

SUPPORTING STATEMENT
Comprehensive Regional Decision Support Framework to Prioritize Sites for Coral Reef Conservation in the U.S. Virgin Islands: Survey of Professional SCUBA Divers
OMB CONTROL NO. 0648-xxxx

A. JUSTIFICATION

1. Explain the circumstances that make the collection of information necessary.

This request is for a new information collection to benefit natural resource managers in the United States Virgin Islands (USVI). The National Ocean Service (NOS) proposes to collect information from professional SCUBA¹ divers in the USVI about the value, status and resilience of coral reef areas in the jurisdiction.

Up-to-date sociological data is needed to support the Agency's conservation and management goals, to strengthen and improve decision-making related to coral reef management and to satisfy legal mandates under the [Coral Reef Conservation Act](#) (CRCA) (16 U.S.C. 6401 et seq).² Additionally, this collection supports agency obligations under the Reauthorization of the [Magnuson-Stevens Fishery Conservation and Management Act](#) (MSA), the [Regulatory Flexibility Act](#) (RFA), the [Endangered Species Act](#), and the [National Environmental Policy Act](#) (NEPA), [Executive Order 12866](#) (EO 12866), and other pertinent statutes.

The purpose of the Coral Reef Conservation Act is to advance conservation of coral reef ecosystems in the United States and Territories. Specifically, the Act requires the federal government to preserve, sustain and restore coral reef ecosystems, promote the wise management and sustainable use of them, as well as develop sound scientific information on their condition and the nature of threats to them. After engaging experts, resource managers and stakeholders in a collaborative process³, the NOAA Coral Reef Conservation Program (CRCP) identified three priority threats to coral reef ecosystems in the United States and Territories, including the effect of non-sustainable fishing policies and practices, the influence of land-based sources of pollution and the ecological impacts resulting from climate change.⁴ The USVI constitutes one coral reef jurisdiction of interest to the CRCP program.

According to van Beukering et al., in 2011, the total economic value of coral reef ecosystems in the USVI was approximately \$187 million per year.⁵ The jurisdiction's coral reefs provide a range of ecological services, including reef related tourism and recreation (e.g., boating,

¹ SCUBA is an acronym for underwater diving that is carried out using a "Self-Contained Underwater Breathing Apparatus."

² A copy of the act can be accessed at: http://www.coris.noaa.gov/activities/actionstrategy/08_cons_act.pdf

³ For more detailed information on the process used by the Coral Program to develop their strategic priorities for research and management, see process summaries available at: <http://coralreef.noaa.gov/aboutcrpcp/strategy/currentgoals>.

⁴ NOAA Coral Reef Conservation Program. 2009. NOAA Coral Reef Conservation Program Goals & Objectives 2010-2015. Silver Spring, MD: NOAA. Available online: http://coralreef.noaa.gov/aboutcrpcp/strategy/currentgoals/resources/3threats_go.pdf.

⁵ van Beukering, Pieter, et al. 2011. The economic value of the coral reef ecosystems of the United States Virgin Islands. Report number R-11/06, Final report to NOAA. 160 pp.

recreational fishing, water sports, etc.), coastal amenities (related to real estate), protection of the shoreline and infrastructure from storms, and facilitation of commercial fishing.⁶ However, since 2002, scientific assessments of the state of coral reef ecosystem health in the USVI have confirmed a declining trend in the overall health of the jurisdiction's reef systems, as well as the component parts of these systems, such as fisheries, coral, etc.⁷ According to assessors in 2008, decline in the health of coral reef ecosystems in the USVI result from a number of enduring, cumulative and interacting factors, including: ineffective natural resource management, inadequate land use planning, non-sustainable exploitation of resources and significant natural events (e.g., climate change, tropical storms and hurricanes).⁸ Two impediments to improving management of coral ecosystems are, first, inadequate transitioning of scientific knowledge into tools for use by territorial resource managers and, second, a lack of actionable information about the value of coral reef specific resources to the local community. Both of these gaps inhibit the ability of territorial managers, in a fiscally-limited context, to prioritize among competing management objectives, conduct effective risk assessment and implement adaptive management.

The proposed data collection is one component of a larger project that will fill these gaps. Scientists at NOAA will develop a coral reef prioritization framework to identify and describe the jurisdiction's best and most important reefs based on existing scientific survey data along with data collected from professional SCUBA divers. The framework will combine data collected from professional SCUBA divers on the status and value of coral reef areas with previously collected physical/ecological/biological data from thousands of underwater surveys across the region. The resulting decision-support tool will enable managers to map and rank coral reefs with user-defined weightings for biological importance, connectivity, human use value, threats to coral reefs and/or potential for resilience. This tool will enable territorial managers to carefully target limited fiscal resources thereby improving their ability to implement adaptive management of jurisdictional coral reef ecosystems to stymie and reverse the decline in reef health.

⁶ van Beukering, Pieter, et al. 2011.; Hinds Unlimited. 2003. Socio-economic assessment of marine resource utilization in the U.S. Virgin Islands. University of the Virgin Islands and the Department of Planning and Natural Resources, United States Virgin Islands, February 7, 2003.

⁷ Catanzaro, D. et al. 2002. Status of coral reefs in the U.S. Virgin Islands. Pp 131-142 in Turgeon et al. 2002. The State of coral reef ecosystems in the United States and Pacific Freely Associated States: 2002. NOAA/NOS/NCCOS, Silver Spring, MD. 265 pp.; Jeffery, C.F.G. et al. 2005. The state of coral reef ecosystems of the U.S. Virgin Islands. Pp 45-90 in Wadell, J.E., Ed. 2005. The state of coral reef ecosystems of the United States and Pacific Freely Associated States: 2005. NOAA Technical Memorandum NOS NCCOS 11. NOAA/NCCOS/CCMA, Silver Spring, MD. 522 pp.; Rothenberger, P., et al. 2008. The state of coral reef ecosystems of the U.S. Virgin Islands. Pp 29-74 in Waddell J.E. and A.M. Clarke, Eds. 2008. The state of coral reef ecosystems of the United States and Pacific Freely Associated States: 2008. NOAA Technical Memorandum NOS NCCOS 73. NOAA/NCCOS/CCMA, Silver Spring, MD. 569 pp.

⁸ Jeffery, C.F.G. et al. 2005. The state of coral reef ecosystems of the U.S. Virgin Islands. Pp 45-90 in Waddell, J.E., Ed. 2005. The state of coral reef ecosystems of the United States and Pacific Freely Associated States: 2005. NOAA Technical Memorandum NOS NCCOS 11. NOAA/NCCOS/CCMA, Silver Spring, MD. 522 pp.

2. Explain how, by whom, how frequently, and for what purpose the information will be used. If the information collected will be disseminated to the public or used to support information that will be disseminated to the public, then explain how the collection complies with all applicable Information Quality Guidelines.

General Overview

The proposed data collection is one component of a larger project geared toward creating a tool that will allow natural resource managers to identify and characterize the jurisdiction's best and most valuable coral reef areas, both ecologically and sociologically speaking. The tool will combine data that describes the physical environment (e.g., benthic structure on the sea floor), biological environment (e.g., the distribution, density and richness of species present), ecological environment (e.g., source-sink dynamics for species) and social environment (e.g., the location of areas used by the professional SCUBA diving community) of coral reef ecosystems in the USVI. The tool will help territorial managers to identify which coral reefs are of highest priority for management, protection or restoration by answering the following key questions:

- Where are the best examples of healthy coral reefs?
- Where are the reefs with the highest potential for recovery?
- Where are the threats to coral reefs located relative to priority reefs?
- Which reefs are most important to the professional SCUBA diving community?

These questions are answerable to some degree with existing data. However, local knowledge held by individuals who regularly use coral reef resources is required to understand the human use-value of particular reef areas, as well as the status of these reefs in terms of health and resiliency. Thus, the data collection described herein will engage the professional SCUBA diving community to collect spatially explicit data on where they go, how they use particular areas, and their perception of the health status and recovery potential of familiar reefs.

Who will use this information?

Data gathered during this collection will be combined with physical, ecological and biological data in a quantitative and spatially-explicit prioritization framework that will be custom designed as a discrete user-driven decision support tool. Ultimately, this tool will be provided to natural resource managers who are responsible for managing, protecting or restoring coral reef ecosystems in the USVI. The information collected also has potential for use by resource management agencies to support education and outreach programs.

How frequently will this information be used?

This one-time collection will last four to five months. Data collected will be integrated with data from the physical, ecological and biological components of the broader project. Derived products from the broader project will be provided to Territorial resource managers at the conclusion of the full project period. It is anticipated that all data, as integrated into the derived product, will be used by Territorial resource managers on an as-needed basis.

For what purpose will the information be used?

Application of the tool produced will be at the discretion of Territorial resource managers. The tool could be used by natural resource managers to inform a number of management activities, including permit review, selection and design of habitat restoration projects, and prioritization and planning of research/monitoring investments. In addition, the tool could be used by Federal agencies to evaluate existing protected area design and to support identification of geographical priorities for investments.

Summary of Survey Questions and Mapping Activity

The survey will be divided into three sections: Diving Questions, Mapping Exercise and Informational Coverage & Demographic Questions. The questions or items from each of these sections are discussed in detail below.

Section 1: Diving Questions

Question 1. Do you presently engage in diving as a part of your occupation in the USVI?

This is a screening question. Our target population is professional SCUBA divers in the USVI. If a respondent indicates that he or she does not presently engage in diving as a part of their occupation, or dives for their occupation outside of the USVI, the survey will terminate.

Question 2. How long have you engaged in diving as a part of your occupation in the USVI?

This question will ascertain the number of years that the respondent has engaged in professional SCUBA diving in the USVI specifically. We assume that persons who have been diving longer in the USVI will have more experience on coral reefs in the jurisdiction. Thus, this question will establish the respondent's degree of professional experience in a diving capacity within the USVI.

Question 3. Which of the following best describes the types of diving activity you engage in as a part of your occupation? (Check all that apply)

This question will be used to identify the types of occupational diving in which respondents are engaged. We assume that some respondents will be engaged in multiple types of occupational diving (e.g., a diver may conduct research and teach). Therefore, we allow them to select as many types of diving as are applicable. This information will be used to evaluate the type of diving experience respondents have in terms of interaction with coral reef ecosystems. Some types of occupational diving do not necessarily require a high degree of interaction with coral reef resources, such as underwater salvage or construction. We anticipate that different types of occupational diving experience will influence one's ability to evaluate the ecological status of coral reefs. This is an independent variable.

Question 4. In the previous 12 months, approximately how many dives have you completed on coral reefs in the USVI as a part of your occupation?

Question 5. Over the course of your career so far, approximately how many dives have you completed on coral reefs in the USVI as a part of your occupation?

Questions 4 and 5 continue to ascertain the degree of experience respondents have on coral reefs in the USVI. Question 5 establishes the number of dives that a respondent has completed as a part of their occupation over the course of their career to date. We assume that a larger number of dives equates to more time (ergo, experience) on coral reefs in the USVI. Therefore, individuals with a larger number of dives would have more observational experience in the USVI relative to respondents who have spent less time diving in the USVI. Question 4 establishes the currency of a respondents' experience diving on coral reefs in the USVI as a part of their occupation. We assume that respondents who have had more total dives in the past twelve months have more current experience with the jurisdiction's coral reef resources and, therefore, can better assess the current status of reef resources and characteristics.

Question 6. Do you engage in diving for leisure or recreational activity in the USVI?

This question serves two purposes. First, it further establishes the degree of experience respondents have diving on coral reefs in the jurisdiction. We anticipate that individuals who engage in occupational diving also participate in recreational diving, thereby increasing their overall observational experience on coral reefs in the jurisdiction. The second purpose of this question is to establish the recreational use patterns of the professional SCUBA diving community in the USVI. This information will be used to identify reefs of personal value and importance to the professional SCUBA diving community.

Question 7. How long have you engaged in diving for leisure or recreation in the USVI?

This question will ascertain the number of years that the respondent has engaged in recreational SCUBA diving in the USVI, specifically. We assume that persons who have been diving longer in the USVI will have more experience on coral reefs in the jurisdiction. This question will establish the respondents' degree of recreational experience in a diving capacity within the USVI.

Question 8. In the previous 12 months, approximately how many dives have you completed on coral reefs in the USVI for leisure or recreation?

Question 9. Approximately how many dives in total have you completed on coral reefs in the USVI for leisure or recreation?

Questions 8 and 9 continue to ascertain the degree of experience respondents have on coral reefs in the USVI. Question 9 establishes the number of dives that a respondent has completed as a part of their recreational activities to date. We assume that a larger number of dives equates to more time (ergo, experience) on coral reefs in the USVI. Individuals with a larger number of dives would have more observational experience in the USVI relative to respondents who have spent less time diving in the USVI. Question 8 establishes the currency of a respondents' experience diving on coral reefs in the USVI for recreation. We assume that respondents who have had more total dives in the past twelve months have more current experience with the jurisdiction's coral reef resources and, therefore, can better assess the current status of reef resources and characteristics.

Question 10. Please indicate the degree to which you agree with the following statements related to function and value of coral reef ecosystems.

Question 10 is composed of 8 items, provided below in Figure 1, that are geared toward documenting the values respondents' have for coral reef ecosystems in general. These items are based on a body of scholarship that seeks to understand the range of social values attached to natural resources that are used or desired by people.⁹

⁹ Brown, G. and C. Raymond. 2007. The relationship between place attachment and landscape values: Toward mapping place attachment. *Applied Geography* 27: 89-111.; Brown, G. and P. Reed. 2000. Validation of a forest values typology for use in national forest planning. *Forest Science* 46 (2): 240-247.; Brown, G. and M. Kyttä. 2014. *Applied Geography* 46: 122-136.; Fulton, D.C., M.J. Manfred and J. Lipscomb. 2008. Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife* 1(2): 24-47.; Kellert, S. 1996. *The value of life: Biological diversity and human society*. New York: Island Press.; Nielsen-Pincus, M. 2011. Mapping a values typology in three counties of the interior northwest, USA: Scale,

Figure 1: Value Questions

geographic associations among values and the use of intensity weights. *Society & Natural Resources* 24: 535-552.; Raymond, C. and G. Brown. 2006. A method for assessing protected area allocations using a typology of landscape values. *Journal of Environmental Planning and Management* 49(6):797-812. Reed, P. and G. Brown. 2003. Values suitability analysis: A methodology for identifying and integrating public perceptions of ecosystem values in forest planning. *Journal of Environmental Planning and Management* 46(5): 643-658.

Value Documented in Literature	Value Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Aesthetic	I enjoy looking at and experiencing coral reefs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilitarian/ Economic	Coral reefs provide economically valuable resources to support my business, job or livelihood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cultural	Coral reefs are places where I can pass down the wisdom, knowledge and traditions of my family, ancestors or culture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreational	Coral reefs provide a place for me to engage in my favorite recreational and leisure activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educational / Scientific	Coral reefs are places where I can learn about the environment through observation or experimentation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biological Diversity	Coral reefs provide living space for a variety of fish and other marine species that are important to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spiritual	Coral reefs are sacred, religious or spiritually special places to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Subsistence	Coral reefs provide food and other natural resources that I need to sustain my way of life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 2: Mapping Exercise

A primary goal of this collection is to gather data on the geographical locations and associated attributes of coral reefs in the USVI. Therefore, we will be collecting three types of information using a mapping exercise. In this mapping exercise, respondents will be asked to place applicable “informational pins” on an electronic map of coral reefs in the USVI. Each of these pins signifies a particular type of information about the coral reef area that the respondent may “pin” to his or her reef location of choice. The three types of spatial information being collected are: Reef Characteristics & Features, Reef Activity Areas, and Stressors & Recovery Potential.

The map will be displayed in a Google Earth format, which is familiar to most persons who use electronic mapping technology for common activities such as obtaining driving directions, etc. A number of additional data layers beyond what is typically provided via the Google Earth service, such as the locations and names of local landmarks, navigational markers, management unit boundaries, etc., will be displayed on the map to help orient respondents. Other data layers containing physical features, such as benthic type, etc., will also be provided. The respondents will be able to see the location of coral reefs on the map.

The survey administration/mapping tool is not yet developed. However, to assist with visualization of how the tool will look we have provided images below. Figure 2 is an example

of how the user interface will look on the mapping tool. This example comes from a study conducted by Greg Brown¹⁰, who is assisting us with tool development. As with this tool, our respondents will grab, drag and drop the information pins on the tabs to the left of the frame (circled in red on this figure) and drop them on the map.

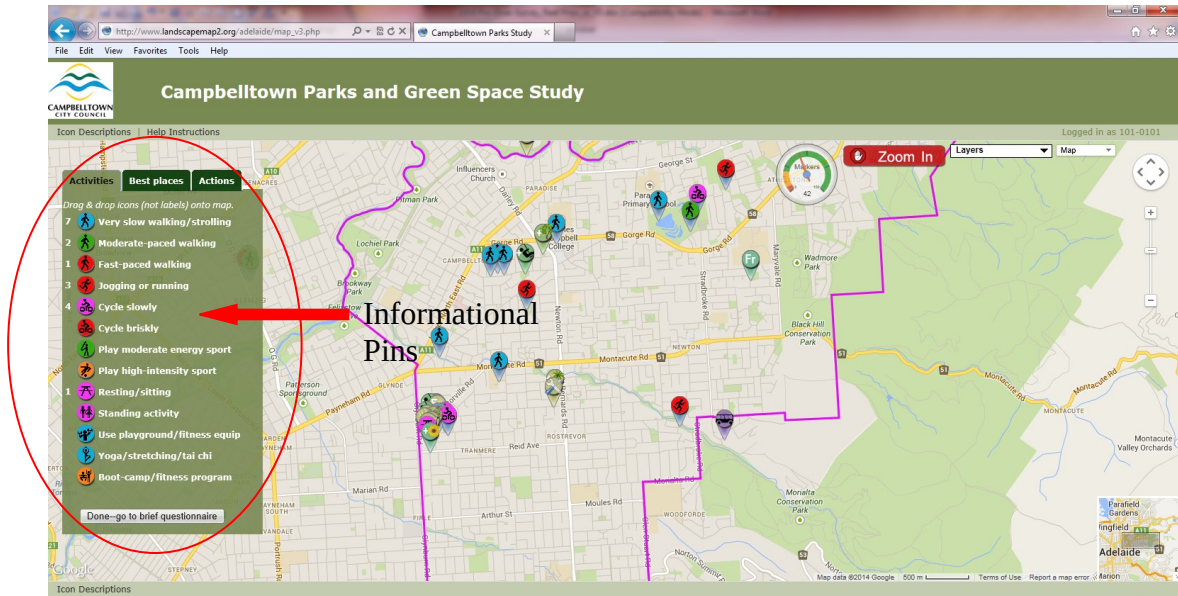


Figure 2: Example of Planned User Interface

Respondents will be able to view the entire USVI coral reef jurisdiction at a scale of 1:600000, as well as zoom into the map to see more detailed mapped features at a finer spatial scale. Enabling respondents to zoom in and out in this way is intended to help with their spatial orientation so they can quickly locate areas of interest on the map. However, respondents will be required to zoom into a scale of 1:24000 or finer to place their informational pins so that the scale of the data across the population will be standardized. To further standardize the data collected across the population, respondents will be instructed that the coverage of each informational pin placed will be set at a 50 meter radius. Employing this assumption will reduce the mapping effort for respondents as they will likely have to place fewer pins to cover the coral reef area to their satisfaction, in terms of mapping information. A grid overlay will be used to help respondents know how much area is covered by their informational pin once placed. Figures 3 and 4 below roughly demonstrate how the maps of the coral reefs will look for respondents. Figure 3 shows the wide view of the coral reef jurisdiction, while Figure 4 shows a finer scale. The respondent will be able to view the map at multiple scales. Additional orienting features will appear on the map as the respondent zooms into a finer scale, such as the locations of navigational infrastructure and the names of bays.

¹⁰ This example is provided courtesy of Greg Brown. The full tool may be viewed at: <http://www.landscapemap2.org/adelaide>. Guests should use the access code 101-0101 to enter the survey site.

Figure 3: Example of a Wide View of the Map

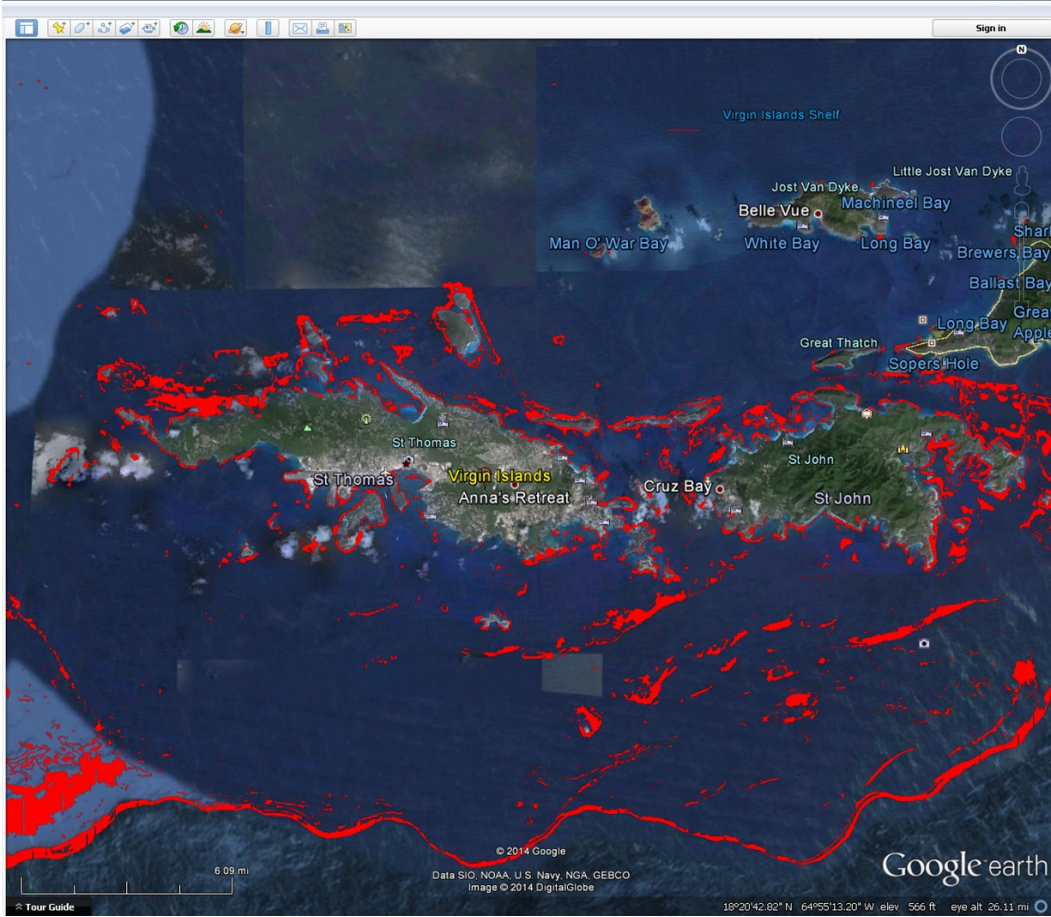
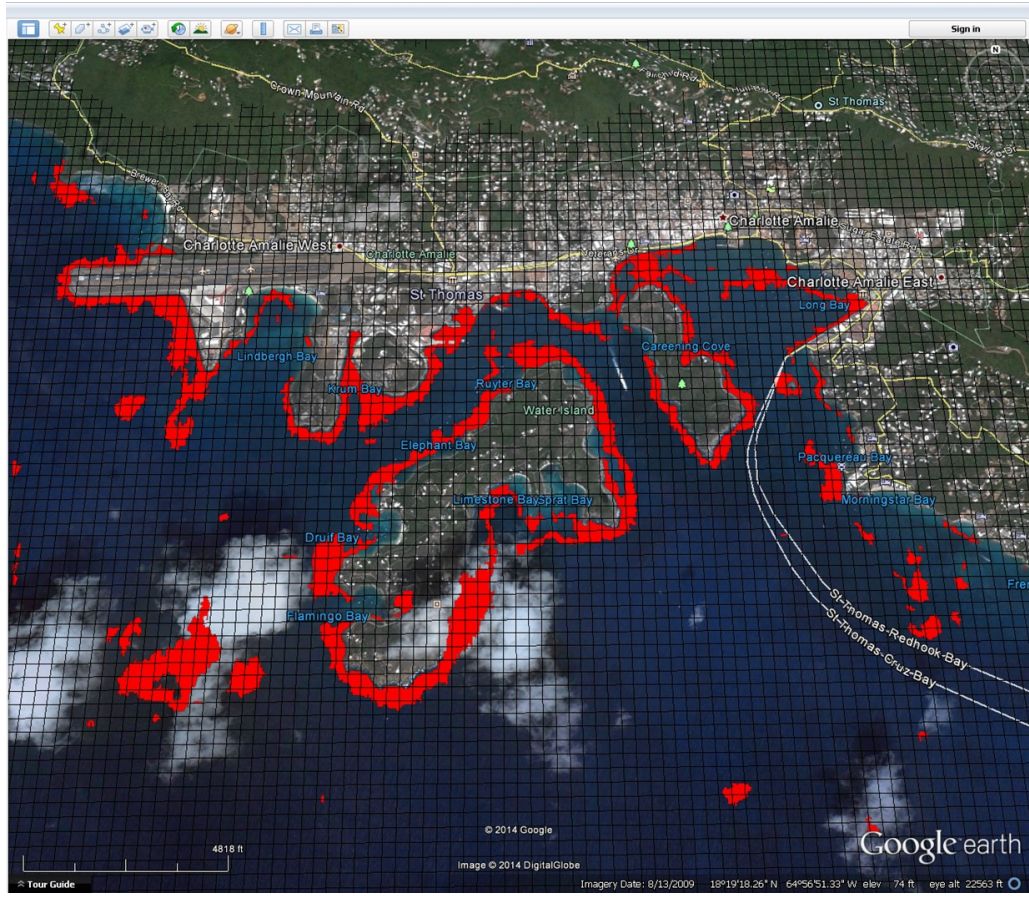


Figure 4: Example of a Finer Scale View of Map with Grid Overlay



The general instructions for the mapping component of the survey are as follows:

Instruction: For this mapping exercise, we would like for you to place the informational pins provided under each tab on your map in the locations where you feel you can contribute information about coral reefs in the USVI. The information that you provide should be based on your own personal observation and experience diving in the USVI. Except where otherwise noted, you may use pins more than once or not at all.

You may increase or decrease the resolution of your map to locate areas or orient yourself, but are limited to a resolution of 1:24000 or finer for mapping purposes. For this survey, we will assume that the information you provide with your informational pins covers an area of up to 50 meters around each point marked by a pin. Please place your informational pin on the side of the reef that you want to describe, meaning either the fore-reef or back reef. Please place your informational pin near the reef area that you want to describe, as opposed to the location where you typically enter the water (for example, where you anchor or moor your boat).

TAB 1: Reef Characteristics & Features

For the first mapping exercise, respondents will be asked to identify the location of a set of significant ecological and biological characteristics and features. Specifically, respondents will be instructed to identify the characteristics and features that they most associate with reefs areas where they dive. The features that they will then “pin” to the map of coral reefs in the USVI are:

- Fish spawning aggregation site
- Large herbivorous fish (e.g., parrotfish or surgeonfish)
- Large predatory fish (e.g., sharks or barracuda)
- Endangered or threatened species present (e.g., elkhorn and staghorn coral)
- Large variety of coral species
- Large variety of fish species
- Large amount of live coral cover
- Large amount of physical reef structure
- Good water clarity/visibility
- Small amount of macro algae/seaweed

These coral reef characteristics and features were selected by the ecologists and biologists on the project team. These features represent the ecological, biological and physical features of a healthy coral reef. A “healthy” coral reef has more of these attributes, while a “less healthy” reef has fewer of them. In combination with the biological and ecological survey data that will be compiled as a part of the broader project, data collected from this mapping exercise will be used to identify the “best” coral reefs areas in the jurisdiction.

TAB 2: Reef Activity Areas

Placement of the “Reef Activity Areas” informational pins will help the research team to understand how respondents use coral reef areas in the USVI. Respondents will be asked:

Based on your experience as a diver in the U.S. Virgin Islands, please identify the reefs that are the best places for diving tourism, personal diving and research activities on or around coral reefs by placing a pin on the appropriate locations on your map. These locations may be areas that you visit/use yourself or areas where you have observed others visiting/using coral reef resources. You may place as many or as few pins as you feel are needed to well represent the location of these activities.

The informational pins that they will place for this exercise are:

- Diving tourism activities
- Personal diving experiences
- Research activities

Where:

- Diving tourism activities = Taking tourists and other paying customers to engage in recreational diving
- Personal diving experiences = Diving for personal leisure, relaxation or recreation
- Research activities = Engaging in scientific research activities, such as data collection

Value for particular coral reef areas will be determined by measuring the distribution and density of Reef Activity Areas informational pins that are placed across the jurisdiction by the professional SCUBA diving community.

TAB 3: Stressors & Recovery Potential

The final tab in the mapping exercise portion of the survey will allow respondents to indicate how the coral reef areas that they dive on are influenced by common stressors of coral reef ecosystems. The directions for this tab are as follows:

Please show us which of the stressors listed below influences the reef areas that you are familiar with by placing the applicable stressor pins on your map. For each reef area where you have placed at least one stressor pin, please also give us your assessment about the degree of recovery potential for that reef by placing one recovery potential pin. Stated differently, for each area that you have marked with at least one stressor pin, we would like for you to place one recovery potential pin.

The stressor items available for placement on the map are as follows:

Stressor Pins

- Storms
- Coral Bleaching
- Water Pollution
- Shipping and Other Boats
- Unsustainable Fishing
- Recreational Overuse
- Invasive Species

Where:

- Storms = Including hurricanes, tropical storms and other severe storm events
- Coral Bleaching= Occurs when corals expel the symbiotic algae living in their tissues and turn completely white as a result of changes in conditions such as temperature, light, or nutrients
- Water Pollution = Including point and non-point pollution from land or marine-based human activities, such as sedimentation, chemical spills, nutrient run-off, etc.
- Shipping and Other Boats = Including stress or injury caused by the grounding of ships or other vessels, anchor damage, and increased shipping traffic and infrastructure
- Unsustainable Fishing = Including catching fish from stressed/vulnerable fish stocks or use of gear that damages non-target species or habitat
- Recreational Overuse = Overuse of an area for non-harvest related recreational activity, such as diving or snorkeling
- Invasive Species = Including non-native species, such as lionfish

The options that respondents will have for identification of areas with recovery potential are as follows:

Recovery Potential Pins

- High Recovery Potential
- Low Recovery Potential
- No Recovery Potential

Where:

- High Recovery Potential = High potential for this area to recover after disturbance
- Low Recovery Potential = Low potential for this area to recover after disturbance
- No Recovery Potential = No potential for this area to recover after disturbance (i.e., will stay the same or degrade further)

This information will be used to assess how respondents perceive the type, distribution and intensity of stressors across the jurisdiction. This information will also enable researchers to document which areas within the jurisdiction hold most potential for recovery, in the opinion of respondents.

Section 3: Informational Coverage & Demographic Questions

Question 11: Thinking about all of the locations where you have experience diving on coral reefs in the USVI, could you tell us approximately what percentage of those areas you have mapped information for us today?

This question will be used to assess the breadth of coverage of the mapped information gathered from respondents. An assumption of the study is that respondents will provide information for most, if not all, of the coral reef areas where they have experience diving. However, it is possible that respondents will provide information for fewer sites than they have experience with for a variety of reasons (e.g., wanting to keep a special dive spot secret, mapping fatigue, etc.). Thus, information from this question will be used to qualitatively evaluate the breadth of coverage of information provided by respondents.

Question 12. On which island do you live? (Check on one)

This question will be used to determine where in the USVI respondents live. This information will be used to understand the type and spatial distribution of reef use relative to geographies of residence.

Question 13. How long have you lived in the USVI?

This question will be used to determine tenure as a resident of the USVI. This information will be used to understand the type and spatial distribution of reef use, as well as their perception of reef status, relative to how long a person has been a resident of the USVI.

Question 14. What is your sex?

This question will be used to ascertain the sex of the respondent. This information will be used to examine differences in respondent perceptions of reef status by sex, as well as possible differences in the type and spatial distribution of reef use.

Question 15. What year were you born?

This question will be used to calculate the age of respondents. This information will be used to examine differences in respondent perceptions of reef status by age, as well as possible differences in the type and spatial distribution of reef use.

Question 16. What is the highest level of schooling that you have completed or the highest degree you have received? (Check only one)

This question will ascertain respondents' educational attainment. This question is based on the question used by the U.S. Census Bureau for their American Community Survey. This information will ascertain respondents' educational attainment, which will be used to examine differences in perceptions about reef status. Demographic data is also collected in order to examine differences in spatial attributes that are mapped.¹¹

Compliance with Information Quality Guidelines

It is anticipated that the information collected will be disseminated to the public or used to support publicly disseminated information. NOAA National Ocean Service, National Centers for Coastal Ocean Science will retain control over the information and safeguard it from improper access, modification, and destruction, consistent with NOAA standards for confidentiality, privacy, and electronic information. See response to Question 10 of this Supporting Statement for more information on confidentiality and privacy. The information collection is designed to yield data that met all applicable information quality guidelines. Prior to dissemination, the information will be subjected to quality control measures and a pre-dissemination review pursuant to [Section 515 of Public Law 106-554](#).

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological techniques or other forms of information technology.

This collection will utilize electronic techniques and other forms of information technology. All respondents will be surveyed using an online survey instrument, which will consist of survey questions and an interactive mapping tool. This electronic technique of data collection is essential for the mapping component of the survey and will substantially diminish respondent burden. Completion of the survey via the Internet will require respondents to have Internet access and the use of a computer. Because our target population is professional SCUBA divers, we anticipate that the majority of respondents will have ready access to computer equipment and the Internet. However, where respondents do not have access to a computer or the Internet, the research team will provide this technology to them in the form of a rugged tablet personal computer for in-person survey administration. Additionally, the collection will depend upon multiple strategies of contacting the respondents, including electronic mail, telephone calls, etc.

4. Describe efforts to identify duplication.

The research team consulted with Territorial resource managers and program liaisons from the NOAA Coral Program to determine what types of socioeconomic data collection activities were planned or presently ongoing in the USVI. To avoid survey fatigue and overburdening citizens in the USVI with data collections, the team also consulted with researchers who have projects underway or planned to determine if there was overlap of target populations. We are aware of three survey projects underway in the USVI that are focused on recreational fishers, which is not our target population. We are aware of one new data collection that will be focused on commercial fishers, which is also not our target population. Our study excludes persons who dive

¹¹ Brown, G. and Reed, P. 2009. Public Participation GIS: a new method for national forest planning. *Forest Science* 55(2): 166-182.

to conduct commercial fishing activities. However, after review of our survey instrument, the Principal Investigator for this latter project, Dr. Scott Crosson with the NMFS Southeast Fisheries Sciences Center, will consider options for collecting similar information from commercial spear fishermen that are encountered during his collection. In this manner, we will be able to leverage research efforts without duplication. Finally, we have identified and consolidated existing datasets on the spatial distribution of marine activities for the USVI that would be applicable to our research study.

5. If the collection of information involves small businesses or other small entities, describe the methods used to minimize burden.

This collection involves individuals. However, if individuals are self-employed as professional SCUBA divers, then our population would include some small businesses. Our effort to minimize burden to self-employed individuals is the same as our effort minimize burden to our population as a whole.

Foremost, this is a voluntary survey. Persons who do not wish to participate in the study may refuse. Additionally, to minimize burden, we have limited the number of survey questions as well as the number of mapping activities. Related to the mapping exercise, we will provide features on the map to make the mapping activity easier for the respondent, such as the ability to zoom in or out and inclusion of data to help orient the respondent on the map. A number of additional data layers beyond what is typically provided via the Google Earth service, such as the locations and names of local landmarks, navigational markers, management unit boundaries, etc., will be displayed on the map to help orient respondents quickly. Finally, to help reduce the mapping effort for respondents, as well as standardize the spatial data collected, respondents will be instructed that the coverage of each informational pin placed will be set at a 50 meter radius. Employing this assumption will reduce the mapping effort for respondents as they will likely have to place fewer pins to cover the coral reef area to their satisfaction, in terms of mapping information.

6. Describe the consequences to the Federal program or policy activities if the collection is not conducted or is conducted less frequently.

Without collection of this data, prioritization of coral reef areas for management could be undertaken without formal reference to the needs and values of an important resource user group, professional SCUBA divers.

7. Explain any special circumstances that require the collection to be conducted in a manner inconsistent with OMB guidelines.

Data collection will be consistent with OMB guidelines.

8. Provide information on the PRA Federal Register Notice that solicited public comments on the information collection prior to this submission. Summarize the public comments received in response to that notice and describe the actions taken by the agency in response to those comments. Describe the efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.

Federal Register Notice

A Federal Register Notice published on February 12, 2014 (79 FR 8438 - 8349) solicited public comments. No comments were received.

Consultation

We consulted with seven research scientists with expertise in the area of natural resource management and planning, as well as survey design and methodology. These technical experts included:

Survey Design/Data Collection Methods

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We consulted with this panel of experts about the survey mode and instrument, including validity of questions, clarity of wording, and question order. From this group, three scientists, two external to NOAA, were specifically consulted on data collection methods because of their expertise in mapping social science data and/or conducting similar collections using computer/Internet technology.

Our consultants provided a number of editorial suggestions to improve clarity of language and align terminology with that likely to be familiar to the target population. For example, the professional dive community understands “commercial diving” as activities including underwater pipeline work (e.g., oil and gas industry), underwater construction (e.g., welding), ship hull inspections and marine salvage. We were previously using this term in reference to diving conducted with tourists and recreationists. Revisions were made per comments to improve accuracy and clarity of terminology used on the survey instrument.

We also received suggestions related to clarification of the stressors for the mapping exercise. As a result of these recommendations, we shortened the keyword for each stressor and added definitions/descriptions that will appear when the respondent moves the cursor over the informational pin option. Multiple reviewers suggested that we add answer categories with numeric ranges for the questions addressing the number of dives (Questions 4, 5, 8, and 9). After additional consultation and testing with a small set of individuals with occupational dive experience, we determined an appropriate set of ranges for these questions. This revision and others were incorporated into the final version of the survey.

One reviewer with experience using participatory GIS mapping techniques suggested that we reduce mapping effort by somehow limiting the number of sites selected for mapping by the respondents. However, because the goal of the survey is to gather local knowledge from respondents on coral reefs across the jurisdiction, and because we anticipate a motivated population, we opted not to preemptively limit their mapping activity. Moreover, SCUBA divers consulted during survey development indicated that the number of dive sites used varies among professional divers. Some divers may have experience with many areas, while others may have experience with only a few areas. Therefore, we did not want to restrict a respondent’s mapping effort based on the assumption that diving activity and behavior across the population is uniformly large. However, we have added clarifying language to the instructions telling respondents to add informational pins only to sites where the respondent has personal knowledge based on their own observation and diving experience. This addition should reduce the potential sites that an individual will map, but also allow respondents to add as much information as they wish to their map.

9. Explain any decisions to provide payments or gifts to respondents, other than remuneration of contractors or grantees.

No payments or gifts will be given to respondents.

10. Describe any assurance of confidentiality provided to respondents and the basis for assurance in statute, regulation, or agency policy.

Respondents will remain anonymous. Access to raw data collected during the data collection process will be restricted to project managers only. In final datasets and products that are released publicly, the data provided by individual respondents will not be linked to personally identifiable information.

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private.

No questions of a sensitive nature will be asked during this data collection.

12. Provide an estimate in hours of the burden of the collection of information.

The affected public for this data collection is individuals. We estimate that a maximum of 238 respondents will participate in this data collection (see Table 1). Completion of the questionnaire portion of this survey, Sections 1 and 2, is estimated at 10 minutes. For Section 3, the Mapping Exercise, mapping effort (i.e., the time a respondent spends placing informational pins on their map) can range from 2 minutes to 60 minutes for “super-mappers” (i.e., people who enjoy providing information and will take extra time to place informational pins on their map).¹² However, we estimate an average mapping effort value of 20 minutes, for a total response burden of 30 minutes. Thus, we estimated total annual burden hours to be 119.

13. Provide an estimate of the total annual cost burden to the respondents or record-keepers resulting from the collection (excluding the value of the burden hours in Question 12 above).

No additional cost burden will be incurred by respondents beyond response time.

14. Provide estimates of annualized cost to the Federal government.

The cost to the Federal government for contract services, supplies, equipment, travel, etcetera, is approximately \$41,000 for FY2014. There is no anticipated cost for contract services, supplies, equipment, travel, et cetera in FY2015. The total annual cost for Federal labor on the project is approximately \$36,000 for FY2014 and \$18,000 for FY2015. **Averaging the totals of \$77,000 and \$18,000, the annualized total is \$47,500.**

15. Explain the reasons for any program changes or adjustments.

This is a new collection.

16. For collections whose results will be published, outline the plans for tabulation and

¹² Brown, G. Personal Communication, 20 December 2013; Greg B., D. Weber, D. Zanon, and K. de Bie. 2012. Evaluation of an online (opt-in) panel for public participation geographic information systems surveys. *International Journal of Public Opinion Research* 24(4): 534-545.

publication.

Data will be collected and analyzed by the research team. Findings will be presented in a variety of formats, including tables, graphs and maps. Upon completion of the project, the research team may produce a NOAA Technical Memorandum report of findings that will be made available to our collaborating territorial agencies and the public in PDF format. Research findings may be presented at professional conferences and will be published in peer reviewed social science or multi-disciplinary journals.

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons why display would be inappropriate.

Not applicable.

18. Explain each exception to the certification statement.

Not applicable.