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2011 Field Season Update

In 2011, our team was in Cumberland Sound because locals from Pangnirtung had regularly seen killer whales in recent years. Although the team did not see killer whales, they were able to study other whales in the sound. They are very grateful to the community members who helped them, and look forward to returning.

We received samples from another dead killer whale this year. Part of the jaw from a whale near Coral Harbour was shipped to Winnipeg so we could study it. Many thanks to Noah Kadlak, Jimmy Kennedy and others who helped recover those very smelly samples. We have also requested a sample from a whale found in the Azores in 2011 so we can see if it is related to Arctic killer whales. It could be related because a whale that we tagged in Admiralty Inlet in 2009 traveled to the Azores.

In past issues of this newsletter, we've talked about how much we can learn by studying whale teeth. We devote this issue to tooth research conducted by Cory Matthews, a PhD student from the University of Manitoba.



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Killer whale teeth.

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Do killer whales need dentists? The animal found in Repulse Bay did. This female had many cavities and some of her teeth were worn down to the gum line.

Learning from teeth

Humans and most mammals grow two sets of teeth: baby teeth and adult teeth. Killer whales have the same teeth throughout their lives. When they are young, the hard part of the tooth is thin and the centre is filled with soft material. As they age, a new layer is added to the interior of the tooth

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Micro-drilling

To take a sample of each growth layer in a whale's tooth, a very small drill grinds out a small piece that can be analyzed.

We also study whale teeth to learn what they eat and where they travel. We can do this because the chemical elements in whales' food, such as nitrogen and carbon, are deposited in their teeth as they grow. Different prey types have unique chemical signatures, so as killer whales move between feeding areas, the chemicals deposited in their teeth change. This means tooth layers are a record of each animal's diet and movements during its life.

So far, we have measured nitrogen and carbon in the teeth of five Arctic killer whales. We have learned that one killer whale probably fed on bowhead whales, while the other four killer whales likely fed on narwhal and beluga whales. We also learned that these killer whales probably fed at lower latitudes in the mid-North Atlantic, likely during the winter.



each year. We can determine a whale's age by counting these annual growth layers. To count the layers, the tooth is cut down the middle and then soaked in acid to make the lines easier to see. Researchers in British Columbia have determined that killer whales live about 30 to 50 years. When we counted the growth layers in the tooth from the killer whale found in Repulse Bay in 2009, we learned that she was an older whale. We are now taking the same steps to find out how old the killer whale found near Coral Harbour in 2011 was.



Photo by Andy Foote

Tooth wear and feeding

Prey species can wear down teeth in different ways, so you can guess what a whale is eating just by looking at its teeth. Shark- and fish-eating killer whales have teeth that are more worn down than killer whales that eat other whales and seals.



Thank you for your reports in 2011

In the summer of 2011, we received many killer whale reports from northerners, including reports from the central Arctic near Taloyoak - Cambridge Bay - Kugluktuk. We still want to learn more about the killer whales in that area, so if you saw whales, took photos of them or know someone who did, please contact us. Each year, more people report killer whales and send us photos, and we are very thankful to everyone who shared this information with us. This year, we also received reports from Repulse Bay, Mackenzie Delta, Igloolik, Kugluktuk, Pond Inlet, Coral Harbour, Rankin Inlet, Admiralty Inlet, Cambridge Bay, Churchill, Roes Welcome Sound, and Clyde River. Because killer whales travel over such large areas, we could not do this research without help from northern communities.

Killer whales can have a big impact on other marine mammal populations, which makes this research very important. Thank you for your help.

