

Appendix 1-1: Timeline for Workshop Planning

Time	Phase	Task	Staff Member				
			Project Lead	Coordination Staff	GIS Lead	Process Facilitator	GIS Facilitator
Nine to 12 Months Prior	Pre-planning	Identify partners and outline roles and responsibilities	X				
	Pre-planning	Determine goals, objectives and end products	X				
	Pre-planning	Identify study area boundaries, sectors, and uses to be mapped	X				
	Pre-planning	Develop a budget and determine funding sources	X				
	Pre-planning	Meet with select agencies and key stakeholders to identify management needs, scales, and existing use data	X				
Six to Nine Months Prior	Workshop Design	Compile and peer-review the use list and definitions	X				
	Workshop Design	Create initial outreach documents	X				
	Workshop Design	Start drafting the participant list based on referrals	X				
	Workshop Design	Create tracking spreadsheets for participant responses and contacts	X				
	Workshop Design	Initiate compilation of base data, determine mapping scales of each use	X				
	Workshop Design	Plan workshop logistics: timing, venue, catering		X			

Time	Phase	Task	Staff Member				
			Project Lead	Coordination Staff	GIS Lead	Process Facilitator	GIS Facilitator
	Workshop Design	Send out participant invitations based on finalized list (with RSVP date)	X				
	Workshop Design	Estimate number of participants expected to attend	X				
	Workshop Design	Estimate participant travel costs	X				
	Workshop Design	Draft workshop formats, the break out groups needed, and initial estimate of staffing needs (number of GIS facilitators, facilitators, note takers)	X	X			
	Workshop Design	Compile digital base maps and consult with key stakeholders for review	X		X		
One Month Prior	Workshop Design	Check in with invitees, compare list to use groups, and make necessary adjustments	X				
	Workshop Design	Create workshop packets: agenda, maps, instructions, and evaluation and expense forms	X				
	Workshop Design	Finalize support staffing, arrange travel (if appropriate)	X				
	Workshop Design	Begin finalizing maps, supporting data, and databases for the workshops; start equipment inventory			X		
Two Weeks Prior	Workshop Design	Print all workshop materials	X				
	Workshop Design	Finalize participant list, assign participants to groups	X				

Time	Phase	Task	Staff Member				
			Project Lead	Coordination Staff	GIS Lead	Process Facilitator	GIS Facilitator
	Workshop Design	Prepare introductory presentation	X				
	Workshop Design	Collect and prepare all workshop supplies	X	X	X		
	Workshop Design	Copy all data to laptops and external hard drives			X		
	Workshop Design	Organize shipping or transport of equipment and materials	X		X		
	Workshop Design	Gather necessary equipment and prepare for transport and use	X		X		
Day Prior	Workshop Implementation	Set up and test equipment, secure cables, and clear walkways	X	X	X	X	X
	Workshop Implementation	Divide participants into breakout groups	X				
	Workshop Implementation	Clarify staff roles and conduct staff training	X		X		
	Workshop Implementation	Ensure that breakout rooms can be locked overnight	X	X	X		
	Workshop Implementation	Have backup equipment ready	X	X	X	X	X
Day Of	Workshop Implementation	Check in participants and provide packets	X	X	X	X	X
	Workshop Implementation	Provide breakfast, lunch, drinks, and snacks		X			
	Workshop Implementation	Deliver overview presentation	X				
	Workshop Implementation	Divide into breakout groups and map uses	X		X	X	X

Time	Phase	Task	Staff Member				
			Project Lead	Coordination Staff	GIS Lead	Process Facilitator	GIS Facilitator
	Workshop Implementation	Debrief	X	X	X	X	X
Day After	Workshop Implementation	Ship data or take back to office, make copies of all notes		X	X		
Week Post	Data Processing and Analysis	Ensure all data and notes documents are accounted for			X		X
Two Weeks Post	Data Processing and Analysis	Conduct initial cleaning of data			X		X
One Month Post	Data Processing and Analysis	Conduct any webinars or question and answer sessions with support staff for data clarifications.	X	X	X	X	X
One Month Post	Outreach and Integration	Finalize the draft data			X		X
Within Two Months Post	Outreach and Integration	Reconvene workshop participants (either in person or virtually) to review the draft data		X	X		
Two-Plus Months Post	Outreach and Integration	Finalize the data, determine distribution level and methods	X		X		

Appendix 1-2: Project Factsheet

Logo

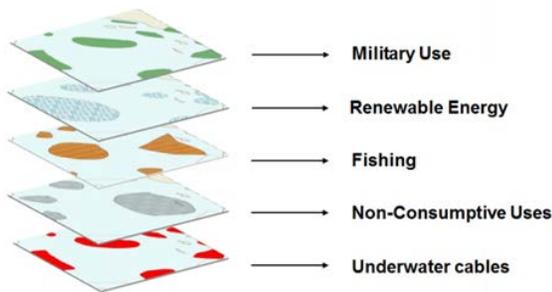
Logo

Insert Name of Project

Collecting expert community knowledge on ocean uses through participatory mapping

Insert Graphic

Human uses of the ocean and coasts are expanding at a rate that challenges our ability to plan and manage them. To avoid potential use conflicts and to help identify suitable operating areas for new and emerging uses, it is critical to understand the patterns and implications of ongoing and future human uses of the ocean.



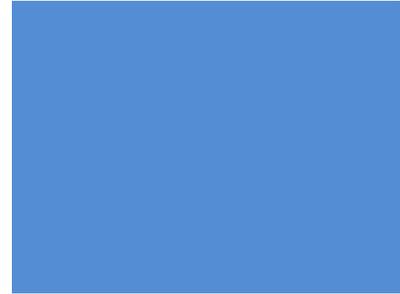
The **INSERT NAME OF PROJECT** is a project led by **INSERT NAME OF AGENCY** designed to document where coastal communities use the ocean across a full range of typical human activities and sectors. Using participatory mapping techniques, the project offers a proven, flexible, and scalable approach that empowers coastal communities to paint an accurate picture of human use on a scale appropriate for ocean planning on a local, state, or regional level.

Project Details

- What is the primary purpose of the project? **INSERT PURPOSE**
- What are the goals of the project? **INSERT GOALS**
- What is the geographic focus of the project? **INSERT STUDY AREA BOUNDARIES**
- Who will lead this effort? **INSERT PROJECT PARTNERS**

The Participatory Mapping Approach

Ocean use data are gathered in interactive, participatory mapping workshops that capture the knowledge of community experts about the patterns and drivers of ocean uses occurring in the study areas. Prior to the workshops, existing geospatial base layers are gathered and compiled into a base map that is used as the basis of interactive mapping.



Target List of Uses

This project will gather information on a wide range of ocean uses occurring **INSERT STUDY AREA DESCRIPTION**, including, but not limited to the following sectors:

Industry and Military Sector	Fishing Sector	Non-Consumptive Sector
<ul style="list-style-type: none"> • Renewable Energy • Military Operations and Ordnance Disposal • Mining and Mineral Extraction • Underwater Telecommunication and Power Cables • Commercial Shipping (Including Towing and Barging) • Designated Dumping and Outfall Sites • Underwater Pipelines • Mariculture 	<ul style="list-style-type: none"> • Commercial Fishing with Benthic Mobile and Fixed Gear • Commercial Pelagic Fishing • Commercial Dive Fishing • Commercial Seaweed Harvest • Commercial Shore-Based Harvest • Recreational Dive Fishing • Recreational Fishing from Boats • Recreational Shore-Based Harvest • Kayak Fishing 	<ul style="list-style-type: none"> • Motorized Boating • Sailing • Paddling • Surface Board Sports • SCUBA and Snorkeling • Swimming • Wildlife Viewing at Sea • Tide Pooling • Shore Use • Tourism Cruise Ships

Products

Data gathered through the participatory mapping workshops will be compiled and analyzed to create a suite of data products in various formats for use in ocean planning applications. These products include, but are not limited to, several areas:

- GIS data and online mapping services
- Digital and paper maps of ocean patterns
- Maps of ocean use hotspots and potential use conflict areas

Timeline

INSERT INFORMATION ON TIMING OF WORKSHOPS, DATA PRODUCTS, ETC.

Funding

INSERT INFORMATION ON FUNDING SOURCES.

**For more information, please contact:
INSERT INFORMATION ON PROJECT CONTACTS**

Appendix 1-3: Budget Considerations

The information listed below provides some insight on planning the budget needs of an ocean use mapping project. There are a lot of variables that can influence the total cost of the effort, but the following groupings can assist in understanding the major phases of the project and the potential associated costs.

Phase 1 – Planning

Activities

- Identify partners, outline roles and responsibilities, and select project coordinator
- Meet with select agencies and key stakeholders to identify management needs, scales, and existing use data
- Build participant list via stakeholder referral process
- Compile and peer-review the use list, use definitions, and mapping scales
- Plan workshop logistics: timing, venue, catering, and staff and participant travel
- Plan workshop format: number of break out groups, experts, days, and locations
- Identify staff needs: number of GIS specialists, facilitators, and note-takers
- Create workshop packets: agenda, maps, instructions, and evaluation and expense forms
- Compile digital base maps and consult with key stakeholders for review

Costs for the Planning Phase:

Project Lead: full time for duration of project

Technical GIS Lead: two to four weeks for base map and document preparation

Phase 2 – Workshops

Activities

- Conduct mapping workshops in designated regions to collect use data (number of workshops, days, and participants can vary)

Costs for the Workshop Phase: will vary by number of workshops, number of days per workshop, number of breakout groups, and attending participants

Staff Time: project lead, GIS facilitators, process facilitators

Venue: meeting rooms for break out groups per day

Travel: staff and participants

Catering: coffee, lunch, snacks

Phase 3 – Data Processing and Analysis

Activities

- Compile and process use data (for all breakout groups and for all regions mapped)
- Seek final review from mapping team and key experts or selected participants
- Compile final maps, metadata and use synthesis reports

Costs for the Data Processing Phase: will vary by number of workshops, number of days per workshop, number of breakout groups, and number of uses mapped

Technical GIS Lead: two to four weeks for initial data compilation and potentially two additional weeks for team review and final map creation (after participant and expert input is received)

Phase 4 – Outreach and Integration

Activities

- Publish cartographic products
- Build and host customized online data viewers
- Convene meetings and webinars to debut data and applications
- Meet with resource managers to communicate advantages of data applications
- Work with data managers to assist with data integration

Costs for the Data Products and Dissemination: will vary drastically by project needs and interest

Staff Time: two to four weeks for product compilation, publication, and integration

Travel: staff to return to workshop location for reporting on findings and meetings with resource managers

Key Budget Variables:

Depending on the nature of the partnerships and collaborators, some staff time may be included in-kind, which can significantly reduce overall project costs. These are other key cost variables:

Number of workshops and locations*

Number of days per workshop

Number of participants per workshop* (travel)

Number of staff per workshop** (time and travel)

Cost of venue per workshop day **

Cost of catering per workshop day

*Workshop locations will dictate how many participants will need travel expenses reimbursed.

**In-kind partnerships can assist in providing low- or no-cost venues and some staff support.

Appendix 1-4: List of Uses and Ocean Use Information Form

Non-Extractive Uses			
<p><i>Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.</i></p>	<p>Expertise H: High M: Medium L: Low 0: None</p>	<p>Geographic Knowledge Entire Region, Outer Coast, Peninsula</p>	<p>Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?</p>
<p>SCUBA or Snorkeling Included: SCUBA diving, surface supply diving, snorkeling (free diving) Excluded: Swimming, dive fishing</p>			
<p>Swimming Included: Short- and long-distance surface swimming any distance from shore, body surfing Excluded: SCUBA or snorkeling, surface board sports</p>			
<p>Surface Board Sports Included: Tow-in and paddle-in surfing, wind-surfing, kite surfing, sailboarding Excluded: Paddling, SCUBA/snorkeling, swimming</p>			
<p>Paddling Included: Kayaking, canoeing, rowing, outrigger paddling, stand-up paddling Excluded: Motorized boating, surface board sports</p>			

Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.	Expertise H: High M: Medium L: Low O: None	Geographic Knowledge Entire Region, Outer Coast, Peninsula	Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?
Sailing Included: Transit, mooring, motoring, or anchoring by sailboats, including sailing kayaks and canoes Excluded: Motorized boating, paddling			
Motorized Boating Included: Transit, mooring, or anchoring by motorized vessels for commercial or recreational purposes, personal watercraft Excluded: Fishing, wildlife viewing at sea, cruise ships, shipping, sailing			
Wildlife Viewing at Sea Included: Boat-based wildlife viewing at sea, usually on a commercial vessel Excluded: Incidental wildlife viewing from shore or sea while pursuing other uses			
Tide Pooling Included: Use of the intertidal zone between high and low tides for recreational, scientific, or educational purposes Excluded: Harvesting from shore, shore use			
Shore Use Included: Walking, running, digging, resting, collecting of shells, wildlife viewing, driving on the beach, camping, kite flying, bonfires, picnicking, dog walking, horseback riding, and skim boarding Excluded: Tide pooling, mining and mineral			

Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.	Expertise H: High M: Medium L: Low O: None	Geographic Knowledge Entire Region, Outer Coast, Peninsula	Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?
extraction, surface board sports, swimming, harvesting from shore, coastal aquaculture			
Cruise Ships Included: Transit, mooring, or anchoring for extended overnight recreational travel on commercial ships Excluded: Motorized boating, commercial shipping			
Permanent Research Areas Included: Sites, transects Excluded: Motorized boating, commercial shipping			
Cultural Use Included: Traditional use of specific ocean, coastal, and shoreline areas by tribal and indigenous communities based on that area's inherent cultural, spiritual, or aesthetic values and significance Excluded: All other uses and activities			

Extractive Uses

Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.	Expertise H: High M: Medium L: Low 0: None	Geographic Knowledge Entire Region, Outer Coast, Peninsula	Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?
Commercial Pelagic Fishing Included: Use of mid-water trawling, purse seine, pelagic longlines, handlines, harpoons, mid-water gillnets, rod and reel, trolling, and buoys to catch pelagic fish and mobile invertebrates Excluded: All other forms of fishing			
Commercial Fishing Benthic Mobile Gear Included: The use of rod and reel, trolling, trawling, dredging, and other mobile gear to catch benthic fishes and mobile invertebrates Excluded: All other forms of fishing			
Commercial Fishing Benthic Fixed Gear Included: Use of traps, pots, bottom longlines, bottom or anchored gillnets, pound nets, weirs, and other bottom tending gear types used to catch benthic fishes and invertebrates Excluded: All other forms of fishing			

Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.	Expertise H: High M: Medium L: Low 0: None	Geographic Knowledge Entire Region, Outer Coast, Peninsula	Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?
Commercial Dive Fishing Included: The use of SCUBA diving, surface supply diving or snorkeling (free diving) to catch fishes and invertebrates for commercial purposes Excluded: All other forms of fishing, SCUBA and snorkeling			
Commercial Shore-Based Harvest Included: Commercial harvest in the intertidal zone of living marine plant or animal species for consumption, aquaria, recreation, education, or research Excluded: All other forms of intertidal or coastal harvesting			
Commercial Seaweed Harvest Included: Large-scale commercial harvesting of macroalgae by machine or limited-scale individual harvesting by hand from a small boat Excluded: Aquaculture, tide pooling, other harvest			
Recreational Dive Fishing Included: The use of SCUBA diving, surface supply diving, or snorkeling (free diving) to catch fishes and invertebrates for recreational purposes Excluded: All other forms of fishing, SCUBA and snorkeling			

Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.	Expertise H: High M: Medium L: Low 0: None	Geographic Knowledge Entire Region, Outer Coast, Peninsula	Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?
Recreational Fishing from Boats Included: The use of rod and reel, crab traps, cast nets, or kites to catch fishes and mobile invertebrates from boats for recreational purposes Excluded: Shore-based fishing			
Recreational Shore-Based Harvest Included: Recreational or subsistence based harvest in the intertidal zone of living marine plant or animal species for consumption, aquaria, recreation, education, or research Excluded: All other forms of intertidal or coastal harvesting			
Kayak Fishing Included: The use of hook and line fishing from kayaks or any other similar vessel to catch fishes and mobile invertebrates Excluded: All other forms of fishing			
Indigenous Fishing or Hunting Included: Shore and boat-based fishing or hunting for vertebrates, birds, mammals, and reptiles, including legally recognized hunting by tribal and indigenous communities Excluded: All other forms of fishing			

Industrial and Military Uses

<p>Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.</p>	<p>Expertise H: High M: Medium L: Low O: None</p>	<p>Geographic Knowledge Entire Region, Outer Coast, Peninsula</p>	<p>Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?</p>
<p>Renewable Energy Included: Systems designed to generate electricity from wind, wave, currents or tidal power using turbines, fixed or floating platforms, or dams, and associated offshore infrastructure including substructures, transmission hubs, generators, cables, and service platforms Excluded: Onshore power grids, other forms of renewable energy</p>			
<p>Military Vessels Included: Transit of military vessels related to training activities, ship and submarine maneuvers, and war games Excluded: Wartime military operations</p>			
<p>Mining and Mineral Extraction Included: Sand and gravel extraction, seabed mining for commercial minerals, dredging, and beach re-nourishment Excluded: Energy production</p>			

<p>Please note your degree of expertise, the extent of the study area you are most knowledgeable about, and any other important notes about each use mapped.</p>	<p>Expertise H: High M: Medium L: Low O: None</p>	<p>Geographic Knowledge Entire Region, Outer Coast, Peninsula</p>	<p>Notes Is the use seasonal? Is it restricted by depth or distance from shore? Is the pattern related to other uses or features (e.g., near harbors or around pinnacles)? What drives the use pattern?</p>
<p>Underwater Transmission Cables Included: Cables installed on the seafloor to transmit data, communications, and electricity generated on land Excluded: Lost fishing gear, renewable electricity transmission cables, other types of cables</p>			
<p>Commercial Shipping Included: Transit, mooring, towing, barging, or anchoring by ships, ferries, and other large commercial vessels Excluded: Cruise ships, offshore oil and gas</p>			
<p>Ocean Dumping Included: The deliberate legal dumping of dredged spoils and other materials into ocean waters Excluded: Sewage discharge, mining, and mineral extraction</p>			
<p>Mariculture Included: Cultivating and harvesting marine organisms in the nearshore or offshore environment using man-made enclosures that can be fixed, floating, or submerged (e.g., nets, pens, and cages) Excluded: Aquaculture wholly pursued on land</p>			

Appendix 2-1: Sources of Potential Participants

U.S. Federal Agencies
Department of the Interior Bureau of Land Management
Department of the Interior Bureau of Ocean Energy Management
Department of the Interior National Park Service
Department of the Interior National Wildlife Refuges
National Estuarine Research Reserves
National Oceanic and Atmospheric Administration National Marine Sanctuaries
National Oceanic and Atmospheric Administration National Marine Fisheries Service
National Oceanic and Atmospheric Administration Office of Coast Survey
U.S. Air Force (operations officers)
U.S. Army Corps of Engineers (permits)
U.S. Coast Guard
U.S. Fish and Wildlife Service
U.S. Navy and U.S. Marine Corps (operations officers)
State Agencies
Department of boating and waterways
Department of fish and game (managers and wardens)
Department of parks and recreation
Office of spill prevention and response
State coastal commission
State parks (rangers and life guards, docents)
State water resources control board
Local and Other Agencies
City and county lifeguards
County health and facilities agencies
Ports and harbors
Regional water boards and agencies
Tourism boards
Tribal councils
Key User Groups or Representatives
Aquaria (collectors)
Commercial fishing
Cruise ships (operators and staff members)
Environmental nongovernmental organizations
Kayak clubs
Marine consultants
Maritime shipping (reps)
Offshore oil companies
Recreational fishing
Research institutions (vessel operators and oceanographers)
SCUBA organizations
Yacht clubs and recreational boating (non-fishing) organizations

Appendix 2-2: Sample Email Invitation

Hello recipient:

We are contacting you to ask for your participation and assistance in identifying ocean use experts for the state or locale Ocean Uses Atlas project, an effort undertaken by funding or lead agency that is designed to collect spatial data on ocean uses throughout the coastal and offshore waters in study area. Through a series of mapping workshops to be held in the season of year, project staff members will work with regional ocean experts to record their knowledge of spatial use patterns. This is being done to inform both the state's marine spatial planning initiative and planning efforts for potential offshore renewable energy development (modify based on project's intended objectives).

The project will draw upon a wide range of experts to share their professional expertise about broad patterns of how and where people use the ocean. Ideal participants will include resource managers, user group leaders, and marine operators (e.g., U.S. Coast Guard, shipping, and commercial fishing). The mapping workshops will yield expert-derived spatial data and map products illustrating patterns and intensity of use for ocean uses in three broad categories: (i) industrial and military uses; (ii) extractive uses; and (iii) non-extractive uses. The workshops will be held in location on days.

Colleagues throughout the state of study area have identified you as a potential workshop participant and a key contact for referring other ocean use experts. As you can imagine, the success of the project and utility of the data derived from this effort depend heavily upon the unique perspectives provided by workshop attendees. We hope that you can spend one of the workshop days with us working in a group setting to map uses in a facilitated, participatory mapping session. We also hope you can recommend potential workshop participants who are familiar with various types of ocean uses occurring in study area marine waters.

Please let us know if you would be willing to participate in a mapping workshop for one day in either location and if there are others you recommend we contact. Please reply with your suggestions to contact person name and phone number. We will reimburse participants for traveling expenses when appropriate. Please note that the mapping workshops will be of limited size and by invitation only.

We very much appreciate your input into this important endeavor.

Sincerely,

Name(s) of primary contact with phone number and email address

Appendix 2-3: Participant Expertise Matrix

Please fill out the form below with your own information and expertise and provide referral for other participant candidates.

Recommended Participants	Industrial Uses								Non-Consumptive Uses								Fishing													
Name, Affiliation, Phone, and Email	Aquaculture	Cruise Ships	Military Operations	Mining and Mineral Extraction	Offshore Alternative Energy	Offshore Oil and Gas	Shipping	Underwater Cables	Beach Use	Motorized Boating	Paddling	Sailing	SCUBA and Snorkeling	Surface Water Sports	Swimming	Tidepooling	Tribal and Native American Spiritual Use	Wildlife Viewing at Sea	Commercial Dive Fishing	Commercial with Benthic Fixed	Commercial with Benthic Mobile	Commercial Pelagic	Kayak Fishing	Kelp and Algae Harvesting	Recreational Dive Fishing	Recreational Fishing from Boats, Pelagic Species	Recreational Fishing from Boats, Benthic Species	Shore-Based Recreational Harvest	Hunting for Marine Animals other than Fish, Invertebrates	Recreational and Commercial Fishing from Shore

Appendix 2-4: List of Workshop Documents

Invitations

- Invitation letter
- Project factsheet
- Uses list and definitions
- Participant expertise and referral matrix

Pre-workshop email for confirmed participants

- Confirmation letter
- Draft agenda
- Travel memo with map
- Study region map
- Instructions for participants

Participant workshop folders

- Name tag
- Workshop agenda
- Study region map
- Project factsheet
- Instructions for participants
- Uses list and definitions
- Use questionnaire
- Reimbursement form
- Evaluation form

Staff member workshop binders

- Name tag
- Workshop agenda
- Uses list and definitions
- Staff members list
- GIS mapping workflow
- Instructions for facilitators and GIS staff members
- Notes template (multiply by 50)
- Confirmed participants list

Other Materials

- Wall maps
- Use definitions – wall posters
- Door signs
- Sign-in list for registration table

- Packing list
- Introductory presentation

Internal documents

- Participant tracking spreadsheet
- Participant information form (confirmed participants)
- Participant sources list
- Project timeline
- Project workflow
- Workshop checklist
- Workshop documents list
- Staff member contact sheet
- Budget breakdown
- Budget considerations
- Data processing works or flow

Training documents

- Training agenda
- Training presentation
- Training packet
- Best practices guide

Appendix 2-5: Instructions for Workshop Participants

Introduction

The Ocean Use Mapping Project is an expert-driven, participatory process designed to map ocean use patterns for a wide range of activities that occur throughout the coastal and marine waters of _____. The study region extends from _____ to _____. The project will focus on mapping uses from the shoreline to the state waters boundary three miles offshore, including the beach and nearshore coastal areas. Outside the workshops, additional data also will be gathered from existing secondary sources to build a complete picture of coastal and ocean use patterns in the region. Workshop participants will be asked to provide their spatial knowledge and local expertise to assist in mapping a variety of extractive, non-extractive (recreational), and watershed uses that occur throughout the study region.

Maps of ocean uses will be created through a participatory group mapping exercise that relies on the input and collaboration of all workshop participants. Through facilitated discussion and hands-on digital mapping, workshop participants will document areas where uses occur, seasonal and temporal variation in use patterns, and historical or community perspectives on how the use has evolved in recent years.

At the start of the workshop, all participants will be assigned to a work group and an associated mapping station. Participants will remain with their work group throughout the day. Each mapping station will have a dedicated GIS specialist and a facilitator to guide the group through the mapping process and to ensure that the workshop objectives are met. Each station will have paper base maps for reference as well as the digital technology needed to complete the workshop tasks in an efficient, timely, and interactive manner.

Mapping Exercise

With guidance from the facilitators, participants will mark areas on a regional map that represent activity areas for each specific ocean use. Participants will draw use areas based on their knowledge of where this type of activity is known to occur. For some uses, existing data may be presented and participants will be asked to review and modify the existing data for completeness and accuracy. For each ocean use, participants will be asked to map the general use footprint and dominant use areas as described below. For some uses, additional areas will be mapped to document seasonality, pulse events, temporal variability (day or night) and species-specific use areas. Participants will also be asked to provide relevant supplemental information on uses (e.g., seasonality, social and cultural significance, and historical patterns) on the provided use notes sheet.

- **General use footprint:** The general use footprint includes all areas in which the use is **known to occur with some regularity** (over the past three to five years), regardless of its frequency or intensity. The general use footprint does not include areas where the use may occur once or twice or where it might *conceivably* occur now or in the future. For this step, all areas drawn will be included in the final data layer.

- **Dominant use areas:** Dominant use areas are defined as **ocean areas routinely used by most users most of the time** (within the seasonal patterns for that use). Dominant use areas must be drawn within the general use footprint. Participants will work together to draw dominant use areas as they occur throughout the study region. This step is designed as a group exercise and participants should work together to agree on which areas are dominant use areas and should be included in the final data layer.
- **Supplemental use data:** Participants will also be asked to provide supplemental information on use patterns both spatially (on the map) and as text on the notes sheet. For some uses, participants will be asked to draw specific locations on the map where variation of the use occurs (e.g., fishing for special events and night versus day fishing). Participants will also be asked to record additional information about uses on the notes sheet.

Summary

Each work group will strive to map all the listed uses. Please use time wisely and break for snacks and beverages as needed. Upon completion of the mapping exercise, the data derived from all the work groups will be compiled and synthesized to create a comprehensive picture of use activities in the study region. The data will be made publicly available as paper maps, online digital maps, and interactive GIS products.

Please ask a facilitator if you have any questions!

Important Considerations

Preparation – Although the use of existing spatial data in the workshop will be limited, you are welcome to bring maps and other reference information relevant to uses in your session. You might also wish to sketch out your thoughts on the patterns of certain uses on the blank regional maps provided at the mapping workstations.

Disagreements – Disputes over use locations and patterns will be recorded by the facilitator and all participants' input will be retained. Use time productively and efficiently, recognizing that the objective is to acquire a broad-scale, comprehensive map of each use for the entire region rather than a precise map of one use in a single small area.

Fishing uses – Fishing areas are defined as places where an effort is made to fish and **do not include** transit to these areas.

Culturally significant or sensitive use areas – It is up to the participants to determine what level of detail they would like to include regarding culturally significant sites. All information is helpful in order to better inform responsible planning for the future, but confidentiality is respected.

Thank You for Your Time and Contribution

Appendix 2-6: Workshop Evaluation Form

Thank you for your participation in today's workshop. Your input provides a valuable contribution to improving coastal planning and marine management efforts in the region.

Workshop Day (circle): Wednesday Thursday Breakout group: _____

Please rate the following aspects of the workshop below. Please be as thorough as you can in your comments. Your suggestions and feedback will help us to make future workshops more effective.

1. Clarity of workshop goals:

Very clear Clear Somewhat clear Not very clear Not at all clear

What would you describe as the primary goals of the workshop? Was anything unclear to you regarding the purpose of the workshop?

2. Usefulness of the mapping sessions:

Very useful Useful Somewhat useful Not very useful Not at all useful

What did you find most useful during the mapping sessions? _____

In what ways could the mapping sessions be improved? _____

Which use types do you think were mapped most accurately in your breakout group?

Were there any use types mapped in your breakout group that you think need further information or revision for accuracy (please describe)?

3. Appropriateness of the human use categories chosen for mapping for this area of St. Thomas, U.S. Virgin Islands:

Very appropriate Appropriate Somewhat appropriate Not very appropriate Not at all appropriate

How could the use categories be improved? _____

4. Quality of the technological facilitation during the breakout group:

Very helpful Helpful Somewhat helpful Not very helpful Not at all helpful

What did you find most helpful about the technological facilitation? _____

How could the technological facilitation of the mapping activities be improved? _____

5. Helpfulness of the breakout group facilitator:

Very helpful Helpful Somewhat helpful Not very helpful Not at all helpful

Comments regarding facilitation of the breakout groups: _____

6. Pace of the mapping sessions:

Much too fast Somewhat fast Just right Somewhat slow Much too slow

Comments regarding the pace of the mapping session: _____

7. Balance of participants for the uses mapped during my breakout session:

Very well balanced Well balanced Somewhat balanced Somewhat unbalanced Highly unbalanced

Do you feel certain uses were over- or under-represented (describe)? How could this be improved?

8. Are you interested in being contacted to review the final maps?

Yes No If yes, please provide the address, phone number, or email where we can contact you.

9. Additional comments or suggestions (please attach additional pages as necessary):

Appendix 2-7: Reimbursement for Travel Expenses

Name _____

Date _____

Travel Dates _____

Departing From _____

Traveling To _____

Please attach original receipts for expenses listed below.

There is no need to submit receipts for meals—this will be reimbursed according to the per diem rate.

Expense	Amount
Hotel	
Rental car	
Taxi or shuttle	
Gas	
Parking	
Tolls	
Personal vehicle mileage @ .50 per mile	
Metro or public transit	
ATM fees	
Miscellaneous*	

Please submit this form and all original receipts to:

XXXXXXXXXXXXXXXXXXXX
 XXXXXXXXXXXXXXXXXXXX
 XXXXXXXXXXXXXXXXXXXX

* When submitting receipts for miscellaneous expenses, please indicate what the expense is.

Appendix 2-8: Workshop Daily Overview

Preparation and Set Up

All the workshop equipment will be set up and tested the day before the workshops begin and will be reviewed each morning to ensure all is in working order.

- The mapping stations will be set-up, data loaded, software and hardware tested and oriented, projectors tested and oriented, wall maps and banners hung, cables taped, and documents sorted and organized.
- An IT area should be designated to store back-up software and hardware items as well as miscellaneous supplies.
- An orientation area should be designated and set up with the back-up computer loaded with the introductory presentation

Test Run and Orientation

To ensure that all things are in order, the entire team will review the documents and the physical setup prior to the start of the workshop (preferable the day before).

- All staff members will run through the agenda, the presentation, and the documents and will do a test run through the mapping exercise to ensure that everyone is clear on the process.
- GIS staff members will go over the GIS workflow in detail and review the tools, tips, and process specifics.

Check In

On the mornings before the workshop begins, participants will be checked in and provided with workshop packets.

- Participants will check in and receive all workshop documents, group name, and color-coded (by group) name tag.
- Workshop folders will be distributed to the participants and will include a printed list of all uses, the project fact sheet, the workshop agenda, mapping instructions, workshop evaluation form, and expense form.

Introductory Presentation

- An introductory presentation should be prepared to introduce the project staff members, present a brief project introduction, and discuss the goals and pace of the workshop.
- A GIS facilitator can follow up this presentation with a run through of the mapping exercises and tools. (Please inform participants that this is only a brief overview that will be revisited in more detail at the start of the group session.)
- This is a good time to introduce the reference materials, including the wall maps and workshop document packet.
- This should end with an explanation of the break-out groups (such as information on designated rooms) and venue logistics (i.e., details on bathrooms, coffee, parking, and expense reports).

Group Break Outs

Groups will be asked to convene in designated areas for the remainder of the workshop.

- The process facilitator will gather the participants around the station, initiate brief personal introductions, briefly review the workshop documents, review the key rules and tips, and ask the GIS facilitator to do a hands-on demonstration and review of the tools.
- The GIS facilitator will introduce the hardware, do a brief demo of the tools, and offer tips for effective and efficient use.
- Picking a group member to help in the demo might be a good way to engage the group dynamics. If no one volunteers, use the facilitator.
- Remind participants that the digital whiteboard and the tablet cannot be used simultaneously.

Mapping Exercise

The process facilitator will start the mapping process by defining the specific use to be mapped and what it includes and excludes. The GIS facilitator will prepare the map view showing the base map zoomed out to the entire region (use the zoom to full extent/globe button) and explain the existing data, sources, gaps, and other details when applicable. For some uses, existing data or MPAs will be toggled on (and off as necessary) to provide some context and present the current state of knowledge.

General Use Footprint

Purpose = To map the maximum footprint over which each use occurs.

Definition = General use footprint includes all areas in which the use is known to occur with some regularity, regardless of its frequency or intensity. This does not include areas where the use may have occurred once or twice or where it might conceivably occur now or in the future.

Mapping Technique = All input is captured and reflected in the final product.

- The participants will be asked to draw the footprint polygons.
- The facilitator should ask for volunteers to start or designate a line up if no one volunteers.
- Participants should be encouraged to watch as others' data are posted but should also feel free to consult the blank wall maps or handout maps to consider their own contributions.
- For uses that have existing data already mapped, if participants agree with existing data patterns, they should draw over the existing data to confirm the use occurs there or not draw over the existing use pattern to deny that the use occurs there.
- Remind participants that use areas will be merged to create the general-use footprint data layer.
- This is a broad and inclusionary exercise designed to capture the maximum area over which the use is known to occur. It is intended to lend credence to everyone's input, regardless of their level of expertise or group agreement. There are no wrong answers at this point.
- Disagreements should be noted by the facilitator on the staff notes sheet, but all areas mapped will be reflected in the final product.
- Specific post-processing suggestions should be noted in text and on map sheets
- Note that not all participants have to individually draw polygons if their areas have been previously drawn by someone else (redundancy will not be considered).

Dominant Use Areas

Purpose = To map those areas where the use most often occurs.

Definition = Dominant use areas are defined as “ocean areas routinely used by most users most of the time.” The following examples and others can be included: popular swimming beaches, regular fishing areas for charter boats, hotspots for whale watching, and consistently good surfing beaches.

Mapping Technique = Participants will be shown the merged results from the maximum footprint exercise and be asked to draw dominant use areas. Participants will suggest areas to be discussed by the group, and the final product reflects only those areas (polygons) agreed upon by the group. Areas of disagreement are captured on the map sheets and “notes” sheet but not presented as the group product.

- The process facilitator will start this process by defining what is meant by dominant use and reminding participants that these areas will, in most cases, be much smaller, focused shapes within the general use footprint. Dominant use areas cannot occur outside the maximum footprint.
- The GIS facilitator will prepare the map view showing the general use footprint zoomed out to the entire region (use the zoom to full extent or globe button) and ask participants to call out or direct the GIS facilitator to dominant use areas for drawing draft polygons.
- Participants then draw their interpretations of the dominant use areas, perhaps beginning with those most familiar with the use.
- The group then discusses the patterns and develops a consensus of where the dominant use areas occur.
- All participants should **be encouraged** to sketch draft polygons for group discussions prior to drawing the final polygons.
- This exercise will require that the group work together to discuss and map dominant use areas. It will definitely need very active facilitation to reach group consensus on the final polygons.
- The outcome should be a data layer with dominant-use area polygons mapped for the entire region.

Variations of Use

Purpose = To provide information on how and where use varies seasonally, temporally, or for special events. For some uses, this may be spatially documented, while for others it may be recorded as notes.

Technique = Participants are asked to draw or record on the notes sheet areas where the use has variations due to seasonality, time of year, day or night, or special events. For some uses, participants may be asked specific questions that can be recorded on the participants’ notes sheet.

Workshop Wrap-Up and Thank You

- Either during the lunch break or at a designated time, the project leader should convene the participants to thank them for their time and contribution.
- This time can be used to encourage feedback on the workshop evaluation form.
- This task tends to work better when it is scheduled to occur prior to the end of the work day, as participants tend to quickly scatter as the mapping exercise is completed.

Data Back-Up

- During the mapping, databases will be routinely backed up to thumb drives.
- At the lunch break **and** the end of each day, the thumb drives will be copied to the back-up computer (label the back-up directories by group and date).

Wrap Up and Equipment Break Down

- Ensure that the equipment is secure before leaving the building. At the end of each day, the laptops and data back-up drives should be removed from the mapping stations and stored in the hotel.

All the data should be backed up redundantly on passport external drives and on the designated back-up laptop hard-drive.

Appendix 2-9: Instructions for Process Facilitators

Facilitator Role Definition

The primary purpose of the process facilitator will be to manage the process of information exchange in the data gathering phase of the workshop. Through communicating with the group participants and the GIS facilitator, the process facilitator's main responsibility will be keeping the mapping effort on track by engaging the participants in the process, reminding them of the rules and tips, helping them work through controversial issues, routinely refocusing the group on achieving the project goals, and communicating to other teams via the runner.

Facilitator Tasks

Introduction – When the mapping group first convenes, the process facilitator will initiate the following steps:

- Introductions: Process facilitator, GIS facilitator, and participants will introduce themselves.
- Goals: Session goals will be reviewed and use-specific concepts presented.
- Documents: Relevant workshop documents and maps will be distributed and explained as needed.
- Tools: GIS facilitator will be prompted to give a quick refresher on the tools and tips for use, and will run through a quick mock mapping demonstration using the process facilitator as the participant.
- Rules of thumb: Remind participants of the key rules and tips to keep in mind throughout process.
- Questions: Answer outstanding questions regarding the goals or the technology.

Mapping – Once these initial steps have been completed, the group can move into the technical mapping component of the session. The GIS facilitator will be the main point of contact for technical issues, questions, or methodology steps, but the process facilitator will be expected to maintain the flow, take notes, record any information from the participants that will help interpret the mapped polygons, and communicate with “runner” regarding any major hurdles or problems encountered. Throughout the mapping exercises, the expectations for the process facilitator include these tasks:

- Inform: Write use descriptions and mapping steps (footprint, dominant, future) on white board.
- Record: Note any significant roadblocks or disagreements and on notes sheet.
- Engage: Recognize the dominant personalities and engage the other participants.
- Encourage: Encourage group interaction and brief, productive discussions.
- Discourage: Discourage lengthy debates, arguments, and extended private discussions.
- Promote: Promote efficient use of time and effective group dynamics.
- Keep Time: Be the timekeeper of the session and record start and end times on notes sheet.

Review – Once each of the mapping exercises are achieved, the process facilitator will be expected to review what has been completed and what the next task entails, following up with an opportunity for questions (and coffee break if needed).

Facilitation Advice

- Maintain clear objectives and effective time management.
- Encourage participation but recognize different expertise levels.
- Avoid stalling in controversial areas; skip to other regions and return later if time allows.
- Make notes on big issues, both social and technical.
- Let everyone have a voice and be respectful, but manage the discussions to note waste time.

Keep messaging clear and consistent with the agreed goals and aims of the project.

Appendix 2-10: Instructions for GIS Facilitators

GIS Facilitator Role Definition

The primary purpose of the GIS facilitator will be to manage the technical aspects of information exchange in the data gathering phase of the workshop. By communicating with the group participants and the process facilitator, the GIS facilitator's main responsibility will be to ensure that the participants can provide the necessary information through use of the digital technology and software applications and that the data are properly secured and managed.

GIS Facilitator Tasks

Packing – GIS staff members will be responsible for ensuring that all GIS equipment, maps, and software are securely shipped and arrive at the workshop venue.

Preparation – Before the workshop, the GIS facilitator will be responsible for preparing the mapping station. Be sure that the mapping area is safely constructed, floor cords are taped, excess cables are wrapped, and extraneous materials are stowed away.

- **Set up:** Set up computer, projector, digital whiteboard, tablet and orient displays.
- **Organize:** Ensure all documents and wall maps are available and there are enough copies.
- **Test:** Launch GIS software, test editing functions, test pens, undo buttons, scales, and other features.
- **Prepare:** Prepare the file saving infrastructure and the back-up drive.
- **Demo:** Do a demo of the GIS workflow.
- **Facilitator synch:** Work with your process facilitator to develop common approach and signals.

Introduction – When the mapping group first convenes, these are the GIS facilitator's duties:

- **Present tools:** Give a hands-on refresher on the tools, explain tools handout, and offer tips.
- **Explain method:** Briefly review approach and methods.
- **Answer questions:** Answer questions regarding the tools or the technology.

Mapping – The GIS facilitator will be the main point of contact for technical issues, questions or methodology steps throughout the mapping session. The process facilitator will be expected to maintain the flow, resolve and document road blocks, and communicate with "runner" regarding any major hurdles or problems encountered. Throughout the mapping exercises, these are the GIS facilitator's duties:

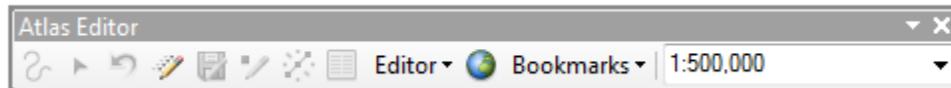
- **Record participant instructions** for post-processing on notes sheet (clip out marine protected areas).
- **Provide guidance** on use of the digital tools, pen, and software, stay at designated scales.
- **Fix any mistakes or errors** by helping participants erase and redraw.
- **Keep the mapping environment active** by panning through the region to ensure coverage.
- **Routinely export the active sketch polygon** to a shapefile for back-up.
- **Discuss problems or issues** with the process facilitator, who can pass concerns on to runner.
- **Promote efficient use of time and effective use of tools and technology.**

Data Management – After completion of the mapping exercise, the GIS facilitator will be expected to show the results to the group, securely save the data to thumb drive and copy to back-up computer.

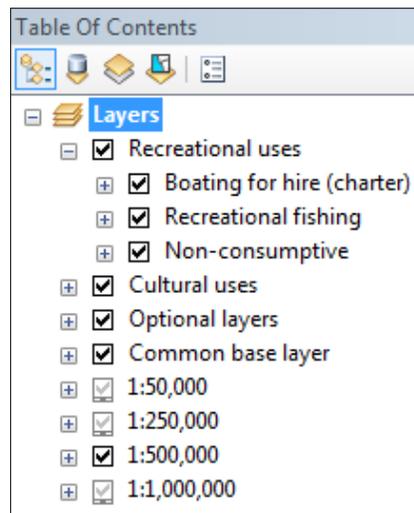
Appendix 2-11: Technical Tutorial for Data Processing

Mapping process

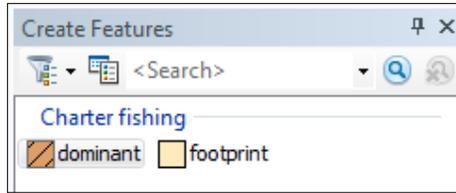
1. Open workshop.mxd
2. The Atlas Editor toolbar (below) will contain most of the tools used during mapping: freehand draw, edit tool, undo, start editing, save edits, stop editing, explode multi-part polygon, attributes, Editor menu (for more advanced tools), full extent, bookmarks, and scale. This toolbar lives in the .mxd and should always be visible.



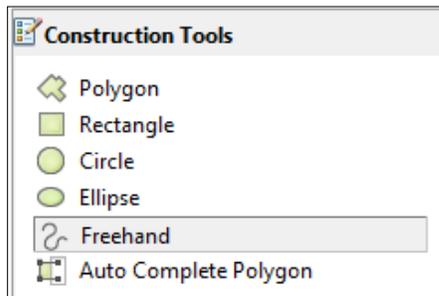
3. The uses to be mapped will be on top of the Table of Contents, with optional and base GIS layers below. Many of these base layers and labels are scale-dependent at either the layer level or the group level. Only the mapped uses are selectable by default.



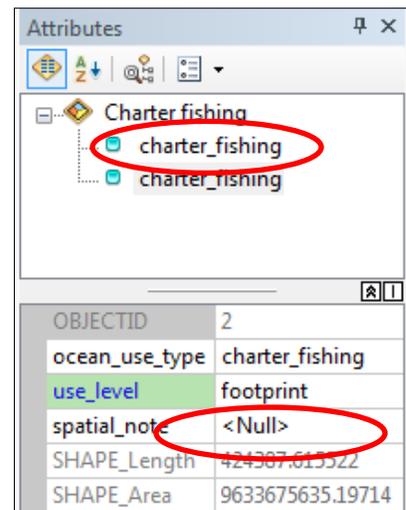
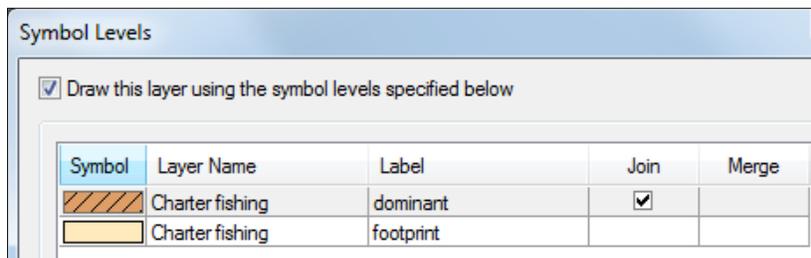
4. To start mapping, turn on the desired use layer in the Table of Contents (TOC); right-click on the layer, select **Edit Features**, and select **Start Editing**.
5. The **Create Features** window will open; select the appropriate use level (General Use Footprint or Dominant Use Area) from the available templates. Using these templates will automatically populate the "ocean_use_type" and "use_level" fields.



- Begin drawing on the map; the default drawing method is Freehand, but you can select other shapes from Construction Tools box. Freehand requires the drawer to click to start the polygon, hold the pen down on the screen, and then click once more near the start of the feature to close the shape.



- Dominant Use Areas will always display on top of Footprint areas due to Symbol Levels (Layer Properties – Symbology – Advanced – Symbol Levels to change).

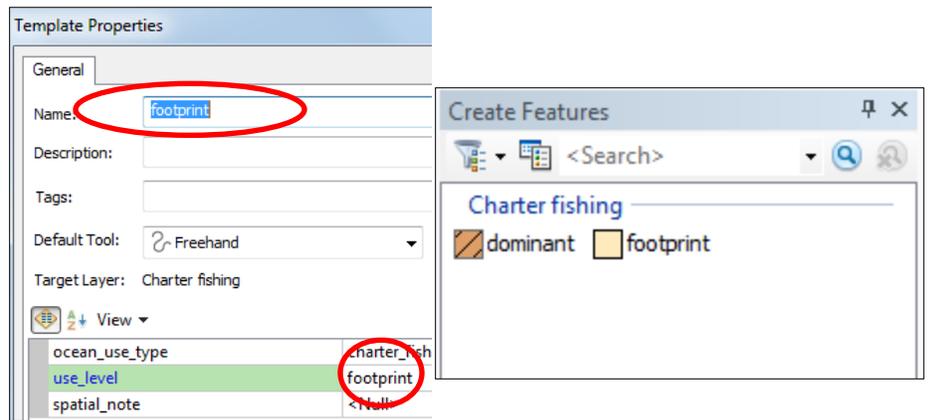


- Use a layer’s table or the Attributes window to add any additional information to any shape (select using the **Edit Tool** on the Editor toolbar). The Attributes window can be opened by right-clicking on the selected polygon or through the Atlas toolbar. The Attributes window will open next to the **Create Features** window; click on the <Null> text in the “spatial_note” field to add any information on seasonality, species, night activities, events, or other details.
- To add additional information to multiple features, follow the above instructions after selecting multiple shapes. At the top of the Attributes window, select the name of the layer to affect **all selected features** and then fill in the “spatial_note” field and hit **Return**.

10. If the participants are not happy with the drawn polygon, you can use the **Undo** tool, select and delete, or draw another shape right over any missing boundaries.
11. To resume drawing after any other tasks, re-click on the feature template or click the squiggly line on the left side of the Atlas Editor toolbar.
12. Once finished with a use (or mid-way through a long use) **save your edits** and export a backup shapefile to c:\gis_data\va\workshop\backup_shapefiles\ with the format of [feature class name]_[group_color]_day e.g. surfing_blue_wednesday.shp; use reasonable short-hand file names.

Frequently Asked Questions

1. How do I copy all of the features from one use_level to another (e.g., footprint to dominant)?
 - i. Select features with **Edit** tool
 - ii. Right-click **Copy**, Right-click **Paste**, and make sure to choose your target layer if you have multiple uses turned on. Note: avoid using Control-C Control-V to copy as it can have unintended consequences like not working, copying a layer in the TOC, or copying Editor templates.
 - iii. Click the layer name at top of Feature Class tree in the Attributes window (above all of the features selected)
 - iv. For copying between use levels:
 - a) Go to “use_level,” click browse dots in value window
 - b) Choose new value; should apply to all selected
2. How do I copy all of the features from one use to another (e.g., charter diving to non-charter diving)?
 - i. Follow 1.i and 1.ii above but make sure when you paste, you have the correct use destination layer (both layers must be turned on).
 - ii. Open the Attributes window and follow these steps:
 - i. Click the layer’s name at the top of the tree
 - ii. Go to “ocean_use_type”
 - iii. Enter in correct shorthand value based on the feature class’s use name; if you don’t know what that is, look at the use’s editing template (below)



3. I need to map something besides footprint or dominant, or I accidentally erased a template. How do I create a new Editor template?
 - i. Access the use's layer properties and change the symbology to add a new value for the "use_level" field. You must symbolize the new value before creating a new template.
 - ii. In the **Create Features** menu, either copy and paste an existing template or click **Organize Templates** and follow the dialog
 - iii. Double-clicking (or Right-Click – Properties) a template allows you to set the new **use_level** value that will be added every time you add a new shape using that template

4. A new use has been added during the workshop. How do I create a new feature class and set up the templates?
 - i. **Copy** (or export) an existing use feature class (preferably empty) into the use database
 - ii. Add it to the map and import the symbology from another use layer; add symbol levels – see mapping process step 7
 - iii. Use the **Organize Templates** dialog (in the **Create Features** window as seen above) to add the appropriate new templates with a new **ocean_use_type**

5. Why is a layer turned on but not drawing?
 - i. This .mxd has a lot of grouped layers; make sure the all nested groups are turned on
 - ii. Make sure the layer (or the layer's group) does not have scale dependencies. If there are scale settings, the check box next to the layer will be greyed out if turned out but not within the scale boundaries. The scale settings can be toggled in the General tab of the Layer Properties window

6. How do I select a feature from a base layer?

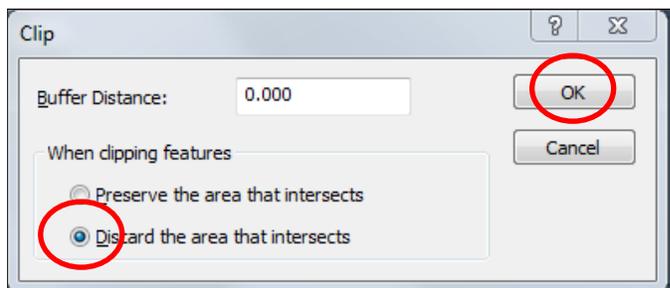
- i. Make sure the layer is drawing, and then access the List by Selection icon in the TOC to toggle the layer's selectability on or off. All of the base layers are unselectable by default so that they don't interfere with the use drawing process.

7. Why is there text when I hover over a feature in a base layer?

- i. "MapTips" are turned on for select base layers to minimize label crowding; these can be turned on or off in Layer Properties – Display
- ii. These appear even when the layer is not visible due to scale dependencies; to turn them completely off you need to toggle MapTips or turn the layer off

8. How do I clip an area from a drawn polygon?

- i. Draw a new area (the area to be clipped) and make sure it is selected
- ii. Click the Editor drop down in the Atlas Editor toolbar and select **Clip**
- iii. Make sure that "Discard the area that intersects" is selected and hit OK
- iv. Erase the clipping polygon

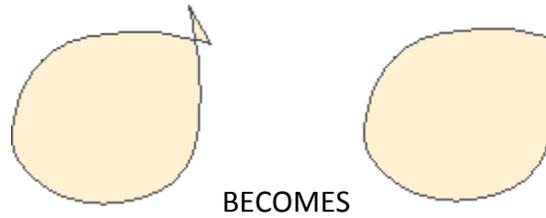


Alternatively, you can just tag the clipping polygon by using the **spatial_note** field (e.g., "CLIP from footprint") and the area will be clipped during processing.

9. How do I get rid of dangling areas or donut holes?

The data will be cleaned later, but if you think that a specific drawing error will not be an obvious error, do the following:

- i. For donut holes, simply draw a new shape over the hole; if you have time you can select the "Merge..." tool from the Editor drop down to merge the two shapes
- ii. For dangling errors (see below), select the shape and then click "Explode Multi-part Features" from the Atlas Editor tool bar. Delete the sliver.



10. What if a shore-based use is drawn not touching the shore, or the participants are spending too much time trying to trace the shoreline?
- i. Try to stress that we will clip out the land later, and that it is much easier and quicker to overdraw way onto land
 - ii. Double-check that the drawn areas touch the shoreline by highlighting the land if necessary

Appendix 2-12: Staff Notes Template

Group Notes Sheet

Date:	Start Time:	End Time:
--------------	--------------------	------------------

Ocean Use:	Group Color:
-------------------	---------------------

Process Facilitator or GIS Facilitator:

Notes:

Appendix 2-13: Workshop Packing List

Hardware

- Laptops and power cables (data and software preloaded and tested)
- Digital whiteboards, USB cables, stylus, attachment options, batteries
- Digital tablets, power cables, USB cables
- Projectors, cables (extra bulbs)
- Camera, charger
- Mice
- Broadband card or wireless router

Software and Peripherals

- ArcGIS software disks
- Digital whiteboard and digital tablet software disks
- Back-up drives and cables (thumb drives for each laptop and one large external)
- Power strips
- Extra USB cables and extensions
- Spare VGA or DVI cables (depending on computers)

Documents

- Wall maps
- Wall sized use descriptions
- Door signs and group room signs, sign-in sheets
- Workshop documents
 - Participant folders
 - Staff binders
 - List of participants

Office Supplies

- | | | |
|---|---|---|
| <input type="checkbox"/> Name tags | <input type="checkbox"/> Packing tape | <input type="checkbox"/> Scissors |
| <input type="checkbox"/> Color dot stickers | <input type="checkbox"/> Push pins | <input type="checkbox"/> Extra paper |
| <input type="checkbox"/> Extra folders | <input type="checkbox"/> Pens, sharpies | <input type="checkbox"/> Cable runners |
| <input type="checkbox"/> Masking tape | <input type="checkbox"/> Binding clips | <input type="checkbox"/> Return shipping labels |
| <input type="checkbox"/> Duct tape | <input type="checkbox"/> Highlighters | <input type="checkbox"/> Manila envelopes |

Appendix 3-1: Mapping Exercise Overview

Once the participants assemble into breakout groups, the mapping exercise can begin. It is important that the mapping station has already been prepared in advance. Spend the first 20 to 30 minutes introducing each other, the map, and the equipment, as well as discussing the method, demonstrating the tools, and explaining the steps. Have participants experiment with the tools, ask questions, and get familiar with the process before you begin the actual data gathering exercise.

Mapping Exercise Overview

- Do round of introductions as staff members and participants say name, affiliation, and expertise.
- Introduce the purpose of the documents in the workshop packet.
- Show list of uses and note that the goal is to map all these uses in the workshop.
- Review general use, dominant, and supplemental use definition.
- Introduce equipment, name each component—digital whiteboard, digital tablet.
- Demonstrate how the equipment is used and draw using both tools.
- Offer tips on how and when to draw, erase, and fix errors.
- Show the base data layers and spatial reference options as well as bookmarks.
- Explain about scale, zooming, and panning.
- Remind participants that mistakes are easy to fix.
- Start with an easy use, take your time on the first use, and instruct as you go.
- Continue with the other uses, prioritizing based on participant expertise.

Mapping Station Equipment and Set Up

To run an effective use mapping exercise, each of the breakout groups need to have a designated mapping station prepared with the necessary PGIS tools and equipment. The primary equipment needed for the mapping station include the following items: a laptop computer loaded with current GIS software (ArcGIS with the spatial analyst extension preferred), and digital whiteboard and digital tablet software; a digital projector; the digital whiteboard (or similar model) digital whiteboard technology with stylus; and a digital tablet (optional).

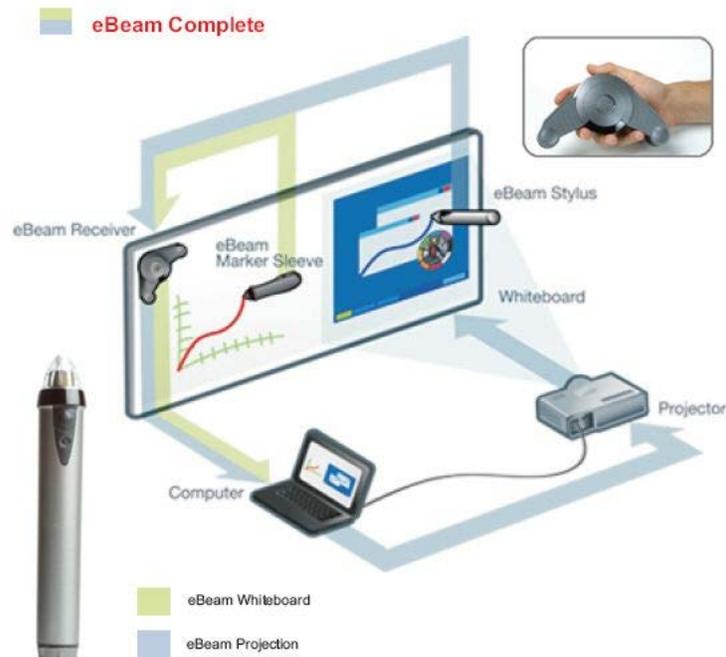
Digital whiteboard



Digital tablet



The digital whiteboard connects via USB to computer; the projector connects via VGA to the digital tablet; the digital tablet connects via VGA; and USB connects back to the computer. The digital tablet, projector, and computer also have power cables. The digital whiteboard has two AA rechargeable batteries. Note that some of the newer digital whiteboard models operate using wireless Bluetooth technology.



A few things to consider when setting up the mapping station:

- Digital whiteboard can be attached to any clean, flat, smooth surface, so a fixed, mounted whiteboard is not mandatory. Place the digital whiteboard away from wall power sockets if possible to avoid interference. Experiment with placement of the digital whiteboard (top or bottom, left right, corners, sides) to ensure that you can capture all of the projected area.
- The projector should be placed on separate table that won't get bumped.
- The ideal configuration for the breakout group is the horseshoe configuration: the participant tables are set up in a u-shape, with the open end of the "u" facing the whiteboard, and the projector on a table in the middle of the "u."
- Have extra batteries ready in case the digital whiteboard stylus batteries die.
- Be sure to tape down all cords with duct tape.

Appendix 4-1: Data Processing Guide

This guide provides simplified instructions for processing ocean uses data gathered in participatory mapping workshops. This guide is intended for the technical GIS lead and provides a generalized technical workflow. For many of the steps, geoprocessing scripts and models have been created to batch process the data and are available upon request.

1. Catalog Workshop Data

- a. Create a project workspace and store all geodatabases from the workshop computers.
- b. Make a backup copy of the compiled data workspace.
- c. Create a spreadsheet to track the steps of the workflow for each use and record important processing notes.
- d. Create a catalog worksheet in the spreadsheet and list the data gathered in the workshop. Review each data layer mapped for each use and note which uses were mapped by each group each day.
- e. Create an editing worksheet to track progress on data review, record editing decisions and steps, and capture any pertinent notes on use patterns from the scanned notes.

Some use patterns are not drawn in the workshop but instead verbally defined by participants and recorded in the workshop notes. Record this information in the spreadsheet.

2. Organize Workshop Notes

- a. Separate the notes by day and group. Include notes from staff members and participants.
- b. Scan all notes and create combined PDFs for each day and group. Create additional PDFs that compile notes from all groups organized by use for easy use during processing.
- c. Review notes for any specific processing instructions (e.g., clip to 20 fathoms) and uses that were verbally defined but not drawn. Record these instructions on the editing worksheet.
- d. For some uses, workshop notes may indicate that the footprint and the dominant areas are the same or that the use needs to be clipped to specific depths or distances. Note this on the editing worksheet.

3. Clean and Edit Data

- a. For each geodatabase, add all of the use data to a working map document, group the data by day and group, and symbolize as footprint or dominant (or other values when appropriate).

- b. Review all data to identify and edit obvious drawing errors: these include drawing artifacts like inner donut holes (Fig. 2a) and single vertices that jut far from rest of polygon (2b), or areas where the footprint and dominant polygons do not overlap but should (2c).
- c. Fix small unintended gaps. These are typically gaps between the shoreline and a use polygon where a drawn polygon does not quite reach the project boundary as intended.
- d. Create shapes that were verbally defined and recorded in the workshop notes. This refers to shapes that were not drawn or were drawn very crudely in the workshop but were explicitly defined verbally or in the notes (e.g., use occurs from the shoreline to a distance of one mile from shore). Often these edits require access to bathymetry data for depth contours, maritime boundaries, or a variety of shoreline buffer distances.
- e. Make other adjustments to the data as referenced in the notes, such as these:
 - a. Clipping out shapes that were described in the notes or that were specifically tagged to be clipped.
 - b. Expanding, creating, or clipping shapes based on distance from shore, depth, or some other feature in an existing GIS data set. Models can help to create a stockpile of shapes that are used repeatedly (state waters, 120' depth, 100 fathom contour).
 - c. Fixing shapes that were drawn but require slight modification based on notes.
 - d. Ensuring that the dominant areas always fall within the general footprint. Typically areas of non-overlap are fixed by copying the dominant into the footprint.
- f. Make a final review of the use notes and capture any additional information in the spreadsheet that will be useful in compiling the final maps. This includes information about the group's knowledge of the use (very important later on for thresholding the dominant use), reference to seasonal variations or contextual use information.

The cleaning and editing of the data is the most time-intensive part of post-workshop data processing and cannot be automated. Much of the remaining work can be automated using models or processing scripts.

4. Prepare Data for Aggregation

- a. Dissolve all features so that each use has a single, multi-part polygon for the general footprint and the dominant use area. This step prevents an area from being double-counted during analysis. Save the dissolve outputs to a new geodatabase referencing the group name, day, and dissolve step (e.g., blue_monday_dissolve.gdb).
- b. Clip each data set to the study boundary and save results in a new geodatabase that references the clip step (e.g., blue_monday_clip.gdb).

5. Prepare Data for Analysis

- a. Add fields indicating the group color and day to each data set.
- b. Merge all data into a single feature class for each use, then split into unique footprint and dominant feature classes for each use in a new geodatabase (e.g., data_processing_merge.gdb).

6. Create Analysis “Fishnet”

- a. Create an analysis polygon grid file, which will be used to join to all uses data. The analysis grid may be composed of rectangles, hexagons, or other shapes. The size of these grid cells will depend on the project area and scale of mapping used during the workshop.
- b. Add a new unique identifier field to the fishnet (e.g., block_number) to properly join the uses data in the following steps.
- c. Keep a separate copy of the empty fishnet feature class as backup for future processing.

7. Join the Data

- a. Run a spatial join for each use with the fishnet feature class and save results fishnets to a new geodatabase (e.g., data_processing_spatialjoin.gdb). There will be two new feature classes for each use, one for general use footprint and one for dominant use, and each fishnet will calculate the number of groups that mapped a use in each analysis block in a field called [Join_Count].
- b. Double-check that the model was run appropriately by counting the number of shapes under a few analysis blocks.
- c. Using a blank copy of the fishnet, create two new fields for each use, one for the footprint and one for the dominant, and join each of the spatial data sets [Join_Count] field to compile all uses into a single fishnet feature class. Use the Calculate Field function to transfer the data from the Join_Count Field to the appropriate use field.

8. Threshold Data

- a. Make a copy of the final spatial joined fishnet feature class—this will be used to calculate the final draft data set, which will be simplified from the raw Join_Counts to 0's and 1's.
- b. For general use footprint, grid cells that were included in any group's general use footprint should be retained as the final footprint for that use. For each footprint field, recalculate the value to 1 for each cell where the raw value is at least 1.
- c. To determine the threshold value for the dominant uses, workshop notes and processing logs should be used to count how many groups mapped each use.
- d. Retain blocks that were mapped as dominant use area by a majority (50 percent or greater) of groups and calculate the field as 1. Blocks with a 0 dominant value indicate that they were either not mapped by any group or by less than 50 percent of the groups.

Ensure that groups that did not know the use pattern for a certain region of the study area are not included in the “majority rule.” Uses where one or more groups did not have knowledge of the entire area need to have a lower threshold for all or part of the study region. The same goes for any uses where the group drew a footprint but did not feel knowledgeable enough about the use to comfortably draw dominant areas.

- e. Add a worksheet to the data processing spreadsheet to document the threshold used for each use.

9. Review Use Patterns

- a. Review each use and note any irregular or illogical patterns, where there is too much (or not enough) dominant area removed by thresholding, or where there are small gaps where groups drew dominant area slightly differently.
- b. Review original raw data and document the source of the data irregularity. Provide documentation and logic for each questionable pattern. This can be used as part of the data validation.

10. Create Draft Maps

- a. Create a set of draft maps for each use that show the general use footprint and dominant use areas to use for data validation.
- b. Provide a text box to include the use definition and compiled contextual use information from the notes.
- c. Send out maps for review to participants or select stakeholders. Ask for specific feedback on use patterns and potential data errors or inconsistencies.
- d. Consider feedback comments and potential data modifications with the workshop team. Note decisions in the processing spreadsheet.

11. Create Override Layer (Only Required If Data Edits Are Suggested by Data Validators)

- a. Copy the empty fishnet analysis feature class and add new fields for each use override (i.e., change to original data threshold or analysis value). This file will serve as the documentation of data modifications resulting from the validation process.
- b. For the uses requiring modification, edit the analysis block values for the general footprint or dominant use as needed, (e.g., the value in the Override layer will now be 1 where a block needs to be added or -1 where a block needs to be removed).
- c. Enact any overrides by adding the override cell value with the original cell value. This will copy the original thresholded data layer and change the values as needed.

12. Sum the Values

- a. Create two additional fields in the geodatabase, sum_footprint and sum_dominant.
- b. For each of these fields, add the thresholded footprint and dominant use fields, respectively. Each block will now have a sum of all uses mapped as footprint and mapped as dominant. This information is useful for analysis and for displaying as a “heat map” to show the most heavily used ocean areas.

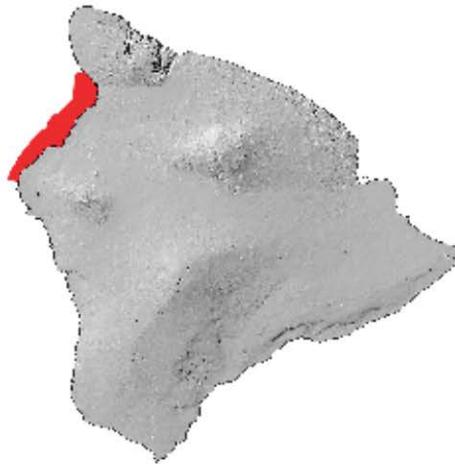
13. Create Final Data Products

- a. Build a series of digital maps complete with use descriptions and compiled contextual notes for each use. Include a set of heat maps showing the overlap of uses. This can be done for all uses, uses by sector, or a specific set of uses. Include a brief introduction describing the workshops and data processing steps.
- b. Create geospatial data sets either as geodatabases or shapefiles that include all the processed ocean uses data. Include explicit metadata that include the use descriptions and contextual information included on the map products. Publish as Web mapping services.
- c. Build customized products as needed. This can include specific analytical maps, data prepped for online viewers, Google Earth format files, and other products.

Appendix 5-1: Hawai'i Coastal Use Mapping Project: Ocean Uses Map Book

Appendix 5-1

Hawai'i Coastal Use Mapping Project



Ocean Uses Map Book

Results from:
Participatory Ocean Use Mapping Workshops
South Kohala & North Kona Districts
Ka'upulehu Interpretive Center
September 23-25th, 2010



March 2011



Appendix 5-1

Hawai'i Coastal Use Mapping Project Ocean Uses Map Book March 2011



Introduction

This map book contains cartographic products derived from the Hawaii Coastal Use Mapping workshops conducted at the Ka'ūpūlehu Interpretive Center at Kalaemanō (North Kona) from Thursday, September 23rd to Saturday, September 25th, 2010. This participatory mapping workshop was designed to gather spatial data on human uses of the coastal and marine environment in the South Kohala and North Kona regions of Northwest Hawai'i.

This effort was undertaken as a partnership between multiple NOAA line offices, including the Office of Ocean and Coastal Resource Management (OCRM), the Pacific Islands Regional Office (PIRO), the Pacific Services Center (PSC), and Pacific Islands Fisheries Science Center (PIFSC), working together with Hawai'i Division of Aquatic Resources (DAR). Primary funding for the project is from NOAA's Coral Reef Conservation Program, with in-kind support from DAR, the Hawaii Chapter of the Nature Conservancy (TNC), and the Ka'ūpūlehu Interpretive Center. Mapping and GIS technology for the workshop was facilitated by NOAA's MPA Center (OCRM). During the workshop, this expert team was shadowed by NOAA and DAR employees from Hawai'i to facilitate a transfer of knowledge and technological skills to Hawai'i based agencies. On Wednesday, September 22, thirteen Hawai'i residents participated in a GIS/facilitator training session led by staff from NOAA's MPA Center.

In total, 48 participants, 13 facilitators, and three observers were involved during the three workshop days. Participants were selected to provide expertise in the various human use activities that were mapped, as well as familiarity with a wide range of locations across the mapped region. Of the 48 participants, most all were Hawai'i Island residents except for one former resident.

Targeted Uses

The uses mapped in the workshop included a variety of extractive and non-extractive activities. These uses are defined on the uses list that follows this document. The targeted uses and use descriptions were compiled with assistance from local stakeholders and resource managers.

Generalized Workshop Process

At the start of the workshop, all participants were assigned to a work group and an associated mapping station. With guidance from the facilitators, participants were asked to draw use areas based on their knowledge of where this type of activity is known to occur. For some uses, existing data was presented and participants were asked to review and modify the existing data for completeness and accuracy. Each use was explicitly defined (see uses list) and participants were asked to map the general use footprint and dominant use areas, as described below. For some uses, additional areas were drawn to document seasonality, pulse events, temporal variability (day/night) and species-specific use areas. Participants also provided relevant supplemental information on uses (e.g., seasonality, social and cultural significance, historical patterns) that was compiled and added to the final use maps.

- **General Use Footprint :** The general use footprint includes all areas in which the use is *known to occur with some regularity (over the past 3-5 years)*, regardless of its frequency or intensity. The general use footprint does not include areas where the use may occur once or twice or where it might *conceivably* occur now or in the future. For this step, all areas drawn will be included in the final data layer.
- **Dominant Use Areas:** Dominant use areas are defined as *ocean areas routinely used by most users most of the time (within the seasonal patterns for that use)*. Dominant use areas must be drawn within the general use footprint. Participants worked together to draw dominant use areas as they occur throughout the study region. This step was designed as a group exercise and participants should work together to agree on which areas are dominant use areas and should be included in the final data layer.
- **Supplemental Use Data:** Participants were also asked to provide supplemental information on use patterns both spatially (on the map) and as additional notes collected after the workshop.

Maps

Data compiled during the workshop were processed to create maps documenting the use patterns as drawn by the workshop participants. The following maps show patterns for each use mapped in the workshops and include the general use footprint and dominant use areas, as well as a compilation of the supplemental data provided by participants throughout the mapping process. After initial data processing was completed, draft maps were presented for review to workshop participants and follow up interviews were conducted to fill any knowledge gaps.

Contacts

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