

How (and why) Do Scientists Monitor Seabirds?

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Why should we care about seabirds?



Seabirds can tell us about the health of our environment!

- Like humans, seabirds depend on a healthy environment to survive.
- Changes in the environment due to climate will likely affect seabirds first.
- By monitoring the health of seabird populations we can learn about the health of the environment as well.



Why else should we care about seabirds?

Seabirds provide food for subsistence cultures

- For thousands of years people around the world have depended on seabirds as an important part of their diet.
- Harvest of seabirds and their eggs is an important cultural activity.



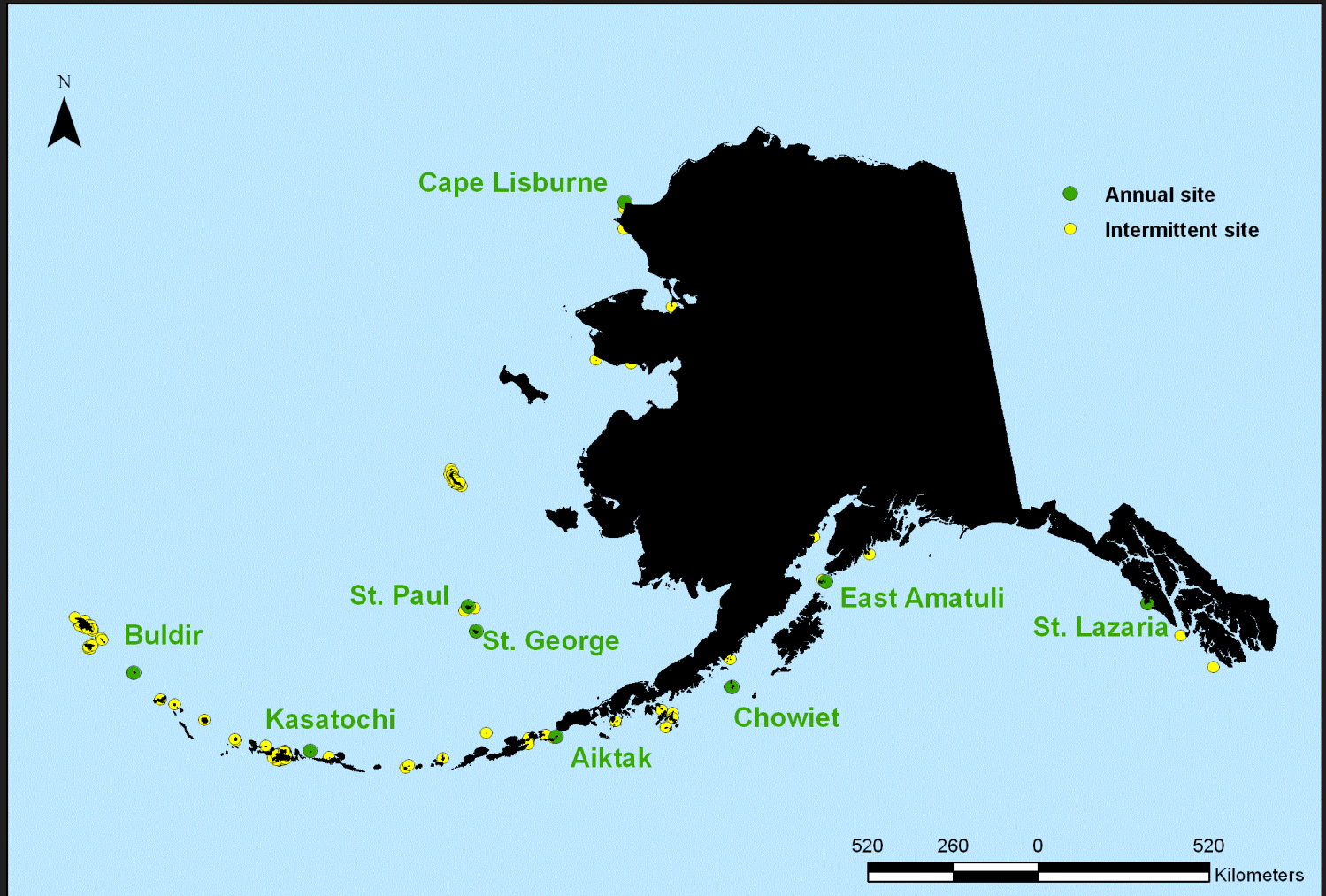
Who monitors seabirds?



There are many scientists monitoring seabirds throughout the world. Seabird researchers come from many different backgrounds including:

- Universities
- Federal, state and tribal governments
- Non-profit agencies

Where in Alaska are seabirds monitored?



St. Lazaria Island



Chowiet Island



Where do seabird scientists live when they're working?



How do scientists get to the seabird colonies?



What about seabirds do scientists monitor?



Scientists monitor several aspects of seabird life

- Population size and trends
- Productivity
- Adult and chick diets
- Adult survival



How are seabird populations monitored?



Ideally we would count every single bird every year, but some colonies are way too big for that.

Instead, we count a small group of birds on each colony, but we go back and count these groups year after year.

How do you count them?



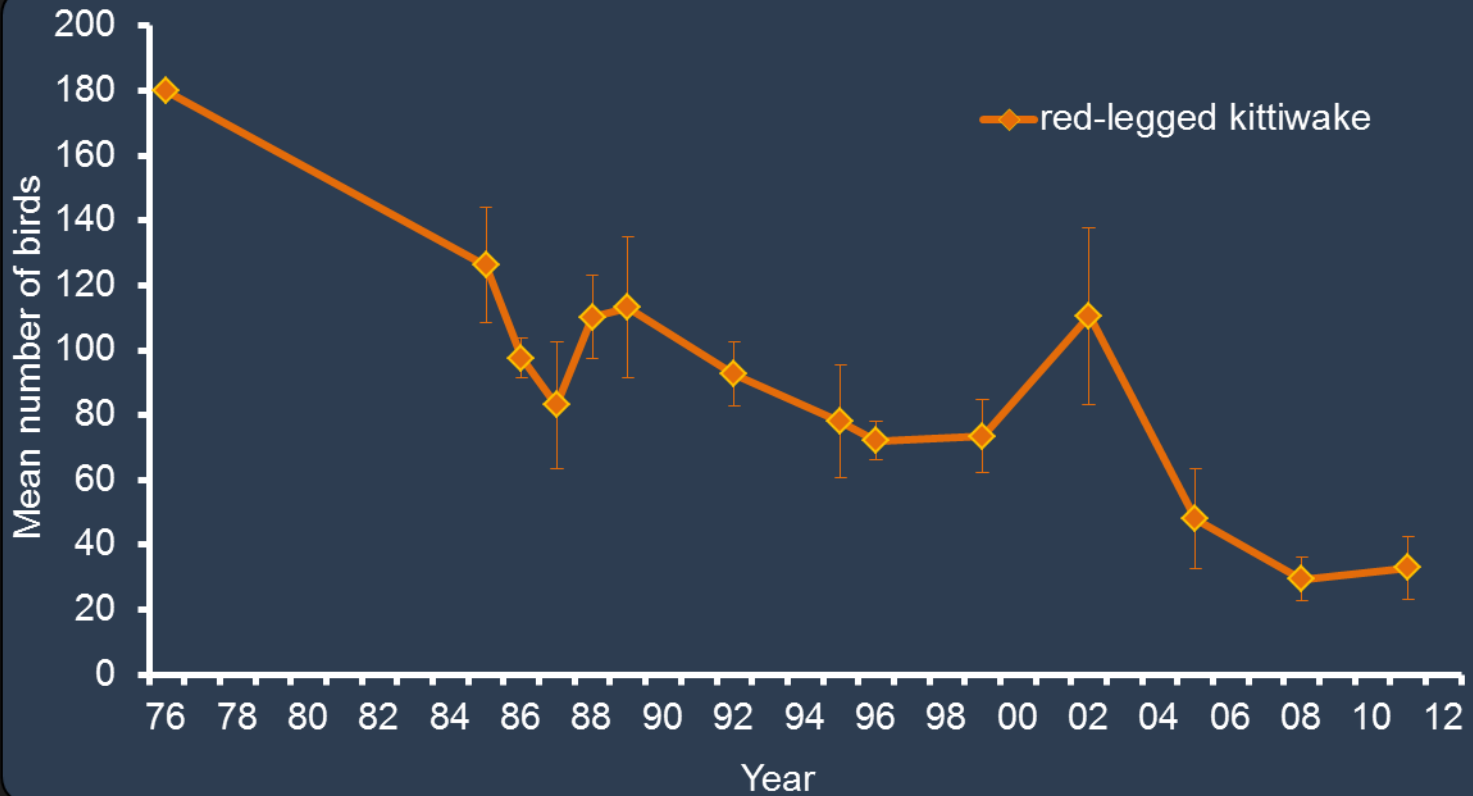
How do you count them?



38 COMU, 24 TBMU

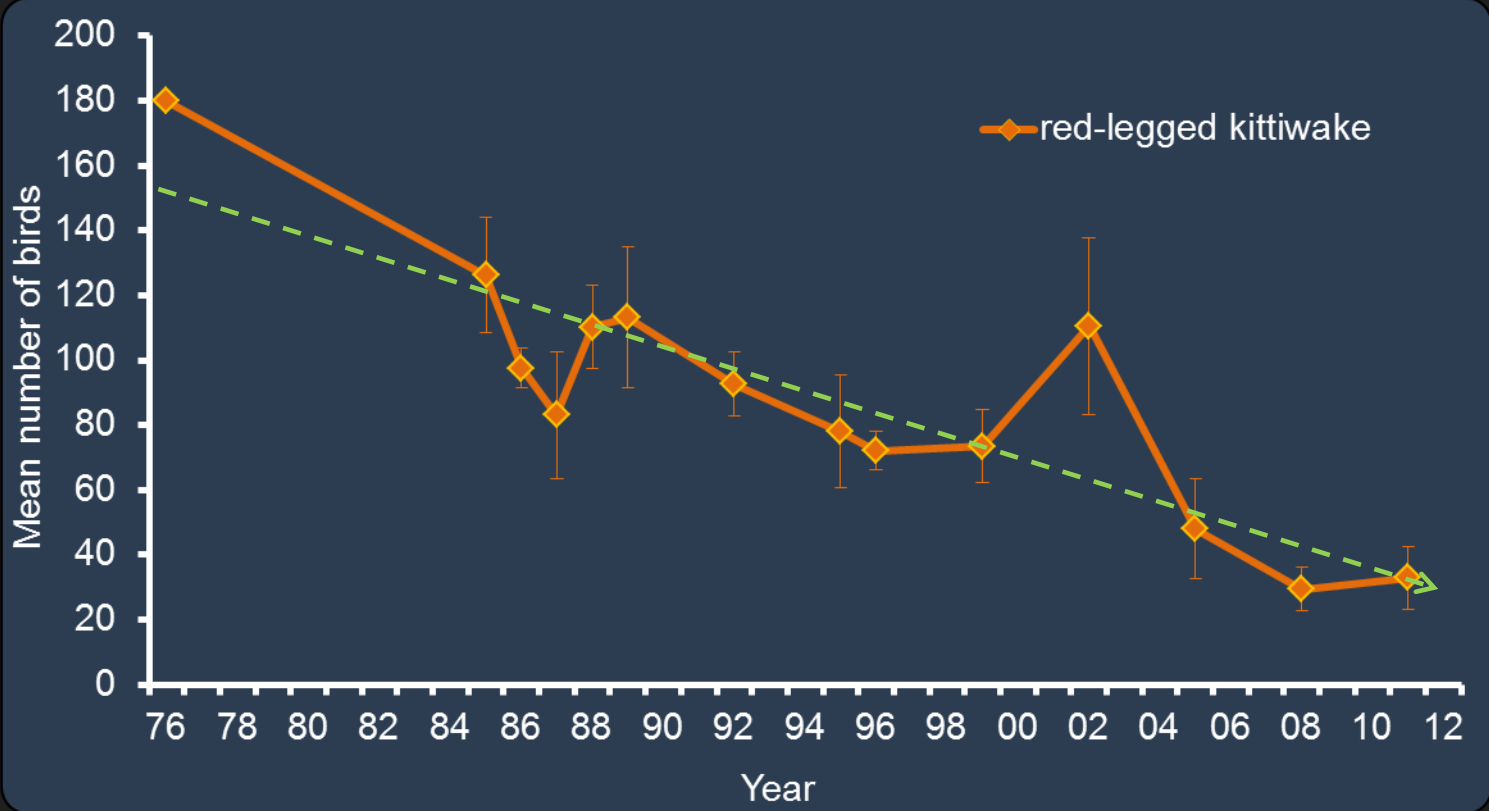


What do you do with the counts?



To detect changes in seabird populations you have to count for many years. Once many counts have been made, scientists can look at trends in the population. What do you think is happening here?

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How is seabird productivity monitored? And what is productivity anyway?



Productivity is the way we measure how successful seabirds are at raising chicks each year

We measure productivity as the number of chicks that are fledged per nest

OK, so how do you do it?



First we count up all the eggs in all of the nests we're monitoring. For murre it's easy! Each nest only has 1 egg.



Next, we monitor each nest every few days to see how many eggs hatch.



Finally, we count the number of chicks that successfully fledge!



OK, so how do you do it?



So, for this example we have ten eggs, and because murre's only lay one egg per nest, we have ten nests.



Next, we have five eggs successfully hatch, and two chicks survive to fledge.



Thus, 10 nests produced 2 fledglings which equals a total of 0.2 fledglings per nest.



Monitoring productivity seems like a lot of work!



Monitoring productivity takes a lot of hard work, but it is worth the effort!

Because the success of a nest depends in part on how well the chicks are fed, seabird productivity can tell us about the health of the ocean.

How are seabird diets monitored?



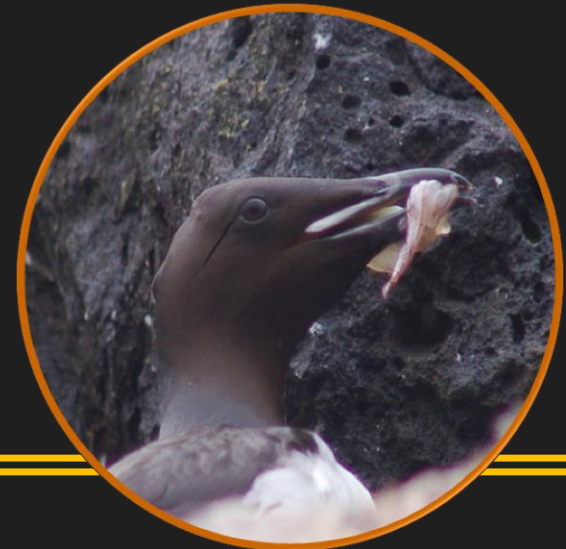
Along with productivity, seabird diets can tell us a lot about the health of the ocean environment

Scientists collect samples of seabird diets from chicks and adults to understand what fish and plankton are available in the ocean

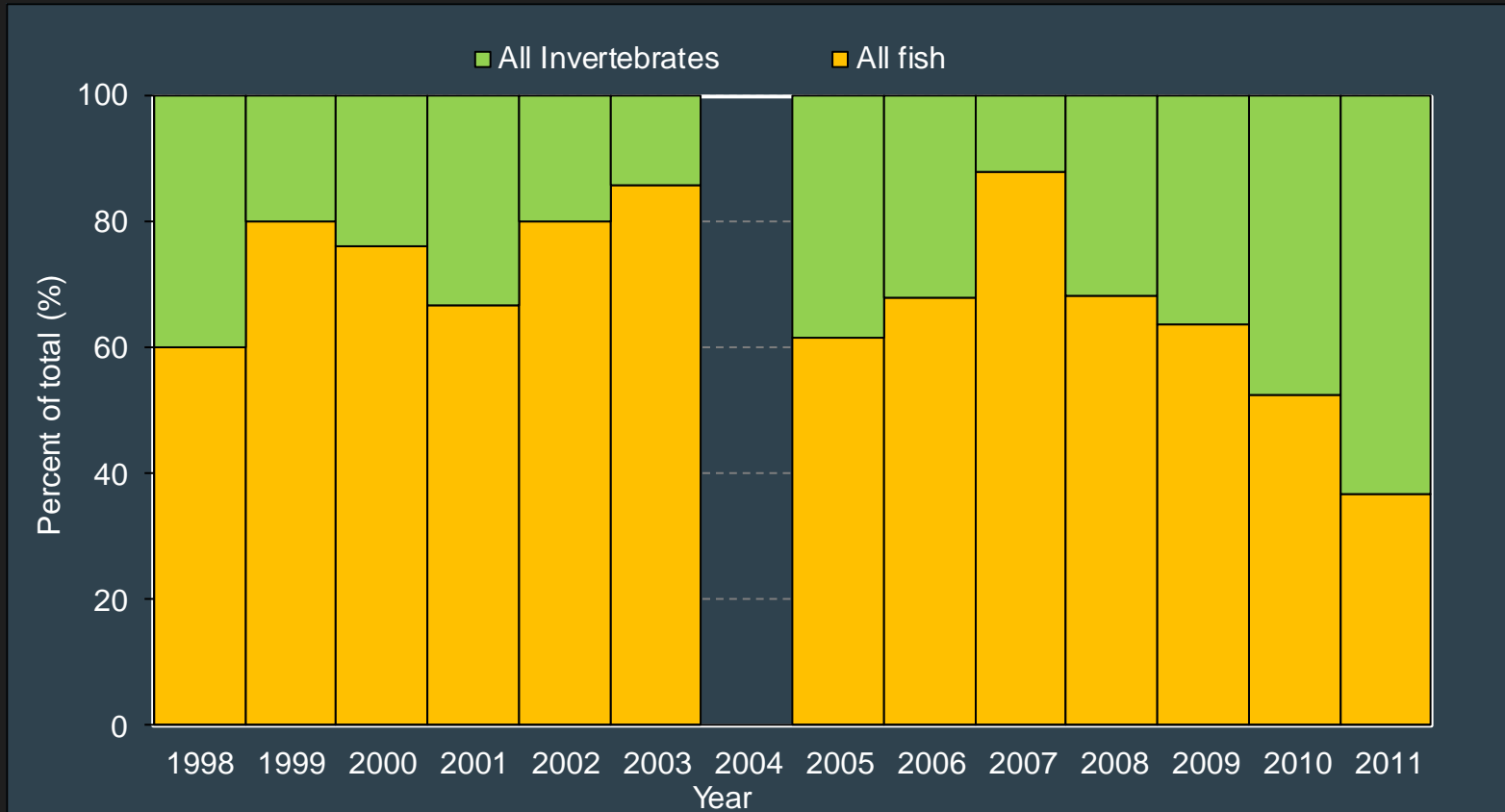
How are diet samples collected?



Getting diet samples from different species of birds often requires different methods.

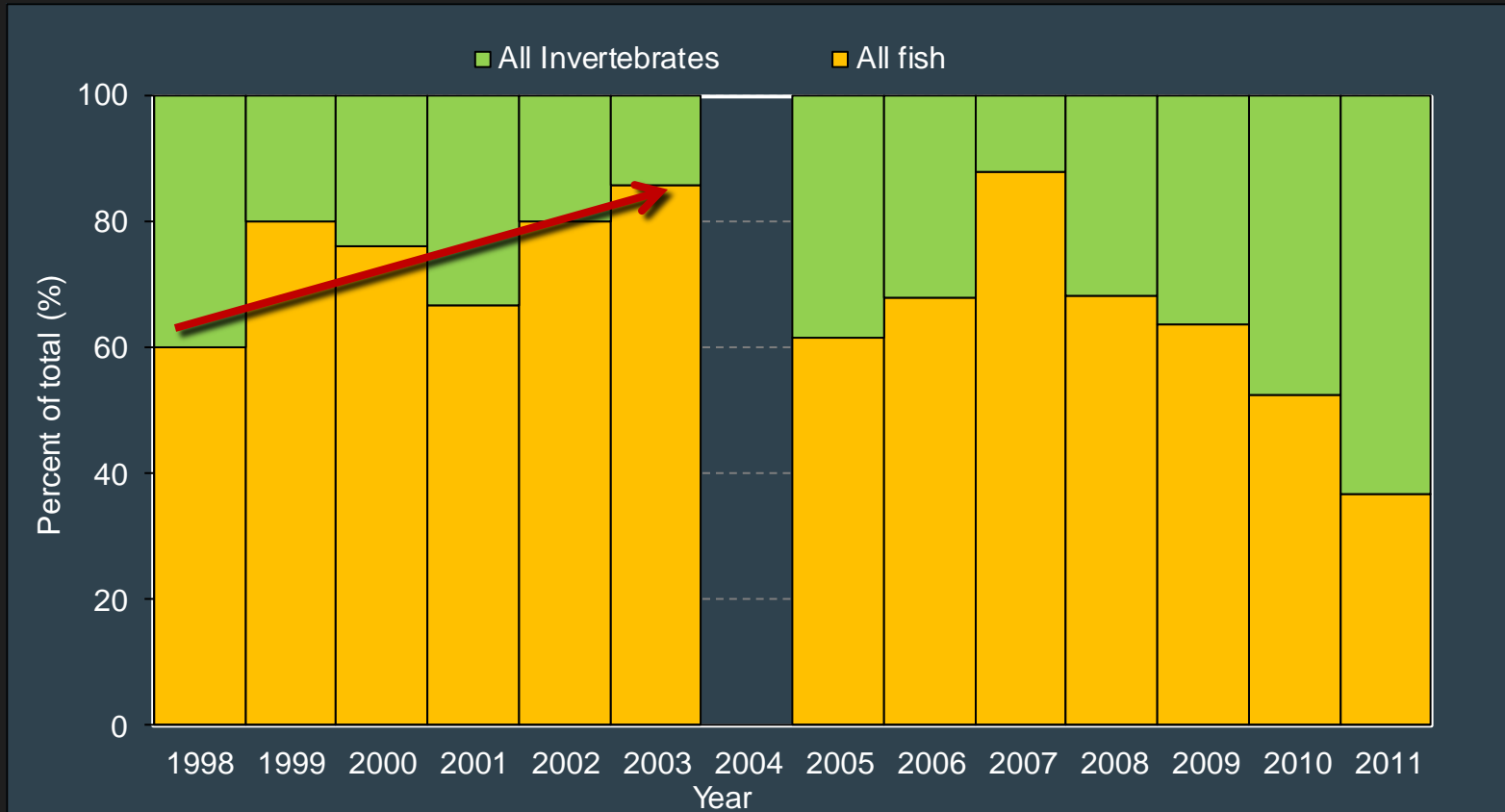


What can the diet samples tell you?



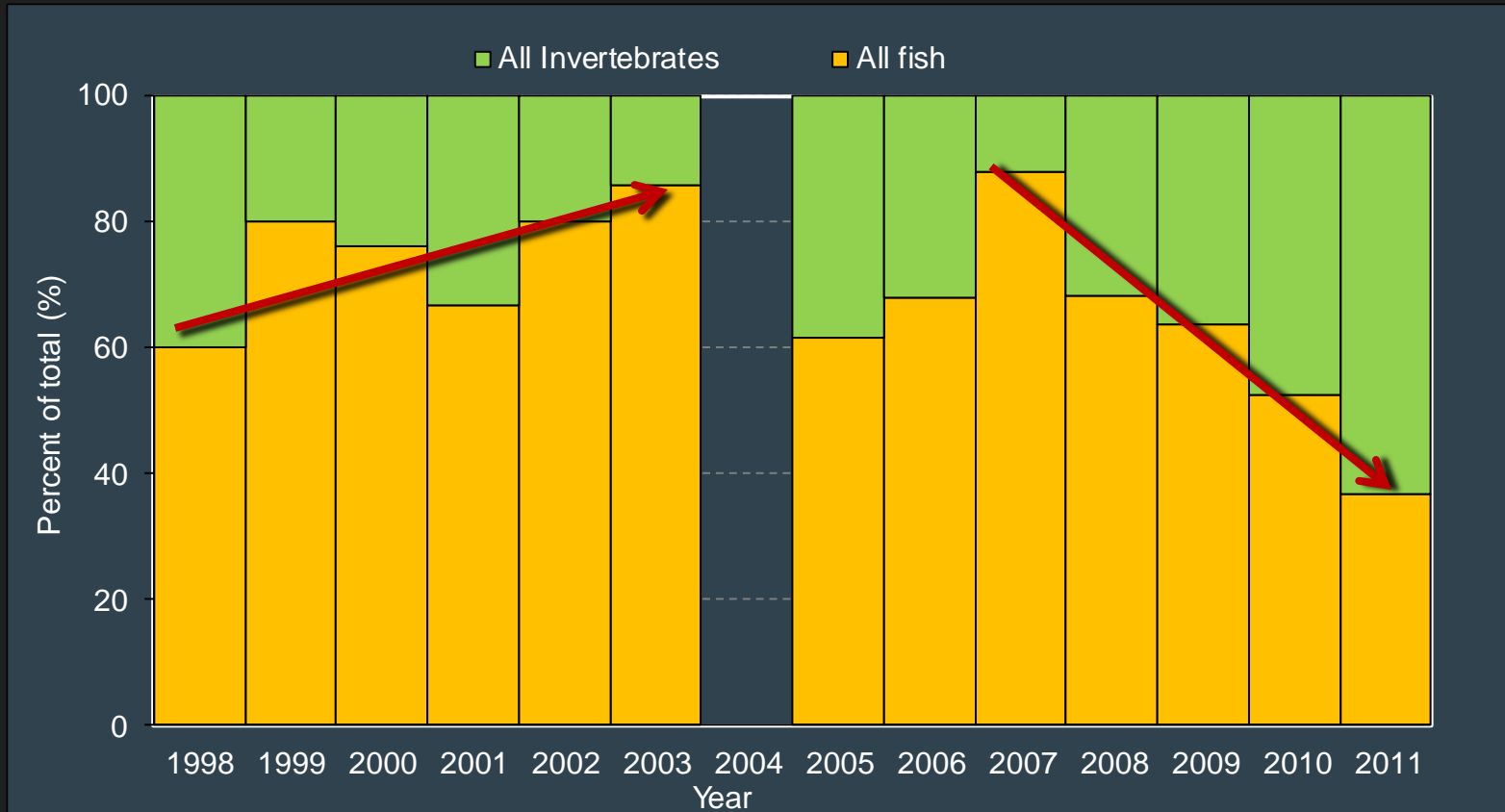
Red-legged kittiwakes eat both fish and invertebrates, depending on what is available to them in the ocean. How has the diet of red-legged kittiwakes changes over time?

What can the diet samples tell you?



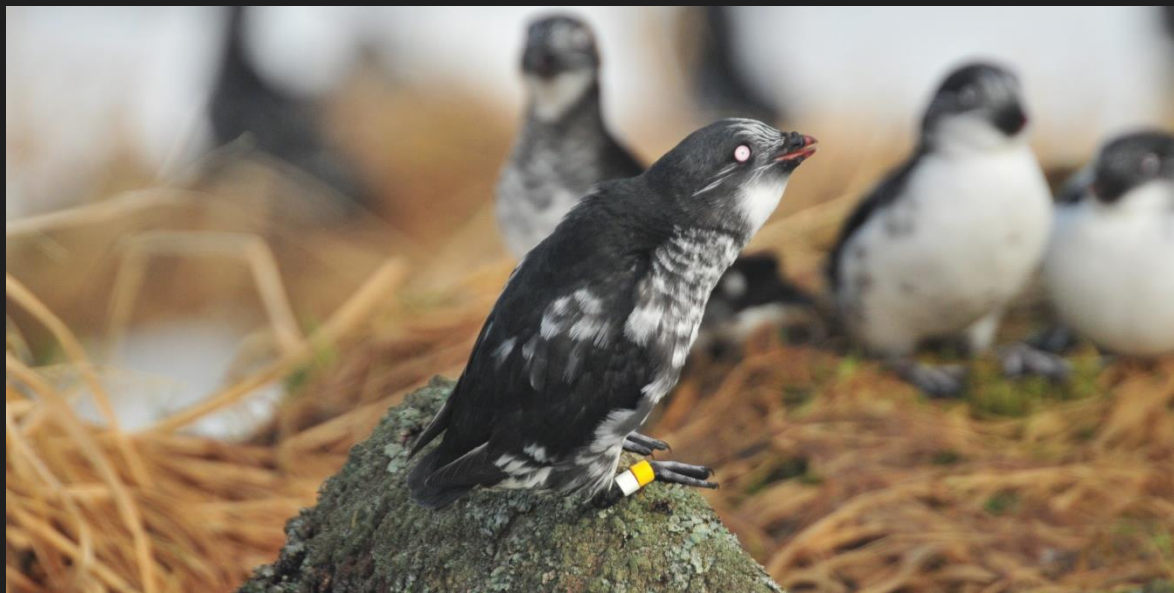
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How do you monitor adult seabird survival?



Most seabirds live for a very long time. Pelagic cormorants can live up to 18 years old and common murrens can live to 26 years old.

We monitor survival by banding birds and then relocating the birds year after year.

How do you get the bands on?



This is the fun part!

What does survival monitoring tell you?



Survival data is very important for understanding bird populations. When we combine population counts, productivity estimates, and survival data we can create mathematical models that can predict how the population will increase or decrease in the future.

What does it all mean?



- Climate change will have a profound impact on marine ecosystems.
- Seabirds are at the top of the food chain so they will be affected by changes throughout the system.
- Monitoring seabirds will help us track climate-related changes in the environment.



Questions?

Thanks to all the great photographers
who have allowed their images to be
used in this presentation!

Ian Jones!



Ronan
Dugan!



Matt
Klosterman!

Greg
Thomson!



...and many more!