



BEST-BSIERP *Bering Sea* PROJECT

UNDERSTANDING ECOSYSTEM PROCESSES IN THE BERING SEA 2007–2013

Subsistence Food Comes from a Vast Area!

THE BIG PICTURE OF PRODUCTION

Subsistence hunters and fishers are drawing on a vast area of the ocean. Much attention has been given to subsistence use areas, where people hunt and fish. We also looked at the areas of the ocean that help produce those fish and animals. We called this the “calorie-shed,” the area that contributes to the food that ends up on people’s plates. Using subsistence harvest records to identify important species, we then used biological data to establish how far those species range from the community or area where they are harvested. We did this for Togiak (Figure 1) and Savoonga (Figure 2), using three species for each village. It turns out that the areas are huge!

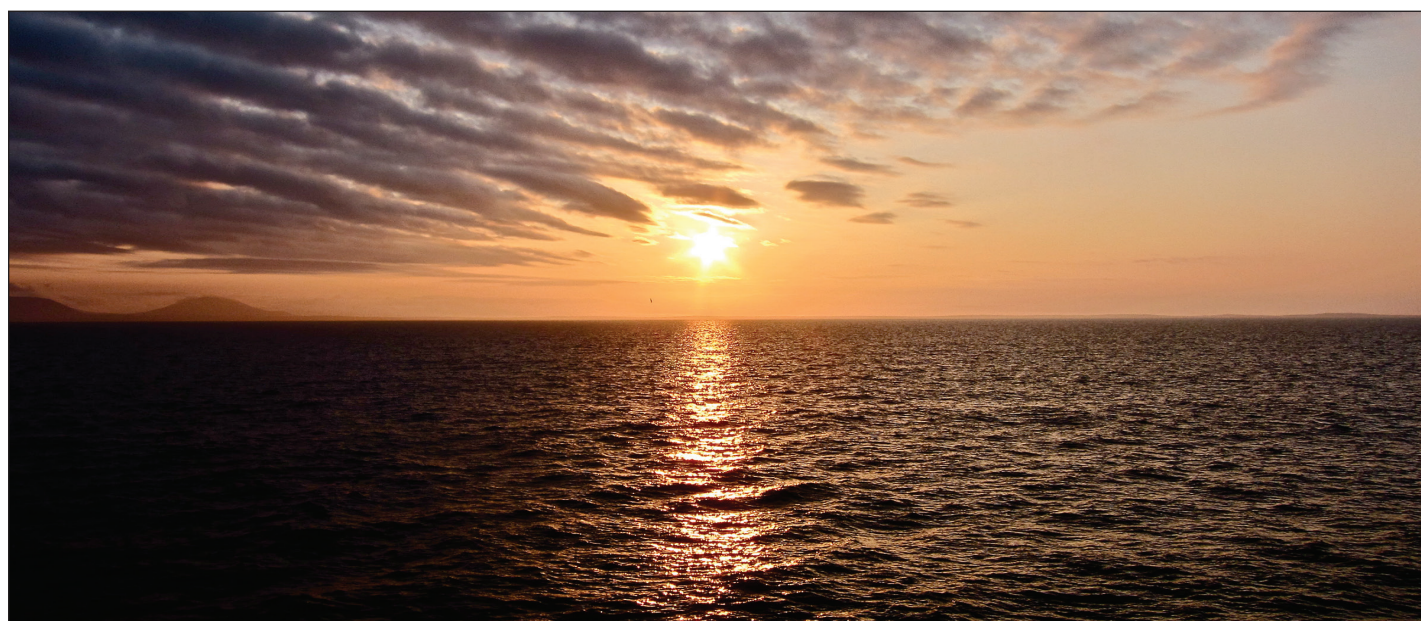
How We Did It

We began with subsistence harvest records, which told us the species that have the largest harvest by weight. Then we looked at the biological data to identify the species for which good distribution and range data are available. That gave us good information about three important subsistence species in each community. We also had to be specific about the location of interest. For example, when showing the range of the salmon that are harvested in Togiak, we did not want to include the full range of all salmon, but only the range of

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The Big Picture

An issue of great interest to researchers in the Bering Sea Project is how the ecosystem affects people. Analysis of subsistence harvests tells us a great deal about direct human interactions with the ecosystem. Looking at “calorie-sheds,” areas of the ocean that produce fish and animals sought for food, gives us another way of understanding how the ecosystem matters to people. In short, coastal residents have a great deal at stake when it comes to ecosystem well-being. This interest extends across the entire region, not just in the areas where people travel, hunt, and fish. Calorie-sheds give us another way of considering how changes in the ecosystem may affect the people who are part of that ecosystem.

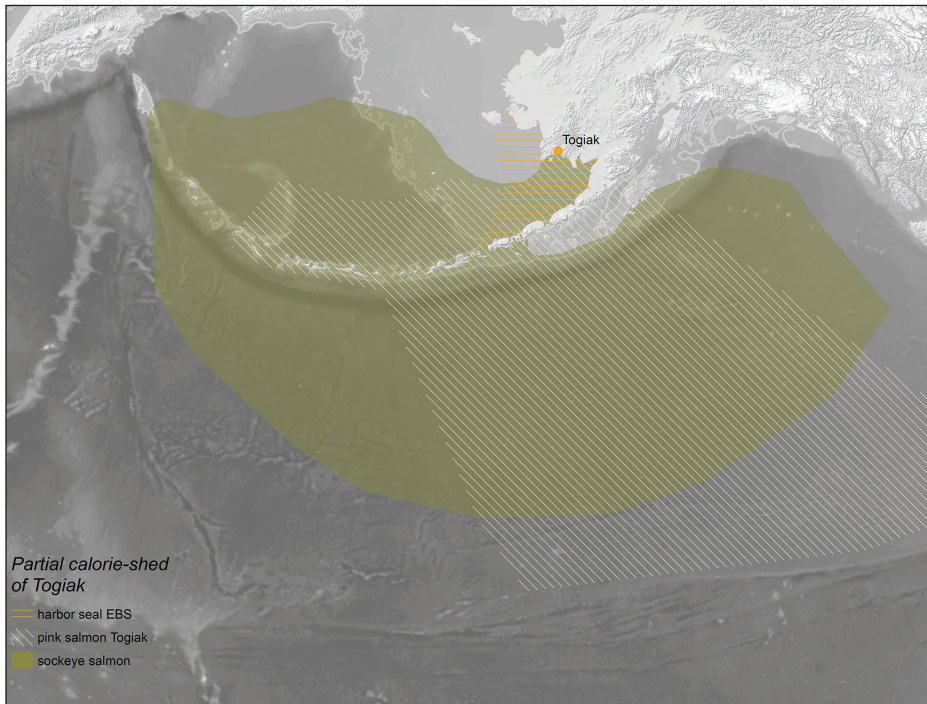


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SUBSISTENCE HARVEST AND LTK ECOSYSTEM PERSPECTIVE

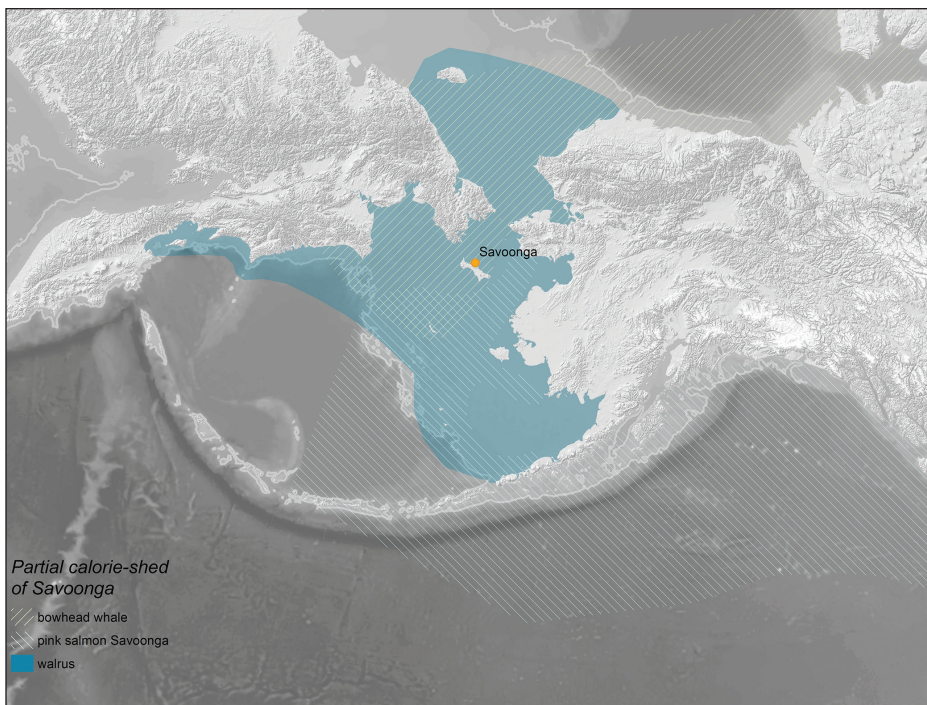
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Fig. 1



Calorie-shed for Togiak, based on the distribution of pink salmon, sockeye salmon, and harbor seal.

Fig. 2



Calorie-shed for Savoonga, based on the distribution of bowhead whales, Pacific walrus, and pink salmon.

salmon that return to Togiak, or at least to the Bristol Bay region. Note, too, that these “calorie-sheds” only include the species harvested, not the animals and plants farther down the food web. So, in fact, these are minimum areas.

Why We Did It

The calorie-shed idea came from wondering about the full geographic extent of people’s interactions with the Bering Sea ecosystem. Subsistence use areas show where people go, but there is more to their use of the ecosystem than that. By showing how much of the ecosystem they draw on, we can also show why an individual community might be concerned about what is happening far away. If those distant activities affect the fish, birds, or marine mammals that the community relies on, then they would clearly be interested in what was taking place. In the future, it may also be possible to look at changes in the calorie-shed in light of environmental change, and better understand the implications of change for subsistence communities.

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