

**Project Number:** EVOS Project No. 050764

**Project Title:** ShoreZone Mapping for Kodiak Island

**PI Name:** Susan Saupe and Dr. John Harper

**Time period covered by report:** May 9, 2005 – September 30, 2005

**Date of Report:** September 30, 2005

**Report prepared by:** Susan Saupe

**Project website address (if applicable):** [www.coastalaska.net](http://www.coastalaska.net)

**Work Performed:**

There were four project objectives proposed in the original proposal to be completed during the two-year project:

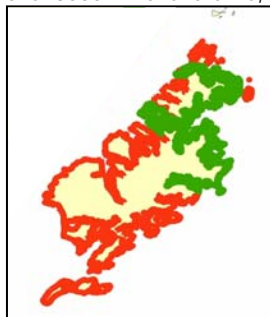
- (1) Collect high resolution, low-tide imagery of Kodiak Island Archipelago coastline,
- (2) Map shoreline features using the Alaska ShoreZone Protocol and making this data publicly accessible through data repositories and ideally through web-accessible (e.g., ArcIMS) sites.
- (3) Collect intertidal and shallow subtidal species data at selected sites to verify aerial videographic interpretation, and compile a regional species database.
- (4) Work with the EVOSTC and other organizations to build a multi-agency/organization database that incorporates the data collected to date.

During FY05, the first of the two-year project, objectives (1) and (3) were met by conducting two field programs simultaneously during low-tide series in May and June. The two field programs included:

- (A) Aerial surveys of the coastlines of Kodiak Island Archipelago, including Kodiak, Afognak, Shuyak, Sitkinak, Tugidak, Sitkiidak, Marmot, and many other smaller islands. These surveys were conducted using ShoreZone coastal habitat mapping standards which were developed in part through funding from the EVOS TC in 2003. The aerial surveys were conducted using a helicopter for most of the coastline. A fixed-wing aircraft was used to survey Marmot and Tugidik Islands, in part because of restrictions for flying near marine mammal haul-outs. Over
- (B) Vessel-based surveys to collect shore station data on intertidal and shallow subtidal assemblage and species data. Species-level data and taxonomic voucher collections were made for 113 sites throughout the Kodiak Island archipelago, sampling in a range of habitats and geographical areas of the islands.

The methods and timelines that were proposed in the original contract between Cook Inlet RCAC and NOAA (EVOS TC) were used as described for most of the coastline. Deviations from the original plan included increased field costs to our contractor for the aerial survey, vessel contract rates that were higher than proposed, and having to switch to a fixed-wing aircraft to survey Marmot and Tugidik Islands at higher altitude than originally proposed, due to concerns about seal and sea lion haul-outs. This has been described in the invoice submitted to NOAA.

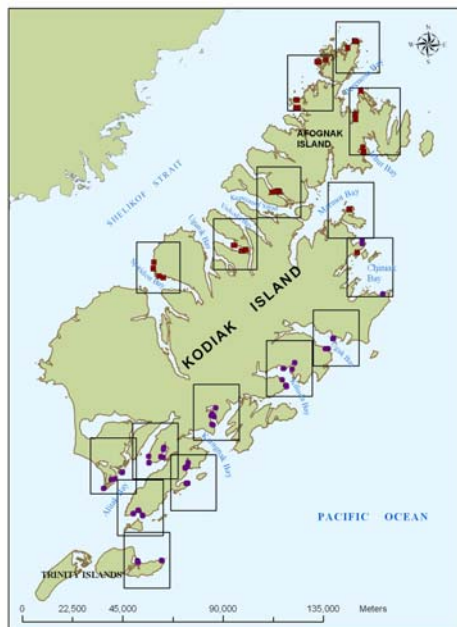
The aerial surveys were conducted by contractor Dr. John Harper at Coastal and Ocean Resources, Inc. (CORI) and his team on over 3500 km of shoreline, in effect, completing the pilot project for northern Kodiak Island that was initiated in 2002 (Figure 1).



**Figure 1. Areas surveyed in 2002 (green) and 2005 (red) along the Kodiak Island Archipelago.**

Attached is a flight survey report that shows the survey track lines for both surveys in May and June 2005 (attached pdf file titled 2005 Aerial Video Imaging Surveys, Kodiak, Island, 22-29 May & 21-24, 27 June 2002).

The vessel-based shore-station surveys took place at 113 sites throughout the Kodiak Island Archipelago during two low-tide series from 20-29 May and 18-27 June 2005 (Figure 2). A field report summarizing station location information is attached as the Word document titled " 2005 Kodiak National Wildlife Refuge, Kodiak Island, Afognak Island, Shuyak Island, & Trinity Islands Ground Station Survey, May 20-29 and June 20-27, 2005."



**Figure 2. Map of the Kodiak Coast showing the general locations of the stations surveyed between May 20-29th and June 20-27th, 2005. Each box represents a general location where a number of sites were surveyed during one tide. Detailed locations can be obtained from the attached ground station survey field report.**

#### Future Work:

One of the main objectives for FY06 is to map shoreline features using the Alaska ShoreZone Protocol and making this data publicly accessible through data repositories and ideally through web-accessible (e.g., ArcIMS) sites. This mapping of the survey images and information will take place during the 2005/2006 fall and winter. The primary data product of the ShoreZone mapping project is a geo-referenced database of biophysical shore-zone data. The shoreline is segmented into *alongshore units* or segments and into *across-shore components*. A database contains attributes on each unit and component; units may be either polygons, lines or points and are referenced through GIS. The shoreline features will be classified by geomorphologists and by biologists according to the Alaska ShoreZone Mapping Protocol.

The deliverables from the mapping component of the project will include:

- ArcView spatial coverage of units
- Access database of shoreline attributes

The shore-station database will also be developed during FY06 to include access to the thousands of digital images available from each site as well as species lists as assemblages associated with biobands for various habitat types throughout the Kodiak Island Archipelago.

We will continue to work with other organizations to build a multi-agency/organization database that incorporates the data collected to date. At this time, the ShoreZone projects completed in the western Gulf of Alaska for Cook Inlet, the Katmai and Aniakchak National Parks, Kodiak Island, and the outer Kenai Peninsula are all available via the web site at [www.coastalaska.net](http://www.coastalaska.net), which has been paid for and maintained through funds from the EVOS TC, Cook Inlet RCAC, and CORI. ShoreZone surveys conducted in southeastern Alaska by the National Marine Fisheries Service and The Nature Conservancy are being served on a separate NOAA-sponsored website. We will work with NOAA to coordinate the two datasets and try to get

the western Gulf of Alaska data also served on the NOAA-sponsored website. In addition, we will work with other entities who have an interest in this nearshore data to ensure that the data is accessible (e.g. the North Pacific Research Board's data dissemination project).

#### Coordination/Collaboration:

We attended a meeting in Juneau, Alaska in July to meet with various agencies that have been coordinating ShoreZone surveys and mapping for Southeastern Alaska. The lead agency for developing the Southeast Alaska website is NOAA and they have since expressed interest in incorporating our work in the western Gulf of Alaska (at [www.coastalaska.net](http://www.coastalaska.net)) into their newly developed web site. This would be an advantage in that the entire Gulf of Alaska ShoreZone dataset would be accessible from one web site. As well, by having an agency such as NOAA coordinating the web site, it increases the assurances that the data products would be continually available to the public.

We approached the Alaska Department of Natural Resources to obtain additional funds and support. ADNR, through their Coastal Impact Assistance Program, provided \$43,000.00 towards this project by expanding their existing contract with The Nature Conservancy (TNC). TNC was able to directly reimburse our contractor, Coastal and Ocean Resources, Inc., for aerial survey costs for a portion of the Kodiak Island 2005 surveys, which included personnel and helicopter costs.

For the shore-station work, personnel from the NMFS and the Oil Spill Recovery Institute also provided in-kind services as field personnel.

#### Community Involvement/TEK & Resource Management Applications:

We contacted the state parks department and were able to bring one of their personnel onboard a helicopter while surveying the Shuyak Island state park coastline. In addition, a National Marine Fisheries Service (NOAA NMFS) employee, Dr. Kate Wynn, participated in surveys that were tied to her existing aerial survey permits for Marmot and Tugidik Islands.

#### Information Transfer:

Two reports that summarize the locations of the aerial and vessel-based survey efforts in May and June 2005 were completed (attached). These are:

- CORI. 2005. Aerial Video Imaging Surveys, Kodiak, Island, 22-29 May & 21-24, 27 June 2002. Field Report prepared by Coastal and Ocean Resources, Inc. for Cook Inlet RCAC and the Exxon Valdez Oil Spill Trustee Council.
- Archipelago Marine Research, Ltd. 2005 Kodiak National Wildlife Refuge, Kodiak Island, Afognak Island, Shuyak Island, & Trinity Islands Ground Station Survey, May 20-29 and June 20-27, 2005

Electronic products that were provided by contractors in support of the project objectives include:

Full set of DVDs (10) with all digital images from still camera photography during the aerial surveys.

Full set of DVDs with all digital video from aerial surveys (22 DVDs from May 2005 survey and 24 DVDs from June 2005 survey).

Photo Archive Files (2 DVDs) for the shore-station surveys:

Kodiak Ground Stations May 2005

- Station Images: KDK\_05\_001 to KDK\_05\_052

Kodiak Ground Stations June 2005

- Station Images: KDK\_05\_053 to KDK\_05\_112

Mapping Files for the shore-station surveys (1 CD):

Kodiak Field Data 2005

- Database File (KodiakFieldStationDBJL15\_05\_DRFT)
- GIS Shape Files (Map Figures)
- Report (KodiakFieldDataRpt)

## Budget:

When we initially submitted the proposal for this project, we estimated at total cost of \$184.7K (with Trustee Agency GA is \$201.3K), for aerial and vessel surveys. A second year of the project included a proposed budget of 185.2 (with Trustee Agency GA is \$201.9). This summer we successfully conducted both the aerial and vessel surveys as we describe in the attached annual and associated field reports.

During the process of planning and conducting these surveys, the budget changed significantly for several reasons as explained below. These budget changes required us to seek additional funding sources and to allocate funds slightly differently than in the original proposed budget to you. The bulk of our project was still under "contractual" and it is only within this budget category that we shifted funds. For example, in our invoices to you we have higher costs invoiced for vessels than planned, but lower helicopter costs, although both were proposed under the "contractual" category.

Overall Project Costs

As mentioned earlier, we initially estimated a total project cost of \$184.7K. The total project ultimately has cost close to \$253K. This increase is due to several factors:

1. During the planning stage, it became clear that to truly reflect the geographic range of the Kodiak Island Archipelago, we needed to increase the vessel-based sampling program from one tide-series to two tide-series. This also matched closer to the two tide series planned for the aerial surveys. To cover the costs associated with the additional vessel-based shore-station sampling, we sought and received additional funds from both Cook Inlet RCAC and from the Alaska Department of Natural Resources' Coastal Impact Assistance Program. We received 20K from CIRCAC and 43K from ADNR to go towards the 2005 Kodiak ShoreZone field survey program. ADNR's fiscal year was coming to an end, and to expedite the transfer of funds, they provided the funds via their existing contract with The Nature Conservancy who then contracted directly with Coastal and Ocean Resources, Inc. This 43K paid from ADNR to TNC to CORI freed up 43K of our aerial survey budget that would have originally gone to CORI so we could cover the costs associated with the shore-station data collections.
2. For the vessel-based shore-station surveys, we began discussions with the owner of the vessel *Big Valley*, who had current federal NOAA vessel contracts in place for work in the Kodiak area. Unfortunately, the *Big Valley* was lost along with 5 of its crew, including Captain and Owner Gary Edwards, during the Bering Sea tanner crab season last fall. After this tragedy, we went back to the new owner of the *Kittiwake II* and were trying to work out a schedule that would work when the vessel caught on fire at the Homer boat harbor and was considered a total loss. At this time, we were into late February 2005, with a planned field program beginning in May. So, we quickly advertised an RFP for a vessel that would meet our sampling needs and advertised in the Homer and Kodiak newspapers. We received 9 responses. All vessels went through a formal evaluation process and ranked according to the criteria listed in the RFO with the evaluations weighted for cost, vessel capabilities, and crew experience. Of these vessels, the vessel *Island C* was ranked the highest when all factors were weighted appropriately and came in at a rate of \$3900.00 per day, significantly higher than the day rate originally planned for.
3. We estimated helicopter rates based on past costs associated with ShoreZone projects. However, for the 2005 season in the Kodiak area, the only helicopter that was available was a jet long-ranger, which uses more fuel than the usual Bell 206 helicopter, which significantly upped the day rate. Some of these costs were covered under the ADNR contribution.

Ultimately, we were able to match the EVOS TC funds with 43K from ADNR and 16K in direct funding from Cook Inlet RCAC. In addition, in-kind services were provided by the National Marine Fisheries Service and the Oil Spill Recovery Institute for one full-time field person each during both ten-day vessel-based surveys. Cook Inlet RCAC also contributed in-kind services for personnel to plan and lead the vessel-based surveys. Finally, the goals of developing a database for accessing shore-station data via a database and the web and linking these data to the ShoreZone mapping data are shared by multiple projects. To this end, we have been able to match the EVOS TC Kodiak shore-station survey funds with funds from the Kenai Peninsula Borough to develop the database that will work for both areas of interest, as well as future Shore-station data from other areas in the Gulf of Alaska. Differences between the proposed budget and the invoiced budget for FY05 include:

- A shift *within* the "contractual" line-item from helicopter survey costs to vessel-based survey costs due to the contribution by ADNR towards the helicopter surveys.

- The budget line for "personnel," which included 0.5 months of Susan Saupe's time (salary plus benefits), was switched to cover contractual personnel costs. Cook Inlet RCAC paid for 100% of Ms. Saupe's salary towards this project, which allowed the "personnel" funds to be directed towards taxonomic expertise during the shore-station work.
- The total costs to our contractor, CORI, exceeded what was submitted in the original budget. At this time, Cook Inlet RCAC is reimbursing CORI for only those costs agreed upon under the contractual category in our NOAA/EVOS TC budget. However, we are seeking help in obtaining funds to cover all expenses incurred during the field program.
- Finally, the match categories have increased due to contributions from ADNR, Cook Inlet RCAC, and the Kenai Peninsula Borough towards overall project goals. This does not reduce the amount originally proposed to the EVOS TC and agreed on in the Cook Inlet RCAC budget