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Underwater Parks:

Three Case Studies, and a Primer on Marine Boundary Issues

Introduction

Unlike boundaries on land, most marine boundaries are not marked with monuments or fences. But like a monument or fence, marine boundaries *do* require maintenance! Poorly maintained boundaries can impair enforcement of environmental, fishing, and other regulations along that boundary. Further, it must be recognized that no agency places a marine boundary that doesn't affect many other agencies. This paper presents a brief primer on marine boundaries, followed by three case studies.

Primer on Marine Boundaries

In the United States, most marine boundaries are projected from a baseline, which consists of discrete points selected along the shoreline. Figure 1 illustrates our first problem: Where *is* the shoreline? U.S. Geological Survey (USGS) topographic maps typically display either the mean sea level or the mean high-water line, while National Oceanic and Atmospheric Administration (NOAA) nautical charts typically show the mean lowest low-water line. (Always check your map to see which datum was used). Various states use different water levels to mark the division between private lands and state-controlled territory. Note that *federal* offshore boundaries are measured from the mean lowest low-water line.

Federal offshore limits and boundaries include (refer to Figure 2):

- ***State Seaward Boundary.*** The Submerged Lands Act of 1953 (43 U.S. Code 1301) grants most coastal states jurisdiction out to three nautical miles.
- ***Revenue Sharing Line.*** This line, also referred to the "limit of 8g," extends 3 nautical miles beyond the state seaward boundary. Revenues generated from resources such as oil and gas within this area are shared between the federal government and the coastal state. Note that these two

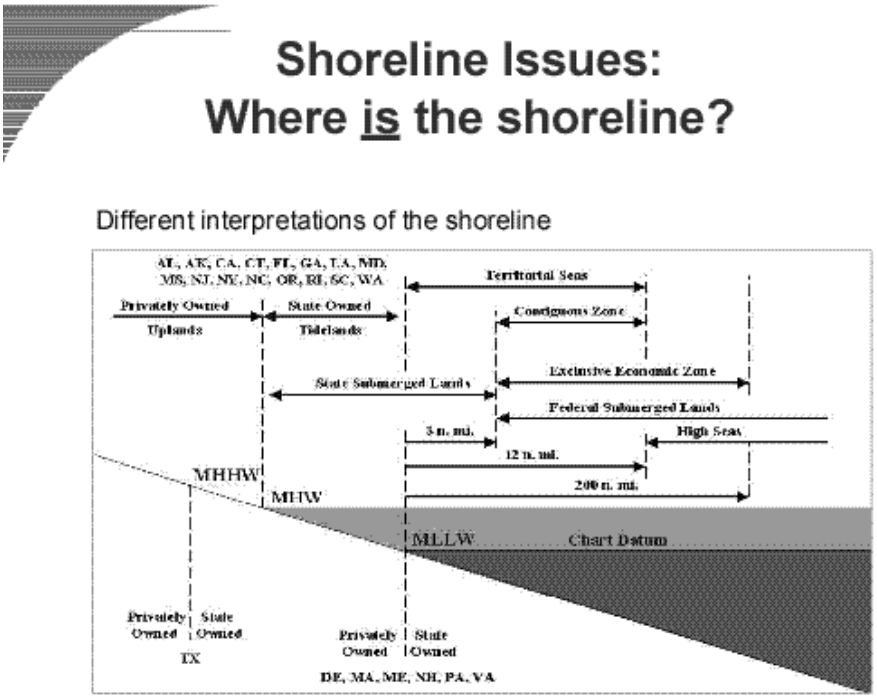

Figure 1. Where is the shoreline?

- lines are unique to the United States. In most countries, *all* offshore territory is controlled by the federal government.
- ***Territorial Sea.*** This line was previously at 3 nautical miles, but was moved to 12 nautical miles by Presidential Proclamation 5928 in 1988, in accordance with the United Nations Convention on the Law of the Sea (UNCLOS). The U.S. claims sovereignty within this line from the air space down through the water column and into the subsoil.
- ***Contiguous Zone.*** Established by Presidential Proclamation 7219 in 1999, this 24-nautical mile buffer grants the U.S. the "control necessary to prevent infringement of its customs, fiscal, immigration or sanitary laws, and regulations within its territory or territorial sea."
- ***Exclusive Economic Zone (EEZ).*** Created by Presidential Proclamation 5030 in 1983, the EEZ claims for the U.S. exclusive rights to economic resources such as oil and gas out to 200 nautical miles.
- ***Article 76 Claims.*** Article 76 of the most recent UNCLOS allows countries to claim resources out to a maximum 350 nautical miles, depending upon the configuration of the continental shelf.

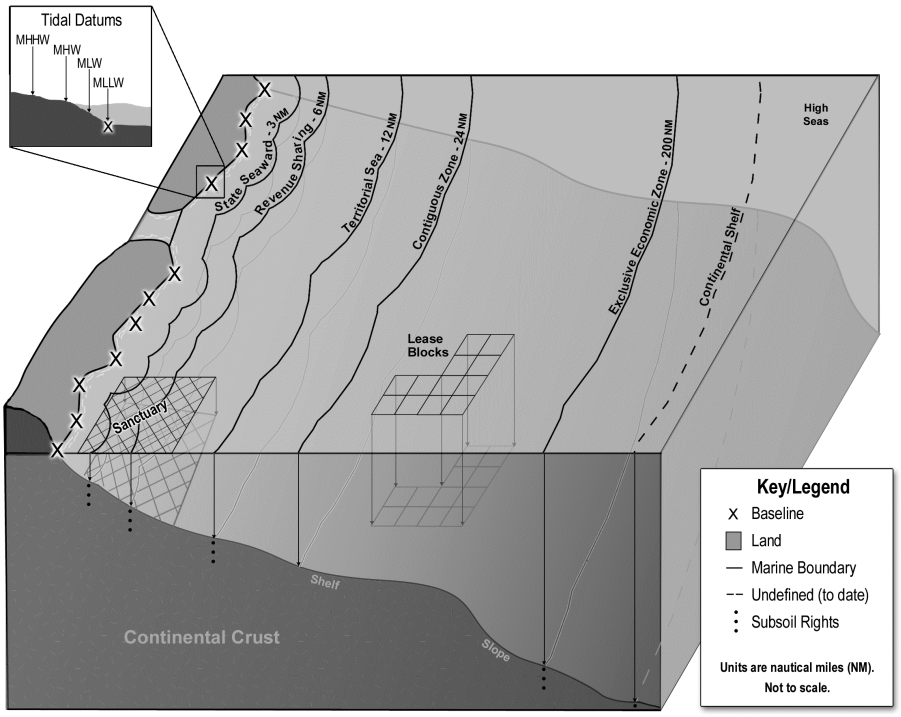

Figure 2. Federal offshore limits and boundaries.

Note that all these boundaries are measured from the baseline points, which are established along the mean lower low-water (MLLW) line, *which includes rocks and islands.* Remember too that, with erosion and accretion, the coastline can move. When that happens, the baseline and associated boundaries will all move with it. Finally, remember that all these boundaries are in nautical miles. A nautical miles equals one minute of latitude at the equator, or 6,076.103 feet, which is not the same as the statute mile commonly used on land—5,280 feet.

Other offshore boundaries include national parks, marine sanctuaries, lease blocks, etc.

Case Study 1: Park Expansions in the U.S. Virgin Islands

As it neared its end, the Clinton Administration was looking for ways to provide greater protection to the nation's coral reefs. Enlarging the boundaries of the existing park system in the U.S. Virgin Islands (i.e., Virgin Islands National Park and Buck Island Reef National Monument) appeared to be one way to accomplish this.

Obviously, the first step for any boundary development is to establish the baseline along the coast. UNCLOS Article 5 states that "the normal baseline for measuring the breadth of the territorial sea is the low water line along the coast as marked on large-scale charts officially recognized by the coastal State." For the U.S., these would be the NOAA nautical charts; a detail from one is shown in Figure 3. Selecting the baseline simply requires that the seaward-most points along the coast, including rocks and islands, be identified, and coordinates obtained for them (usually through digitizing). A problem arises with "low-water features," such as rocks, which are indicated on the charts with an asterisk. In the example shown in Figure 3, one rock (marked by the number 2 in parentheses) is indicated as being 2 feet above datum (MLLW). It can be included in the baseline. Another rock (marked by the number 1, overlined, in parentheses) is indicated as being 1 foot below datum. It does not qualify as a baseline point. But what about the other rocks that are undesignated? These need to be field-checked.

Once the baseline was established, the various boundaries could be calculated. As shown in Figure 4, which depicts the expansion of Virgin Islands National Park with a newly designated Coral Reef National Monument, those boundaries include: the Territorial Submerged Lands Act (TSLA) boundary at three nautical miles, the territorial sea boundary at 12 nautical miles, the equidistant line separating Puerto Rico and the Virgin Islands, and the international boundary separating the U.S. and British Virgin Islands. Coordinates for the international boundary had already been published by the U.S. Department of State in the *Federal Register*.

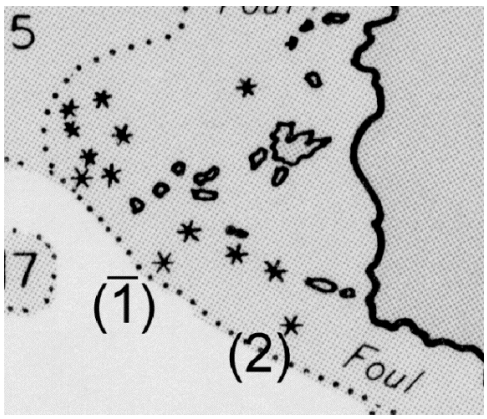

Figure 3. Chart detail.

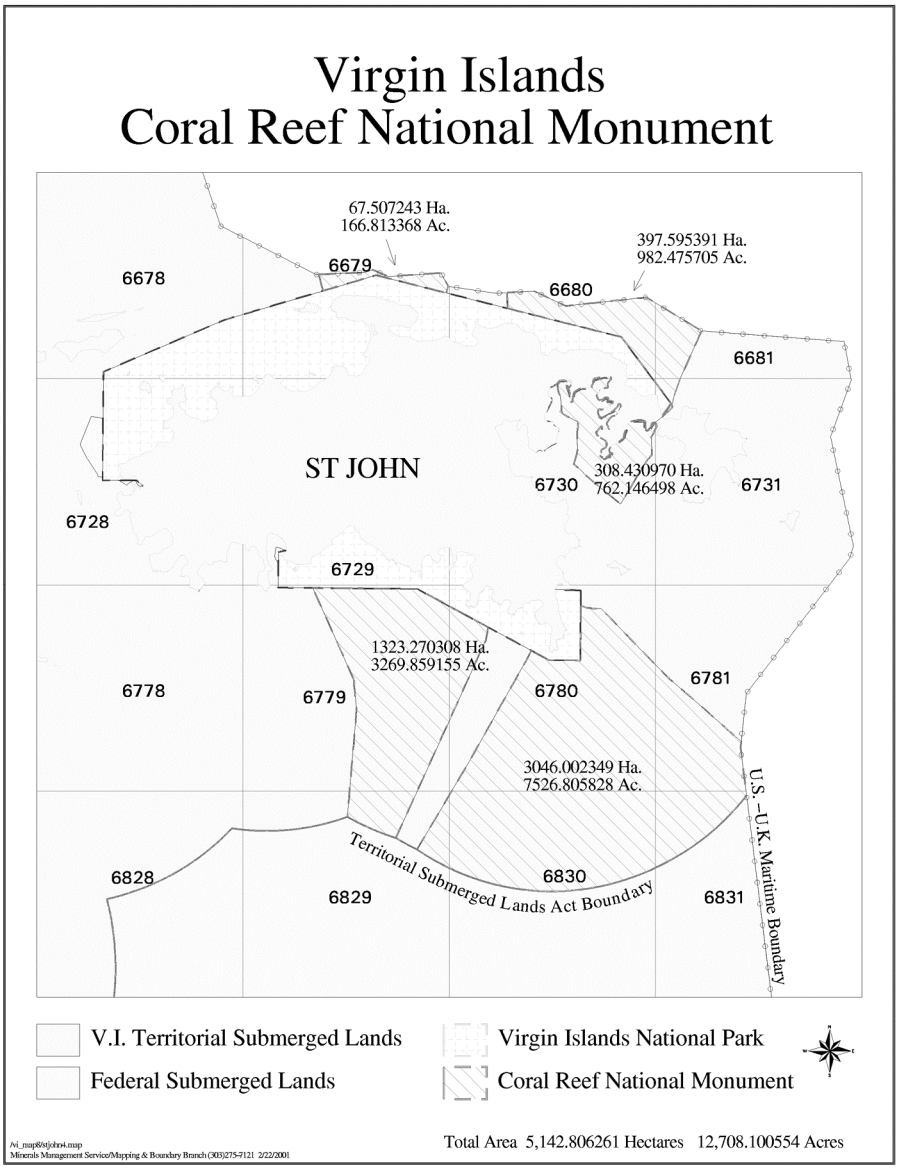

Figure 4. Virgin Islands Coral Reef National Monument.

While the Submerged Lands Act of 1953 granted the three-nautical-mile area to the states, it was the later, *Territorial* Submerged Lands Act (signed on October 5, 1974), that transferred control to the territories. But a careful reading of that act reveals that "all submerged lands adjacent to property owned by the United States above the line of mean

high tide" were excepted from the transfer. This would indicate that there may be some areas within the three-nautical-mile line that were retained under U.S. jurisdiction and not relinquished to the territories. But to our knowledge, in over 25 years since the enactment of the TSLA, no one had ever mapped out these areas.

Mapping them first required a careful search of the land records to see which parcels were owned by the U.S. government as of the date of the enactment of the TSLA. Once those were identified, and precise coordinates determined, equidistant lines could be calculated to separate federal areas from those under territorial jurisdiction. Figure 5 shows an example from Buck Island Reef National Monument.

Having established federal ownership of these areas made it possible to then convert them to National Monument Status, which President Clinton did on January 17, 2001, with Executive Order 7392 and Executive Order 7399. These executive orders are still under review by the Government Accounting Office; however, in this case it appears that careful attention to boundary issues may prevail in bringing about an expanded park boundary—and greater protection to the delicate corals.

Case Study 2: Glacier Bay National Park

As in the Virgin Islands national park units, Glacier Bay National Park has both an onshore and offshore component. The latter is now being contested by the state of Alaska in the U.S. Supreme Court. In this case, Alaska asserts that it "took title to all lands underlying marine waters within the boundaries of Glacier Bay National monument at statehood, pursuant to the equal footing doctrine and the Submerged Lands Act" (U.S. Department of Justice 1999). But even if the National Park Service (NPS) is able to keep the offshore property after this case is settled, questions remain with the boundary. That boundary, as set forth by Executive Order 2330 (April 18, 1939, 53 Stat. 2534), goes (in part) from "Cross Sound to the Pacific Ocean; thence northwesterly following the general contour of the coast at a distance of three nautical miles therefrom to a point due west of the mouth of Seaotter Creek...."

This description raises a number of questions. What is meant by the term "the general contour of the coast"? Is it a high-water line? A low-water line? Does it include rocks and islands? The NPS map GLBA-90,004 shows the agency's original interpretation of this line. What further complicates the issue is a *Federal Register* notice published by NPS on September 30, 1992. The notice conflicts with Executive Order 2330 and the map GLBA-90,004. The *Federal Register* notice stated that the line runs "due west, 3 miles

to a point on the line demarking the Territorial Sea of the United States....” If one uses the Territorial Sea line, then one has to use rocks and islands to determine the boundary. Figure 6 depicts both the park boundary (taken from map GLBA-90,004) as the innermost line and the

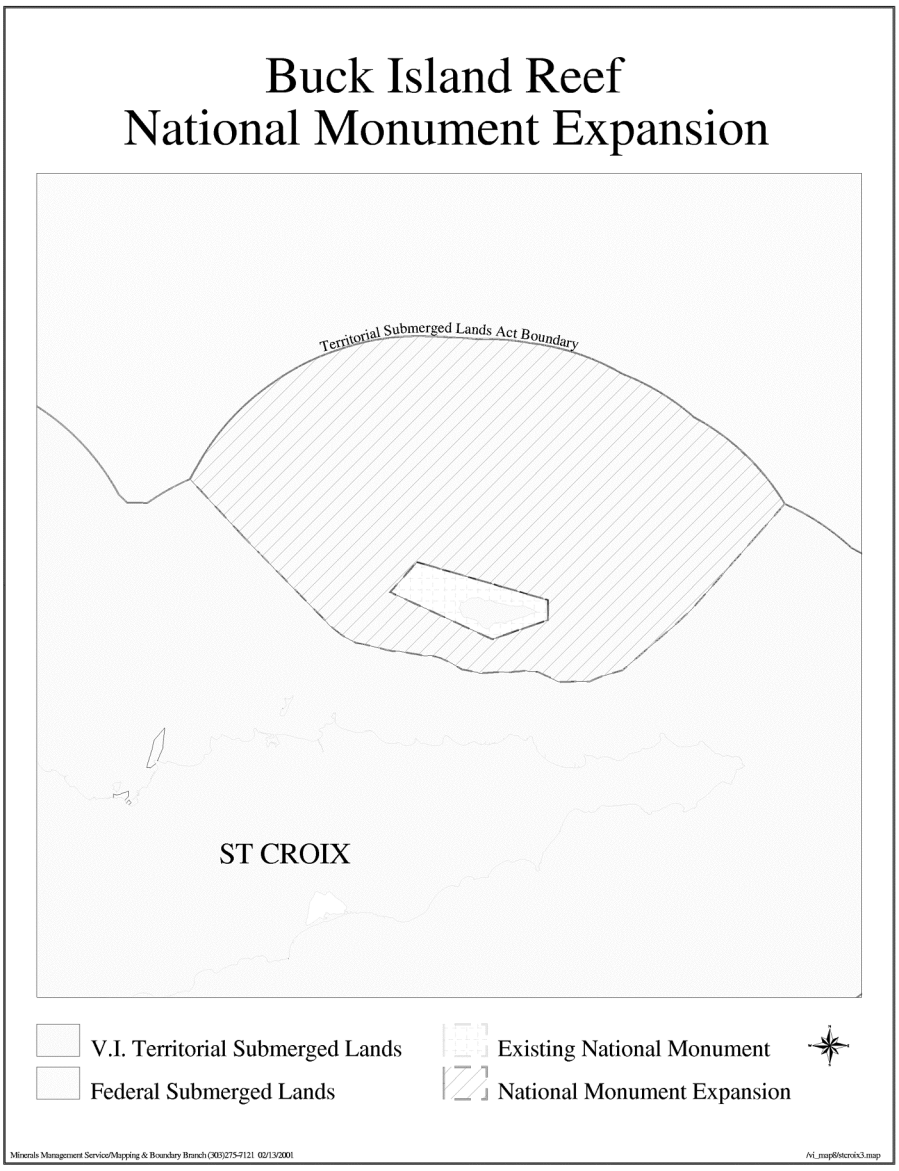

Figure 5. Buck Island Reef National Monument Expansion.

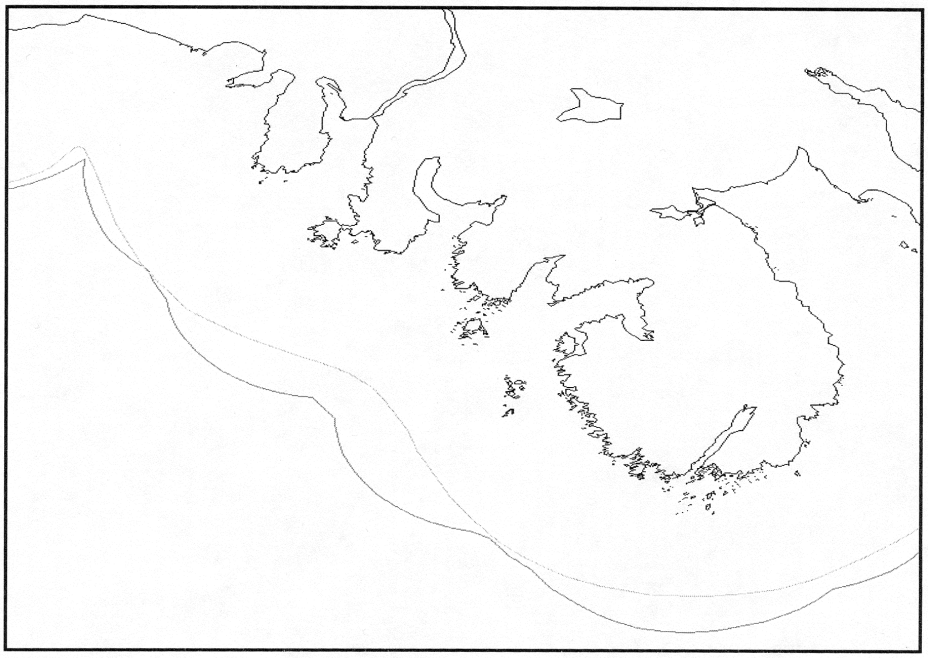

Figure 6. Two versions of Glacier Bay National Park boundary. Innermost line is the park boundary as shown on the map GLBA-90,004. Outermost line is the Submerged Lands Act three-nautical-mile line as calculated by the Minerals Management Service.

Submerged Lands Act three nautical-mile line (as calculated by the Minerals Management Service) as the outermost line. It is clear that rocks and islands were *not* originally used by NPS in determining the park's boundary. Also at issue here is the depiction of a median line through a number of straits within Cross Sound. To our knowledge, the Park Service has never issued official *coordinates* describing this boundary.

Case Study 3: The Florida Keys National Marine Sanctuary

In order to give greater protection to the marine resources of the Florida Keys, especially those that are not already protected by the existing patchwork of state and federal parks in the area, NOAA has established the Florida Keys National Marine sanctuary. This action will require other agencies, such as the Minerals Management Service, to withdraw the affected area from consideration for oil and gas development. Unfortunately, NOAA has been unable to complete a set of coordinates for the sanctuary. They have a gap where the sanctuary closes against the existing boundary for Everglades National Park. This is because NOAA has been unable to get precise coordinates for the Everglades boundary from NPS. Until such coordinates

are provided, NOAA will be unable to finish its work on the sanctuary, and the Minerals Management Service will be unable to complete their withdrawals for the area within their cadastre. All of this helps to illustrate the point that *no one places a boundary out there that doesn't affect everyone else*.

Resolving Ambiguities

Clearly, it is not easy for GIS users to convert legal descriptions of boundaries into the precise coordinates needed to display them in GIS systems, especially when those legal descriptions are vague or inconsistent. Ambiguities in boundary locations could impede enforcement of those boundaries. Finally, ambiguous boundaries controlled by one entity can also negatively affect other agencies in performing their duties.

To deal with numerous issues such as these, the Marine Boundary Working Group was formed in 2001 under the Federal Geographic Data Committee. It includes representatives from nearly every federal agency (including NPS) that either creates or uses offshore boundaries. The purpose is as follows:

> The marine Boundary Working Group (MBWG) was formed to address a number of issues pertaining to legal and technical issues of marine boundaries. Because most maritime boundaries were defined prior to the advent of modern technology such as global positioning systems (GPS) and geographic information systems (GIS), many of the world's nautical charts, treaties, and regulations may contain marine boundary descriptions that are inaccurate, insufficient, and conflicting. In the United States, these discrepancies can negatively affect many ocean related activities, including oil and gas leases, open ocean disposal zones, and the enforcement of fishing and environmental laws (NOAA 2001).

Conclusion

Precise, unambiguous offshore boundaries can be an asset in protecting the valuable resources that have been placed under the care of the National Park Service. Failing to properly locate and maintain boundaries can negatively affect NPS enforcement, and also impedes the work of other federal agencies. The Marine Boundary Working Group is a valuable resource for resolving these problems.

References

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