



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
PETER GOLDMARK - Commissioner of Public Lands

## **COOPERATIVE AGREEMENT WITH THE SURFRIDER FOUNDATION**

### **Agreement No. CA 14-292**

This Agreement is by and between The Surfrider Foundation (Surfrider) and the Washington State Department of Natural Resources (DNR).

DNR enters this Agreement in accordance with RCW 79.10.130 (2013).

The Surfrider Foundation is a nonprofit association that engages in activities that, among other things, provides educational and scientific benefits.

The purpose of this Agreement is to accomplish the purposes of enhancing multiple uses of public lands by establishing a baseline characterization of coastal recreation participation rates and trip expenditures and providing a spatial baseline of coastal and ocean recreation use patterns on the outer Pacific coast of Washington.

## **STATEMENT OF WORK**

---

### **Mapping Coastal and Ocean Recreational Human Uses in WA**

March 10, 2014 – June 30, 2015

Under the terms of the cooperative agreement to which this Scope of Work is attached and of which it is an integral part, Surfrider shall provide the following services and products during the period March 10, 2014 through June 30, 2015. In all cases these will be carried out in consultation with staff designated by DNR to ensure a coordinated effort.

#### 1. Background and Objectives

Coastal and ocean recreation provides significant economic and social benefits to coastal communities and to the state of Washington as a whole. These benefits include, for example, the financial impact of direct expenditures (e.g., hotel stays, dining, shopping), non-market benefits of coastal and ocean recreation, and associated enhanced human well-being. To inform marine spatial planning efforts and understand how management decisions might impact future coastal recreation use patterns, it is necessary to establish a baseline of how many people use the coast, what they do, and the economic contributions of these different types of uses—especially in a geospatial context.

This study is designed to establish a baseline characterization of coastal recreation participation rates and trip expenditures and provide a spatial baseline of coastal and ocean recreation use patterns on the outer Pacific coast of Washington. There is currently a significant gap in the data available describing these uses, their location and frequency, and the direct and indirect impacts on the local economy of Washington's coastal communities.

In order to address the current social science and spatial data gaps in recreational ocean uses Surfrider will:

- Design a survey instrument with stakeholder and agency input that can be deployed online using two complementary methods of data collection;
- Engage with policymakers and stakeholders by gathering input on survey design, promoting participation in the survey, reviewing results, and vetting data to enhance the relevance and use of study results;
- Develop demographic profiles, estimate participation rates, and the economic contribution of marine recreation in the aggregate and by activity;
- Develop spatial data sets depicting the extent and intensity of use and economic value of marine recreation in the aggregate and by activity;
- Integrate these baseline spatial data sets into the WA MSP Data Portal;
- Develop a concise, compelling, and graphically driven report outlining results; and
- Disseminate the report and data products to a wide range of stakeholders.

These activities will support Washington's marine spatial planning (MSP) process and help the state meet its obligations under statute 43.372 RCW to address existing human uses in the marine management plan. Specifically, the information will support several MSP goals and objectives identified during the state's scoping process including: Theme Goal 1 - Protect and preserve resource access and sustainable resource use for coastal communities to ensure economic vibrancy; and Theme Goal 5 - Encourage economic development that recognizes the aspirations of local communities and protects coastal resources.

The project will be a joint effort, with Surfrider Foundation serving as the lead and Point 97 (a company of Ecotrust) serving as a key project partner.

#### 2. Tasks and Deliverables

### **Task 1: Stakeholder Outreach and Survey Design**

Stakeholder engagement is an integral component of all phases of the project. Stakeholder-informed data gathering and scientific initiatives serve a dual purpose of ensuring that the key features and concerns of the industry are properly addressed and that the outcomes of the study will be trusted by the marine recreational user community.

The initial phases of survey outreach have consisted of a series of meetings and telephone interviews with WA marine resource committees, state ocean caucus, and recreational “gatekeepers” (e.g. business owners, club presidents, etc.) and have focused on: describing the specific purpose and intent of the project; addressing questions or concerns regarding the handling, use, and analysis of data collected; soliciting review and feedback on the draft survey; and encouraging groups and businesses to promote participation in the survey to their members and customers. This second phase of the project builds upon this work that the Surfrider Foundation is currently engaged in. Specifically, the Surfrider Foundation will conduct the following activities to promote understanding and participation in the study:

- A. Continue to identify project partners in the marine recreation community and create a project steering committee composed of relevant agencies, NGOs, academic partners and representatives from the marine recreation community.
- B. Establish and coordinate a stakeholder working group of recreational interests
  - 1) This working group will facilitate review of survey design and support broader outreach and data collection efforts.
  - 2) Surfrider will engage the stakeholder working group and other recreational interests in review of data collected and draft study products.
  - 3) Once data have been analyzed, the stakeholder working group will be asked to review the aggregated map products for accuracy. In addition, group members will be asked, as representatives of the broader community, to a) make decisions about the resolution at which maps are made publically available; and, b) serve as community liaisons in the planning and decision-making process.
- C. Conduct outreach and communicate project information.
  - 1) Create and distribute outreach materials to recreational businesses, groups, associations and other partner organizations.
  - 2) Distribute a media release to major print and digital media during data collection phase;
  - 3) Conduct stakeholder workshops to discuss what data is being collected and how to participate;
  - 4) Provide information on the study via websites, blogs, email lists, and social media
  - 5) Disseminate the final study products to recreational stakeholders and the public via media release, presentations, websites, blogs, email lists, and social media

#### **Deliverables:**

- Outreach materials and media releases
- Summaries of stakeholder working group meeting results and stakeholder workshops

### **Task 2: Data Collection**

The first phase of the project has allowed us to develop survey content to address the specific data needs of WA’s outer Pacific coast. We will use a two-part survey methodology, modeled after similar studies conducted in Oregon and the Mid-Atlantic, to collect the data. In combination, these two survey methodologies—the standing internet panel and purposive opt-in sample—are complementary as together they:

- Engage local stakeholders in the overall data collection project and thus promote

- inclusion in and awareness of regional ocean planning efforts.
- Provide statistically robust and representative data needed to extrapolate general coastal recreation spatial and economic expenditure patterns in Washington State.
- Ensure representation of a broad range of user groups by purposively targeting coastal recreation activities that are practiced by a relatively smaller portion of the population, such as those activities requiring specialized equipment or training.

A. Probability-Based Sample: Standing Internet Panel

This methodology utilizes a standing internet panel hosted by Knowledge Networks, which provides a highly accurate sampling platform (<http://www.knowledgenetworks.com>), for conducting online surveys in the United States. The peer-reviewed and patented Knowledge Networks method is the nation's only probability-based 100% online survey research panel (Baker et al. 2010 and Yeager et al. 2011). Its core approach to maintaining an internet panel involves the continual recruitment of households by randomly selecting residents through a combination of 'address-based sampling' (ABS) method to provide statistically valid representation of the U.S. population as well as many difficult-to-survey populations such as cell phone only households, African Americans, and Latinos. Moreover, Knowledge Networks also provides a computer and internet connection for households identified in the ABS technique to represent those non-internet household types in their panel. Invited households are invited to join the Knowledge Networks internet panel through a series of mailings and by telephone follow up to non-responders when a telephone number can be matched to the sampled address. Invited households can join the internet survey panel by one of several means: completing and mailing back an acceptance form; calling a toll-free hotline; or going to a dedicated Knowledge Networks recruitment website. Once membership to the internet panel is established, internet survey panel members are required to fill out an extensive profile of demographic information and other information to determine eligibility for specific studies. Once panel members are profiled they then become 'active' for selection in specific surveys.

Active internet survey panel members located in Washington State are then randomly selected by Knowledge Networks and directed with a web link to the Coastal and Ocean Recreation Uses and Values survey. Respondents cannot self-select and are not financially compensated if they decide to complete the survey. Knowledge Networks also limits the number of surveys each household can participate in to approximately two to four per month to help control for survey fatigue. In the Knowledge Networks standing panel method, each respondent will have a known selection probability; using this probability-based methodology means that the results can be extrapolated to the regional population.

Surfrider will utilize Knowledge Networks' standing internet panel methodology alongside Ecotrust's proven spatial mapping survey tool, Open OceanMap, to survey a probability-based sample of Washington State residents on coastal recreation spatial use patterns, trip expenditures, and site attribute preferences. Based on what is allowable in the project budget Surfrider estimates that they will sample approximately 6,000 WA state residents through this online survey effort. To capture seasonal effects, Surfrider will conduct the panel surveys in two phases over the course of a year inquiring primarily about recreation activities respondents conducted in their last recreation-based trip to outer Pacific coast of WA. Conducting the survey in two phases ensures that there will be no temporal gaps in the data collection.

The following types of information will be collected in the online survey:

- Demographic information;
- Coastal recreation activities the respondent participated in the last 12 months;
- Coastal recreation activities the respondent participated in on their last trip;
- Characteristics and expenditures of participant's last recreational trip;
- Mapping of locations of last-trip recreational activities and assigning relative value of locations; and

- Reasons for recreating at specific sites, including site-specific attributes such as environmental attributes or site amenities

Data on respondents not participating in any marine recreational activity will be captured and used to determine the overall proportion of WA residents using coastal and ocean areas for recreational purposes.

While the internet panel methodology collects a wide range of statistically robust coastal and ocean recreation data, this methodology is unable to collect data with adequate statistical power on coastal recreation activities practiced by a smaller portion of the population, such as SCUBA, stand-up paddle boarding, or other activities requiring specialized equipment or training. To address this limitation, Surfrider will use an additional non-random “opt-in” survey methodology to broaden the range of activities covered during this survey. These complementary survey methodologies were used successfully in the Oregon study of non-consumptive recreational uses in that region.

#### B. Non-Probability Sample: Internet Opt-In Methodology

This methodology will engage stakeholders and interested members of the public through an opt-in survey that collects extensive data on marine recreational activities that are societally important, but practiced by a smaller percentage of the population (e.g. surfing, kayaking, diving). Unlike the standing internet panel survey methodology described above, the opt-in methodology is a non-probability based survey method. Because any user from a targeted user group may elect to take the survey, results from the survey cannot be extrapolated to the population as a whole.

Instead, the primary goal of the opt-in survey method will be to collect comprehensive spatial data on the location of specific coastal and ocean recreation activities. Surfrider will utilize Point 97’s Open OceanMap survey mapping tool to collect survey data from respondents and respondents will report on and map their coastal and ocean recreation activities in the last 12 months. Opt-in survey data collection will take place continuously from April through September 2014.

To encourage participation in the survey, Surfrider will lead a series of outreach and recruitment strategies. These strategies will include targeted outreach to a range of non-consumptive user businesses, groups, and associations throughout WA. Surfrider has recently developed a database of several hundred recreational “gatekeepers” in the region and is currently conducting outreach on marine planning to these contacts.

Collecting data using an internet opt-in mode affords the following advantages:

- Provides a participatory approach that engages stakeholders in the collection and review of baseline human use data and builds stakeholder investment in regional ocean planning;
- Allows Surfrider to collect data and obtain larger sample sizes from specific user groups (e.g. SCUBA divers, kayakers) that are difficult to adequately capture in the internet panel option; and
- Increases the likelihood that stakeholders will trust the survey results and therefore accept their use in policy-making processes.

In combination, the standing internet panel and opt-in methodology are complementary as the internet panel method provides the representative data set needed to extrapolate general coastal and ocean recreation spatial and economic expenditure patterns across the outer Pacific coast of WA while the opt-in method fills the data gaps that exist in the internet panel method by collecting spatial data from specific user groups. Most importantly, the opt-in method engages local stakeholders in the overall data collection project and thus promotes inclusion in and

awareness of regional ocean planning efforts.

**Deliverables:**

- Standing internet panel survey methodology
- Internet opt-in survey methodology

**Task 3: Data Analysis and Management**

**A. Statistical Analysis**

For the internet survey panel data, Knowledge Networks provides survey data weights to more closely align the survey sample representation with the study population's demographic profile and geographic distribution. Surfrider will use data weights to adjust each respondent's contribution to the overall results as not all survey respondents are equal. A data weight is effectively a multiplier that adjusts a given respondent's contribution to compensate for a variety of unexpected disproportionate effects such as non-response bias. The aim of post-stratification survey-weighting is to adjust the weight given to an individual respondent's data so as to better reflect the individual's proportional representation of the total study population.

To analyze the weighted survey data from the internet panel, Surfrider will utilize the statistical software R to apply the weights, analyze the data, and provide confidence intervals on all data summaries. Surfrider will analyze and summarize the responses to each survey question by calculating weighted averages of coastal and ocean recreation use statistics such as (amongst others) the number of days people recreated on the coast in the last year and trip expenditure amounts. Surfrider will also calculate weighted proportions such as participation rates in specific coastal recreation activities. These weighted averages and proportions will then be extrapolated to the entire study population to estimate overall coastal recreation expenditures and participation rates. These results will be presented in both tabular and graphical form.

For the opt-in survey data, Surfrider will not be utilizing survey weights and the data from this survey effort will not be extrapolated to the larger study population. Instead, we will simply summarize the survey results to create user and trip profiles for specific coastal recreation activities based on the responses from individuals surveyed. To do this we will utilize Microsoft<sup>®</sup> Excel<sup>™</sup> to summarize survey response data and produce associated descriptive statistics. These results will be presented in both tabular and graphical form.

**B. Spatial Analysis**

In both survey methods, survey participants will use Point 97's Open OceanMap survey tool together with Google Maps to identify locations on maps where marine recreation activities take place. Users will not be allowed to place activity marker in areas outside the study region thus reducing the need to edit the spatial data before analysis. These activity markers or spatial data points will be stored in a Microsoft<sup>®</sup> Access<sup>™</sup> database and imported into the spatial analysis program ArcGIS as point data. To convert the point data into a 'heat map' type continuous spatial surface, Surfrider will use a kernel density analysis in ArcGIS<sup>™</sup> to interpolate the spatial data point. The kernel analysis is a nonparametric statistical method for estimating probability densities from a set of point data. Conceptually, a smooth raster surface is fitted over each point. The surface value is highest at the location of the point and diminishes with increasing distance (i.e., search radius), eventually reaching zero. The resulting data set will be a smoothed raster data layer or 'heat maps' depicting intensity of use for specific marine recreation activities or for marine recreation in general. This raster data layer can then be exported as a pdf, google earth data layer, or spatial data layer.

As noted above, the data for the internet panel survey will be collected in two waves to capture seasonal variations in marine recreation use patterns. The spatial point data will be a combined set across the two survey waves and respondent survey data weights will be applied to the spatial data as well. To develop spatial data sets depicting the extent and intensity of use and

economic value of marine recreation in aggregation and by activity Surfrider will further weight respondent data by the total number of trips the respondent estimated they took to the coast for primarily recreation purposes in the last 12 months by the estimated trip expenditure from their last trip. Trip expenditures are only associated with a primary marine recreation activity and thus will only be applied to the spatial data for that primary activity.

The spatial data from the opt-in survey will not be weighted and will simply be summarized and aggregated using the kernel density analysis method above for each marine recreation activity.

C. Data management and storage

The spatial data, including the raw point data and the interpretive, raster heat maps from the survey will be managed and stored in geodatabases on secure servers. These data will be available on the WA MSP Data Portal, described in previous sections, both as part an interactive map display, and via download from the site.

**Deliverables:**

- Spatial point data showing where specific activities took place;
- Kernel density raster “heat maps” depicting the intensity of specific recreational use types
- Weighted averages of coastal and ocean use statistics including (among others) the number of days people recreated on the coast in the last year and trip expenditure amounts
- Weighted proportion data such as participation rates in specific coastal recreation activities
- Estimates of overall coastal recreation expenditures and participation rates
- User and trip profiles for specific coastal recreation activities
- Summary and aggregation of opt-in survey data for each marine recreation activity

**Task 4: Project Management and Coordination**

The Surfrider Foundation will serve as the centralized point of contact and provide project management duties and coordination between team members.

A. Organize and facilitate regular conference calls

- 1) Schedule and participate in weekly or bi-weekly check-in calls with Point 97 and Surfrider staff
- 2) Taking notes on the meeting and keeping track of action items and deadlines

B. Prepare a final report

- 1) Write an analysis of the data and include associated figures and maps
- 2) Discuss the stakeholder engagement and lessons learned

**Deliverables:**

- Final report