APPLICATION OF SHOREZONE FOR NATURAL RESOURCE MANAGEMENT: 2 CASE STUDIES

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OBJECTIVES:
1) REMOVING MARINE DEBRIS FROM HEAVILY IMPACTED SHORES
2) WORKING WITH LOCAL SCHOOLS AND COMMUNITIES ON MARINE DEBRIS ISSUES,
3) MONITORING DEBRIS ACCUMULATION WITH NOAA’S NATIONAL MARINE DEBRIS PROTOCOLS,
4) SYNTHESIZING THE LITERATURE AND DATA ON MARINE DEBRIS MICROPLASTIC EFFECTS ON SUBSISTENCE FOOD SOURCES.

PARTNERS:
NATIONAL PARK SERVICE, NORTHWEST ARCTIC BOROUGH, KOTZEBUE IRA, CITY OF KOTZEBUE, SCHOOLS AND COMMUNITIES OF SHISHmaref, WALES, AND DEERING, KOTZEBUE, Kivalina, Kiana, and Ambler, Center for Alaskan Coastal Studies, Alaska Teen Media Institute, Alaska Geographic Society.
WHERE DO YOU TARGET DEBRIS?

Location: Seward Peninsula, Alaska (Yellow Boundary Bering Land Bridge National Preserve)
EROSION AREAS (1950 – 2003)

Data from ARCN DSAS analysis (Manley, Parrish, and Lestak 2010)
SHOREZONE DEBRIS INUNDATION LINES

Data from ShoreZone inundation attribute (ShoreZone 2011)
HIGH DEPOSITION ENVIRONMENT
TRADITIONAL ECOLOGICAL KNOWLEDGE OF CURRENTS

Indigenous Knowledge & Use of Bering Strait Region Ocean Currents (Kawerak 2014)
ALIGNMENT OF TEK AND DEPOSITION MODEL
ALIGNMENT OF TEK AND DEPOSITION MODEL
LOWER COOK INLET ROCKY INTERTIDAL SURVEY

OBJECTIVES:

1) EXAMINE VARIABILITY IN HABITAT AND ABUNDANCE OF INVERTEBRATE COMMUNITIES AND QUANTIFY VARIOUS HABITAT STRATA IN LOWER COOK INLET.

2) CONDUCT SUBTIDAL SAMPLING COVERING INTERTIDAL ROCK RAMPS AND REEFS FOR VEGETATION AND INVERTEBRATE BIOTA INCLUDING: TUXEDNI BAY TO KAMISHAK BAYS, NORDYKE ISLAND AND ST. AUGUSTINE (INCLUSIVE).

3) INCORPORATE THE EXISTING SPATIAL HABITAT DATA WITH THE NEW INFORMATION FROM BIOLOGICAL MONITORING TO CREATE DIGITAL AND WEB BASED SYNOPTIC MAPS TO BETTER PORTRAY ECOLOGICAL INFORMATION TO SUPPORT RESOURCE MANAGEMENT DECISIONS.

PARTNERS:

NATIONAL PARK SERVICE, COOK INLET REGIONAL CITIZENS ADVISORY COUNCIL, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, UNIVERSITY OF ALASKA FAIRBANKS, AND THE BUREAU OF OCEAN ENERGY MANAGEMENT.
LOWER COOK INLET ROCKY INTERTIDAL SURVEY

Sites were selected based on two primary considerations:

- Give the most complete geographic coverage of western Lower Cook Inlet possible within the constraints of the project.
- Provide sampling recommendations for a representative range of rocky habitats.
The project area was constrained between the south side of Tuxedni Bay, and the northern side of Chenik Head.

Based on prior sampling and a May overflight, it was determined that the sites along the most southern Kamishak Bay shorelines could not realistically be sampled by boat.
The Western Cook Inlet ShoreZone habitat dataset (BC Class), was used in ArcGIS to select rocky or mixed rock and gravel shorelines (Classes 1-10).
A geoprocessing tool was applied to generate spatially balanced random points within the shoreline segments.

POTENTIAL SITE DETERMINATION
The June tidal cycle dictated that no more than six sites could be sampled during the field project.
Where a site was within 5 miles of another site, only one site was selected by random draw and the other discarded.

All regions of the study area must be represented.

If a site could not be surveyed in the field, the nearest sampleable location would be surveyed instead.
Onshore swells precluded landing the boats onshore at the random site on Augustine Island. The site was moved to the nearest sampleable rocky habitat.
Shipboard maps with ShoreZone Imagery, NOAA charts, and Aerial IR imagery were used onboard for daily planning of site logistics including site approach, layout, and potential extent expected.
BC CLASS 21

Substrate: Sediment
Sediment: Gravel
Width: Wide (>30m)

Slope: Flat (<5°)
Coastal Class: Gravel flat, Wide
BC CLASS 21 FROM THE GROUND
SHOREZONE IMAGE OF SITE 6
SHOREZONE IMAGE OVERLAID WITH RTK TOPOGRAPHY
THANK YOU

QUESTIONS?

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