra* note 244.

and Punta Nizuc National Parks. As with the ecosystems in American and Cuban waters, all of these reefs are ecologically connected to the greater Gulf ecosystem.

One possibility is to create a multilateral agreement among the three countries similar to the U.S.-Cuba Sister Sanctuaries MOU. All three countries have shown interest in such an agreement.²⁴⁷ This agreement would allow the three countries to work together on research projects concerning these ecosystems, to share knowledge and technology to better understand how to best conserve the reefs, to educate the public about the importance of protecting coral reefs, and to undertake collaborative conservative programs.

The three countries have worked together on Gulf resource management in the past. From November 2002 to February 2004, Mexico, the United States, and Cuba worked together on a project involving a specific portion of the Gulf that was especially susceptible to pollution from oil and natural gas extraction.²⁴⁸ Specifically, the Transboundary Diagnostic Analysis and Strategic Action Programme for the Gulf of Mexico Large Marine Ecosystem Project sought to preserve biodiversity in the region.²⁴⁹ While this program lasted less than two years, it laid the foundation for trilateral cooperation in the Gulf. In July 2012, the countries built on that foundation and created an International Gulf of Mexico Marine Protected Area Network, which strives to protect the region's fisheries.²⁵⁰ In addition, in 2012, the United States and Mexico entered into an MOU between NOAA and CONANP, seeking ways to improve MOA management, and that agreement is now undergoing a revision.²⁵¹ Then, on April 26, 2018, Mexico and Cuba

247. The interest of all three countries including Mexico in establishing a trinational agreement for MPAs in the Gulf was the subject of a workshop held in Cozumel on December 14-15, 2017. See GEF-UNIDO, DESIGN OF A CONDITION REPORTING TOOL OR "REPORT CARD" FOR THE NETWORK OF MARINE PROTECTED AREAS IN THE GULF OF MEXICO (2017); *GEF-6 Request for Project Endorsement*, GEF (2016), https://www.thegef.org/sites/default/files/project_documents/IW_GEF6_UNIDO_Mexico_6952_CEO_Endorsement_Document_061020161.pdf.

248. *A Transboundary Diagnostic Analysis and Strategic Action Programme for the Gulf of Mexico Large Marine Ecosystem: Concept Paper (Final)*, INT'L WATERS LEARNING EXCHANGE & RESOURCES NETWORK (2014), <https://iwlearn.net/documents/6471>.

249. *Id.*

250. *International Gulf of Mexico Marine Protected Area Network, Gulf of Mexico LME*, <http://sites3.iwlearn3.webfactional.com/gomlme/en/other-initiatives/igompan> (last visited May 8, 2015).

251. Memorandum of Understanding on Cooperation in the Field of Environment and Natural Resources, Mex.-Cuba, Apr. 26, 2018 (on file with author) [hereinafter Cuba-Mexico MPA MOU].

signed their own MOU, mirroring the U.S.-Cuba Sister Sanctuaries MOU.

Given the strong benefits of multilateral cooperative management of coral reefs and other marine resources, the three countries should take advantage of this opportunity to establish an ongoing collaborative program for MPAs in the Gulf. Recent developments show the potential for such a relationship. Supported by strong assistance from non-governmental organizations (NGOs), such as The Ocean Foundation and the Environmental Defense Fund, the three countries have worked together to establish the foundation for cooperative measures to link together and protect the MPAs of the Gulf of Mexico and the larger marine ecosystem of which they are a part.²⁵² For example, these parties met together in Cozumel, Mexico, in December 2017, to discuss sustainable tourism and future plans for Gulf cooperation and agreed to continue the dialogue on trilateral marine conservation focusing on MPAs.²⁵³

252. The Gulf of Mexico marine conservation effort is supported by two additional ongoing collaborative efforts. One such program is the Trinational Initiative for Marine Science and Conservation in the Gulf of Mexico and Western Caribbean, which is sponsored by the CubaMar program of The Ocean Foundation. The Trinational Initiative began in 2007 with the goal of establishing a framework for ongoing joint scientific research involving Cuba, Mexico, and the United States to preserve and protect surrounding and shared waters and marine habitats, mainly through annual workshops, the most recent of which occurred on April 26-27, 2018, in Merida. See *Trinational Initiative for Marine Science and Conservation in the Gulf of Mexico and Western Caribbean*, TRINATIONAL INITIATIVE, www.trinationalinitiative.org (last visited Apr. 27, 2018).

Another such effort is the Gulf of Mexico Large Marine Ecosystem Program. Mexico's Secretariat of Environment and Natural Resources, in collaboration with NOAA and other national and international institutions, has recently implemented a Strategic Action Program of the Gulf of Mexico Large Marine Ecosystem (GEF 2016). It includes an outcome to improve the effectiveness of MPAs by linking them into networks. Mexico's National Commission of Natural Protected Areas and NOAA's Office of National Marine Sanctuaries are collaborating in developing a set of projects within this program to create a fundamental understanding of what marine habitats and biological communities exist within Mexico's Gulf MPAs and conduct an assessment of the condition of those habitats and communities. Through these products, MPA managers and other decision-makers will be given a toolkit for the long-term evaluation and improvement of MPA ecosystem and management performance that can be applied to MPAs throughout the Gulf of Mexico. Flower Garden Banks and Florida Keys National Marine Sanctuaries will be part of this trans-boundary initiative between MPAs and plans include integrating Guanahacabibes National Park and Banco de San Antonio in Cuba into the Large Marine Ecosystem program. Together with the sister sanctuary relationship established under the U.S.-Cuba MOU, it is anticipated that the joint efforts will result in a tri-national sister sanctuary MPA network in the Gulf of Mexico. *GEF-6 Request for Project Endorsement*, *supra* note 247, at 145.

253. K. Thompson & F. Bretog, *Sharing Experiences Across the Yucatan Channel: A Learning Exchange on Sustainable Tourism and Marine Protected Areas*, CUBA MARINE RES. & CONSERVATION: CUBAMAR BLOG SPACE (Jan. 10, 2018), <http://www.cubamar.org/blog>.

The parties joined again in Merida, Mexico, on April 25, 2018, for a policy-focused meeting to discuss mechanisms to move forward with Gulf of Mexico MPA conservation.²⁵⁴ In the meeting, the government officials and NGO representatives recognized that current political tensions in the region, especially between Cuba and the Trump administration, made a formal three-country agreement unrealistic in the short-term, but that many important initiatives to protect MPAs could occur under the domestic laws of each country, the existing bilateral agreements, and other means of cooperation.²⁵⁵ The parties agreed that, in addition to coral reefs, consideration should be given to migratory marine wildlife species throughout the Gulf (e.g., sea turtles, whale sharks, marine mammals, flamingos), sustainable tourism, fisheries management, and water quality.²⁵⁶ While MPAs would be the focal point of the cooperative conservation efforts, the ultimate goals would be the health of the entire Gulf of Mexico marine ecosystem and eventually to develop and implement a formal three-nation MOU on MPAs.²⁵⁷ The new collaborative effort was dubbed “the Gulf of Mexico Marine Protected Areas Network” (GOMMPAN), and the parties left the meeting with the charge to identify a list of achievable objectives under existing domestic laws and the bilateral agreements to serve as the basis for future deliberations.²⁵⁸

VI. CONCLUSION

Despite the decades-long history of broken relations between the United States and Cuba, the countries have made important strides in improving relations. The recent U.S.-Cuba MOU, Joint Statement, Twinning Agreement, and the Cuba-Mexico MPA MOU of April 26, 2018, have established a framework for cooperation on environmental issues, especially concerning coral reef protection and other Gulf of Mexico marine resources.

254. Env'tl. Law Inst., Agenda, Meeting on Policy Approaches for Improving Transboundary Cooperation for the Creation of a Network of Sister MPAs in the Gulf of Mexico, Merida, Mexico (Apr. 25, 2018) (on file with author). The Merida meeting received NGO organizational support from The Ocean Foundation, The Environmental Law Institute, and The National Marine Sanctuary Foundation.

255. D. Baur, J. Hamilton, X. Reico Blanco, Meeting Report Memorandum (Apr. 30, 2018) (on file with author).

256. *Id.*

257. *Id.*

258. *Id.*

The Sister Sanctuaries recognized under the MOUs represent some of the most diverse coastal ecosystems in both countries, which are extremely susceptible to a variety of environmental threats. By pursuing joint research projects and educational outreach, Cuba, Mexico, and the United States can help mitigate and adapt to some of these effects. To fully protect the coral reef ecosystems and other Gulf resources, however, the countries will need to work cooperatively under existing authorities and rely on support from the NGO community.

While the new administration in the United States leaves some uncertainty regarding the future of U.S.-Cuba relations, the necessary foundation for future cooperation and significant marine conservation success stories are in place. The opportunity to build on this foundation is at hand, and the benefits from cooperation are clear and attainable provided the will exists to carry forward the diplomatic outreach and collaboration that has already begun.