

3-3. Feeding Habits and Trophic Interaction (Poster-21)

## **Genetic Techniques Provide Evidence of Chinook Salmon (*Oncorhynchus tshawytscha*) Feeding on Pollock Offal**

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Declining runs of Chinook salmon in western Alaska have focused interest on the ocean condition and food habits of Chinook salmon in the Bering Sea. Although there was no winter BASIS sampling, Observer sampling by the U.S. North Pacific Groundfish Observer Program (NOAA Fisheries) provided stomach samples of Chinook salmon caught during winter. Examination of the stomach contents revealed individual pieces of skin, bones, and fins belonging to large bodied fish. The presence of these isolated body parts suggest that Chinook salmon were feeding on fish offal. To confirm the species identification of the fish parts consumed by Chinook salmon, we used genetic techniques to match DNA sequences of the samples to known sequences of fish prey species of Chinook salmon. Novel mitochondrial DNA (mtDNA) primers were designed to PCR-amplify a 174 base pair (bp) long section of the Cytochrome oxidase subunit I (COI) gene, which was sequenced and compared with known sequences in the GenBank database. Typically, much longer sections of DNA are used for species identification (~700 bp), but the physical and chemical degradation in our samples by the fish's digestion process meant long sections of DNA could not be amplified. Nevertheless, our short bp fragment was sufficient to allow positive species identification. Of the 17 stomach samples selected for analysis, 15 samples were sequenced, 11 of those yielded usable sequences, and all were positively identified as walleye pollock. Our results clearly demonstrate the utility of a short COI sequence for species identification of Chinook salmon stomach contents that might otherwise be unidentifiable due state of digestion, or because the salmon consumed isolated body parts (offal) rather than the whole fish. These results suggest that walleye pollock offal supplements the diet of Chinook salmon during winter.