



SITKA CASE STUDY: COLUMBIA HABITAT MONITORING PROGRAM

The Columbia Habitat Monitoring Program Saves Over \$1 Million in Monitoring Costs After 5 Years

Other organizations can leverage CHaMP program best practices with GeoOptix®

In 2008, the National Oceanic and Atmospheric Administration (NOAA) released a final biological opinion on the operation of the Federal Columbia River Power System for salmon and steelhead listed under the Endangered Species Act. The opinion (FCRPS BiOp RPA 56) mandates Bonneville Power Administration (BPA) to collaborate with NOAA and other action agencies to improve aquatic monitoring in the Columbia River Basin. BPA must provide evidence that an expanded habitat restoration program is an effective approach to endangered species recovery.



The Bonneville Power Administration (BPA) is a federal nonprofit agency based in the Pacific Northwest. BPA is self-funding and covers its costs by selling wholesale electrical power from 31 federal hydro projects in the Columbia River Basin. As part of its responsibilities, BPA promotes energy efficiency, renewable resources, and funds regional efforts to protect and rebuild fish and wildlife populations.



The National Oceanic and Atmospheric Administration is an American scientific agency within the United States Department of Commerce focused on the conditions of the oceans and the atmosphere.

THE CHALLENGE

The basin-wide monitoring program required 22 field crews from 12 agencies, tribes, and private firms to collect data from more than 350 sites in 11 watersheds using a synchronized set of methods. BPA needed a single solution to standardize all data collection, centralize analyses, automate QA/QC, and uniformly publish monitoring data to estimate basin-wide habitat conditions. In 2010, BPA entrusted Sitka and a few key collaborators to build an end-to-end solution platform that would become the Columbia Habitat Monitoring Program (CHaMP).

THE SOLUTION

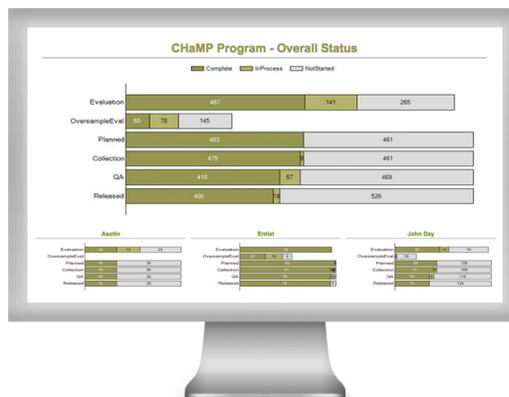
A Single Platform for Data Collection and Analysis

To ensure all collected data uses the same methodologies for more accurate data aggregation and inferences, Sitka developed CHaMP (www.champmonitoring.org) by focusing on a single monitoring protocol that provides a programmatic approach to data collection and analysis. The program assists in selecting survey sites from a “master sample” dataset using the Generalized Random Tessellation Stratified (GRTS) algorithm. This establishes a statistically valid and spatially balanced sample of the basin from which researchers can make powerful inferences.

CHaMP maps the resulting sample design in a web application so researchers can view all sites and evaluate individual locations to determine the feasibility of actually visiting them.

Connecting Field Crews, Researchers, and Managers via the Cloud

The CHaMP website keeps researchers and managers connected with their field teams via advanced mobile technology. Program managers can push survey locations directly onto the field crews’ iPads, and the surveyors can upload field measurements and other findings to the centralized, FISMA-compliant, cloud-based database via their mobile tablets. Since this solution eliminates the need to transcribe paper notes or copy data from spreadsheets, researchers and managers can immediately begin review once the crew completes their site visit.



GRTS is a form of spatially-balanced sampling that is a true probability design (each point has a known, non-zero probability of being included in the draw) thereby supporting design-based inferences for the entire area.



Field measurements include large wood volume, thalweg maximum depth, fish cover, fish count and density, channel unit area and volume, stream and air temperature, average bankfull width, and cumulative drainage area.

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Quality Control from Field to Final Results

Data quality review happens as the field crew enters their findings at the survey site. The solution alerts them when entries are outside of prescribed boundaries. Researchers also contribute to data quality by using CHaMP’s online QA tools like scatter plots. Any time data is corrected, stream metrics calculated using geospatial analysis tools are automatically re-calculated by the GeoOptix platform.



Researchers also contribute to data quality by using online QA tools.

THE RESULTS

Improved Workflow Efficiency from Automating Metric Calculations

Since the GeoOptix platform includes a flexible calculation engine that automatically generates clean metrics from uploaded field data, workflow efficiency is greatly improved. CHaMP is able to generate more than 400 metrics per site visit that are publicly available to support:

- Statistical analyses
- Watershed assessments
- Natural resource decision making



CHaMP is able to generate more than 400 metrics per site.

Better Visibility and Tighter Control Leads to \$1 Million in Savings

The CHaMP program significantly increases BPA and NOAA's visibility and control over the vast volumes of habitat data. The GeoOptix platform enables users to:

- Remotely evaluate sites
- Instantly export selected sites to the field crews' iPads
- Edit raw measurements
- Analyze metrics generated by the platform
- Safely store and organize collected data for easy discoverability and sharing

All of which resulted in an annual monitoring cost savings of \$19,000 per watershed. With 11 watersheds, BPA saved \$1,045,000 after the first five years.



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GET STARTED

For organizations interested in streamlining their monitoring programs with the GeoOptix® platform, please contact us at **1.800.805.6740** or **sales@sitkatech.com**

For more information, please visit: www.sitkatech.com/GeoOptix

