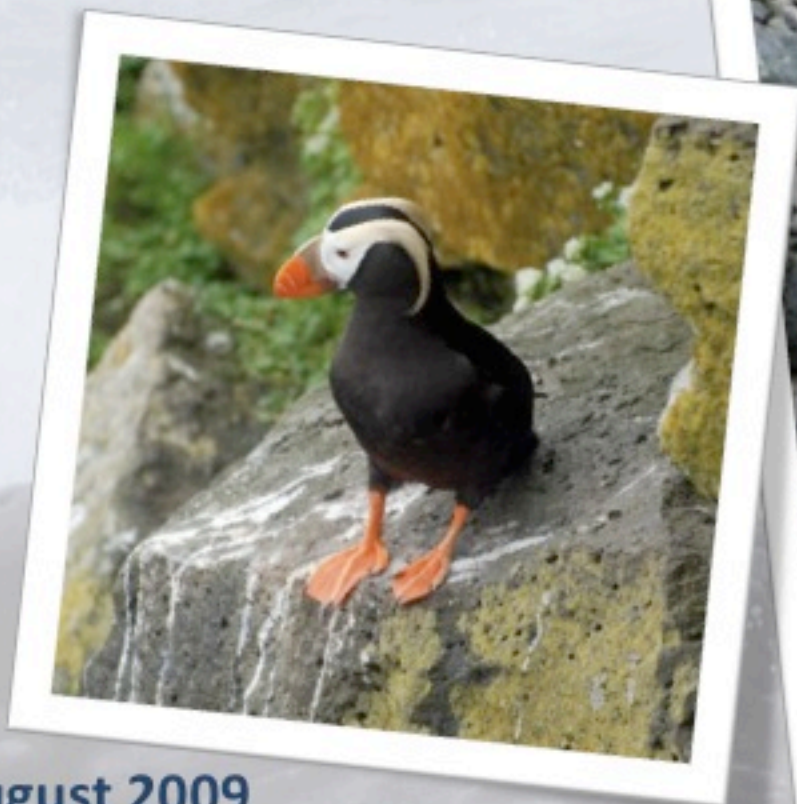


Live from IPY!

with Tom Harten and the Sea
Bird Ecology Team in the
Pribilof Islands, Bering Sea



13 August 2009

3:30 pm Alaska Time (1:30 pm HST, 4:30 pm
PDT, 5:30 pm MDT, 6:30 pm CDT, 7:30 pm EDT)



Welcome to HorizonWimba



Arctic Research Consortium of the United States

List of all participants

Raise your hand to ask a question

Return to the lobby or exit

Slides will be shown here

If using VOIP, press here to talk

'Chat' with one person or the entire group

The screenshot shows a Wimba webinar interface. At the top, a slide reads "Welcome to HorizonWimba" with the ARCUS logo and "Arctic Research Consortium of the United States" below it. A toolbar contains a "TALK" button, microphone, video, and other icons. A chat window at the bottom left shows a conversation. A "People" list on the right shows three participants: Janet_Warburton, ronnie, and tina. A navigation bar at the bottom right includes "Exit - Lobby - Help" options. Red circles highlight the "TALK" button, the chat window, the "People" list, and the "Exit - Lobby - Help" options. Arrows point from text labels to these elements.

Please note: Today's event will be recorded and archived at www.polartrec.com.

Roll Call

When called, please state your:

- ✓ Name
- ✓ School / Classroom
- ✓ The number of students participating from your classroom today



International Polar Year (IPY)

The International Polar Year (2007-2009) is an exciting scientific campaign focusing on the world's polar regions!

IPY is a time for discovery, science, learning, and awareness about the polar regions with activities for youth, scientists, and the public.

www.ipy.org



What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers in authentic polar research experiences.

In the next three years over 40 teachers from around the United States will join scientists in the Arctic and Antarctica in celebration of the International Polar Year!

www.polartrec.com

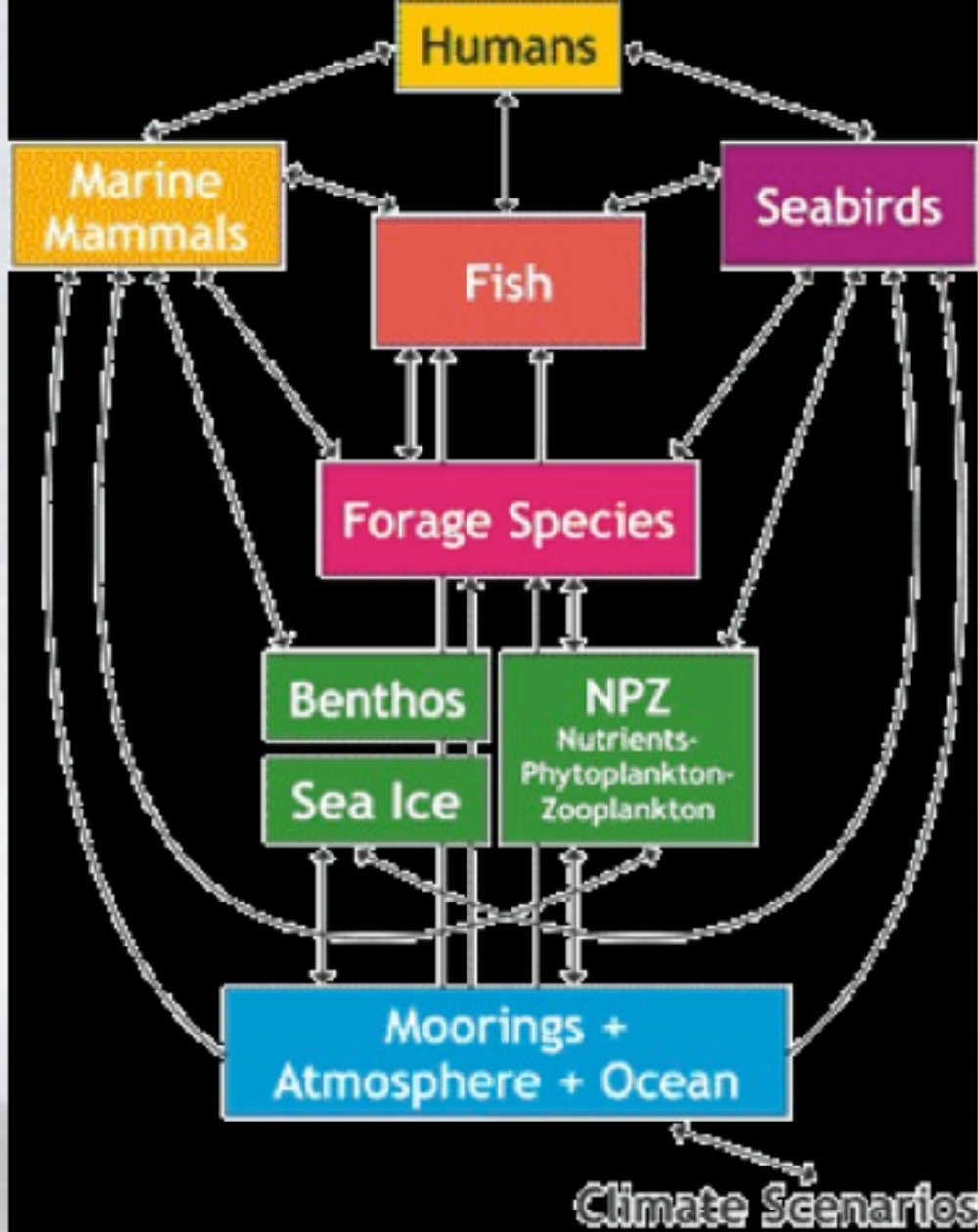
Today's Presenters:



Tom Harten - PolarTREC Teacher, CHESPAX Environmental Education Program, Maryland
Dan Roby - Researcher, U.S. Geological Survey and Oregon State University, Oregon
Rachel Orben - Researcher, University of California Santa Cruz, California
Ine Dorresteijn - Research Assistant, University of Alaska Fairbanks, Alaska

Bering Sea Integrated Ecosystem Research Project

- Bering Sea fisheries account for nearly half of U.S. catches. The BEST-BSIERP Bering Sea Project examines the fish, seabirds, marine mammals, and people sustained by the Bering Sea.
- The BEST-BSIERP Bering Sea Project is a six-year study of the Bering Sea ecosystem, from the benthos and the atmosphere to human communities, and everything in between.
- Funded through the National Science Foundation and the North Pacific Research Board.



From North Pacific
Research Board
website

Modeling

Data
Management

Education +
Outreach

Where We Are

Science in IPY4

Canada

Chukchi Sea

Alaska (U.S.A.)

Chukotka
Russia

Bering Sea

St. Paul Island

Gulf of Alaska

Image from Google Earth

471 mi

© 2009 Europa Technologies

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Data SIO, NOAA, U.S. Navy, NGA, GEBCO

61°51'26.71" N 168°12'13.18" W

©2009 Google

Eye alt 1371.13 mi

Typical Research Day for the Seabird Telemetry Team



**A Day in the Life of a PolarTREC
Teacher in the Bering Sea**

What's it Like Here on St. Paul Island?





Who Lives Here?

Lots and lots of birds and...





The largest population
of Northern Fur Seals in
the world



What birds are we studying?

Black-legged Kittiwakes:

A small gull that feeds by surface plunging for small fish and invertebrates.



Thick-billed Murres:

An alcid that feeds by deep diving, hunting for food at over 100 meters beneath the surface

There are three islands
where this research is
taking place



Image from Google Earth

226 mi

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Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2009 Europa Technologies
© 2009 Tele Atlas

56°42'32.86" N 168°03'03.52" W

©2009 Google

Eye alt 723.27 mi

What We do each Day



We Watch Birds

- We make observations in 4-5 hour shifts
- We watch them to observe the lengths of their foraging trips.
- We watch them to record the types of fish they are feeding to their young.
- We watch them to monitor how they are reacting to the GPS devices





We Catch Birds

- We use noose poles and snares to safely capture the birds. Some of the other teams also use mist nets and noose carpets.
- Kittiwakes are captured from below the nest using an extendable noose pole or a snare set (for those noose savvy birds).
- Murres are caught from above with a noose pole and a LOT of patience!





We Collect Data from Birds

- We measure them; i.e. length of bill, length of wing, mass, etc.
- We collect feather samples
- We collect blood samples
- We collect diet samples





We Deploy Technology on the Birds

- Some of the birds are outfitted with GPS tags
- Some of the birds are equipped with Winter Logger Devices or some with Temperature Depth Recorders (TDRs)



After the equipment is secured, the birds are released!





**After all of this
technology is deployed
on the birds...**

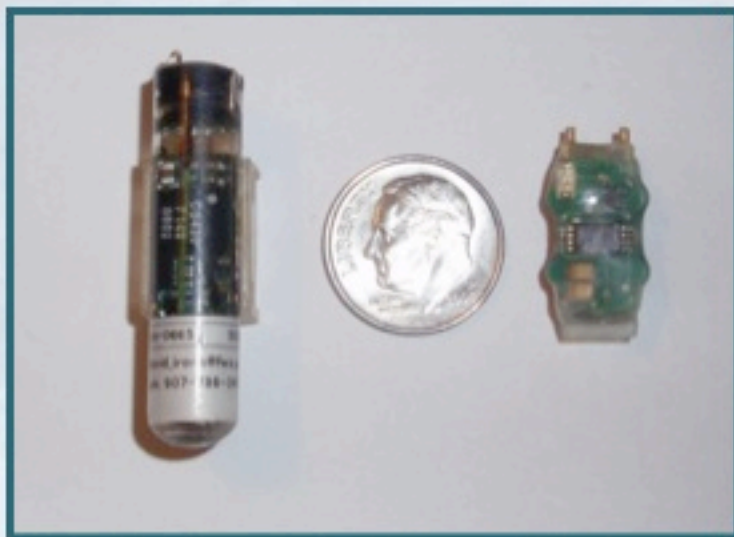
We Catch them Again!

- GPS tags are shorter term data collectors that gather information for a couple of days at the most. The birds with these devices are recaptured a couple of days after they are deployed.
- Winter Loggers are longer term data collectors that will stay on the birds until they can be caught again next year.
- A more extensive series of data is collected upon the second capture, including blood, diet sample, weight and other measurements.

What the data will tell us:

- Since this seabird project is integrated with other research, seals, plankton, oceanography, it will be possible to look at larger scale environmental changes how they will influence the birds.
- By looking at bird movements on foraging trips, their diet samples, and the data gathered from their blood samples, we will form a better understanding of seabirds and their ecology in the Bering Sea.

Geolocators



Black-legged Kittiwakes – 1.8- 2.5g

Thick-billed Murres – 3.6 g

Batteries last 1-5 years

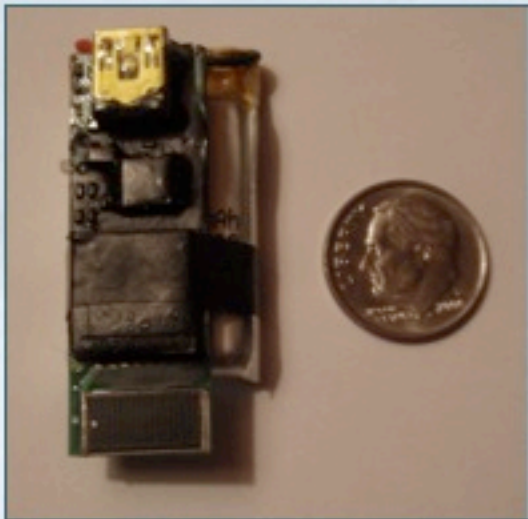
Tags are attached to leg bands

Use light levels to determine sunrise and sunset times.
These times can then be used to estimate bird location.



Data Loggers

GPS tags

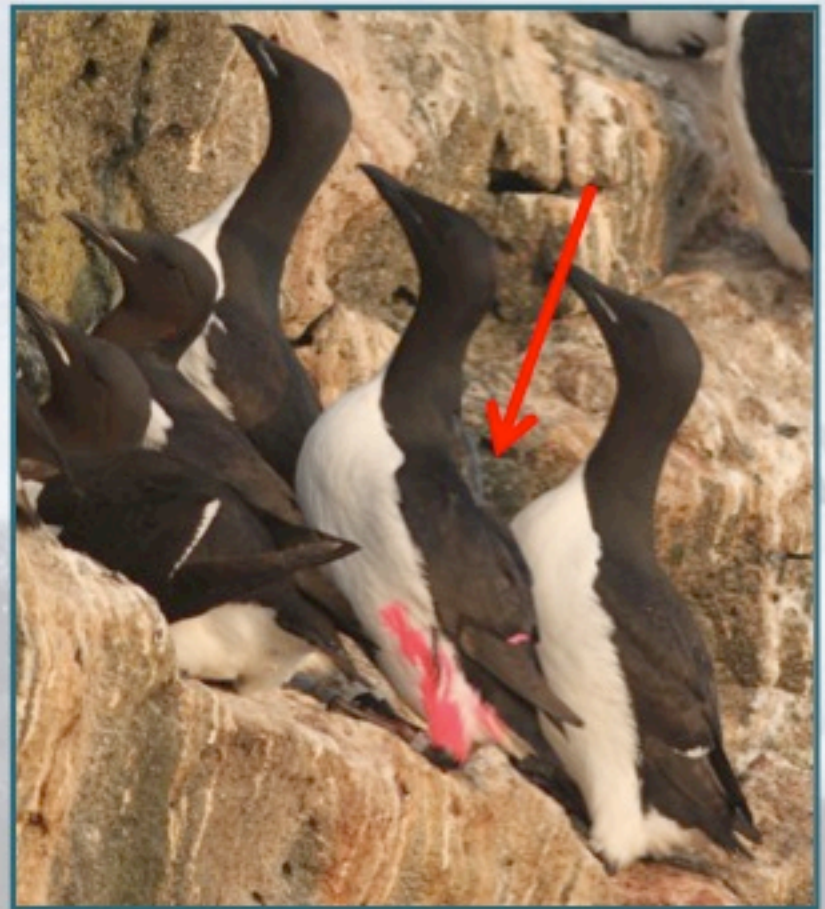


Tags weight 10g

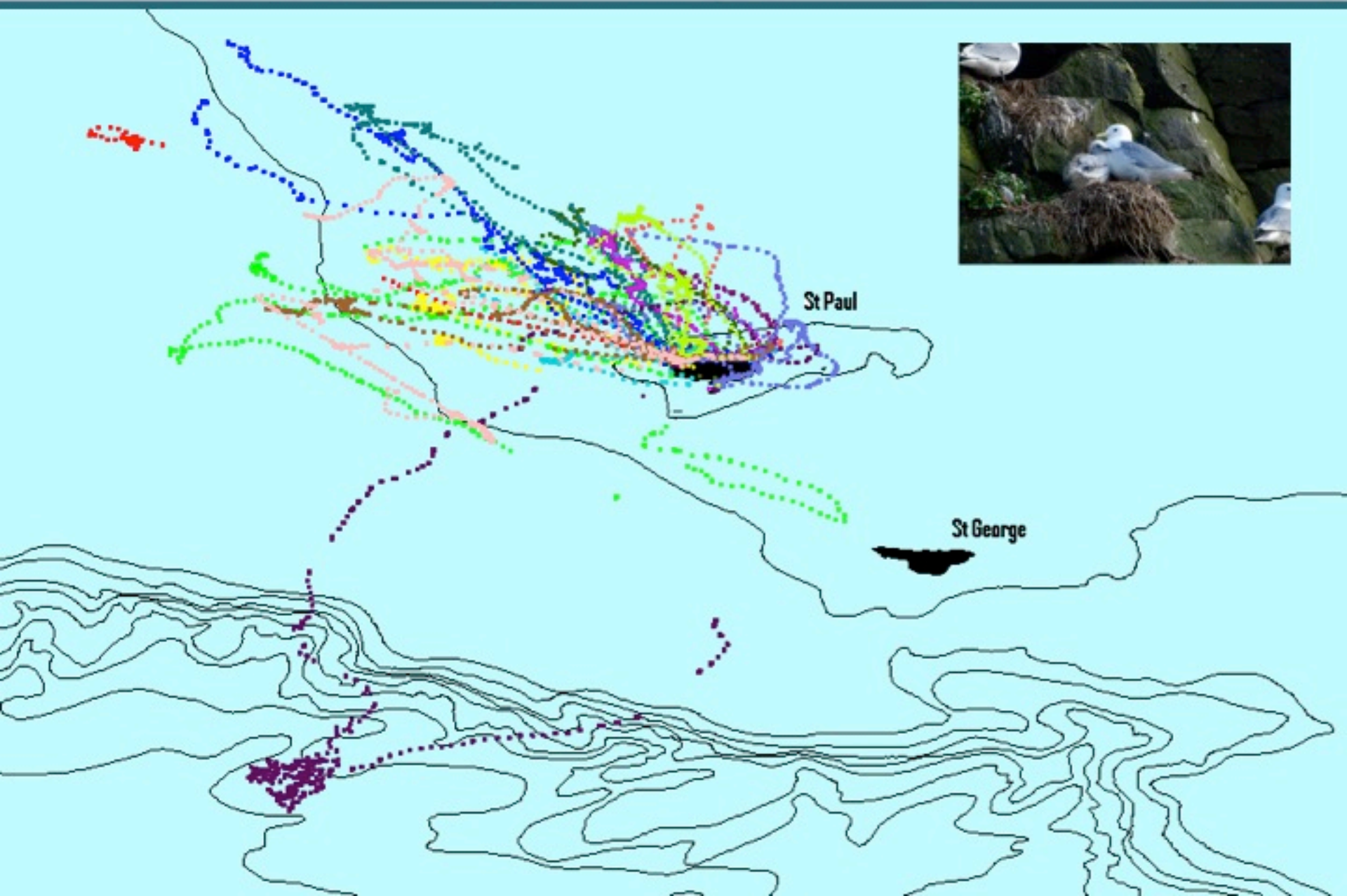
Use Satellites to determine positions

Batteries last 1-3 days

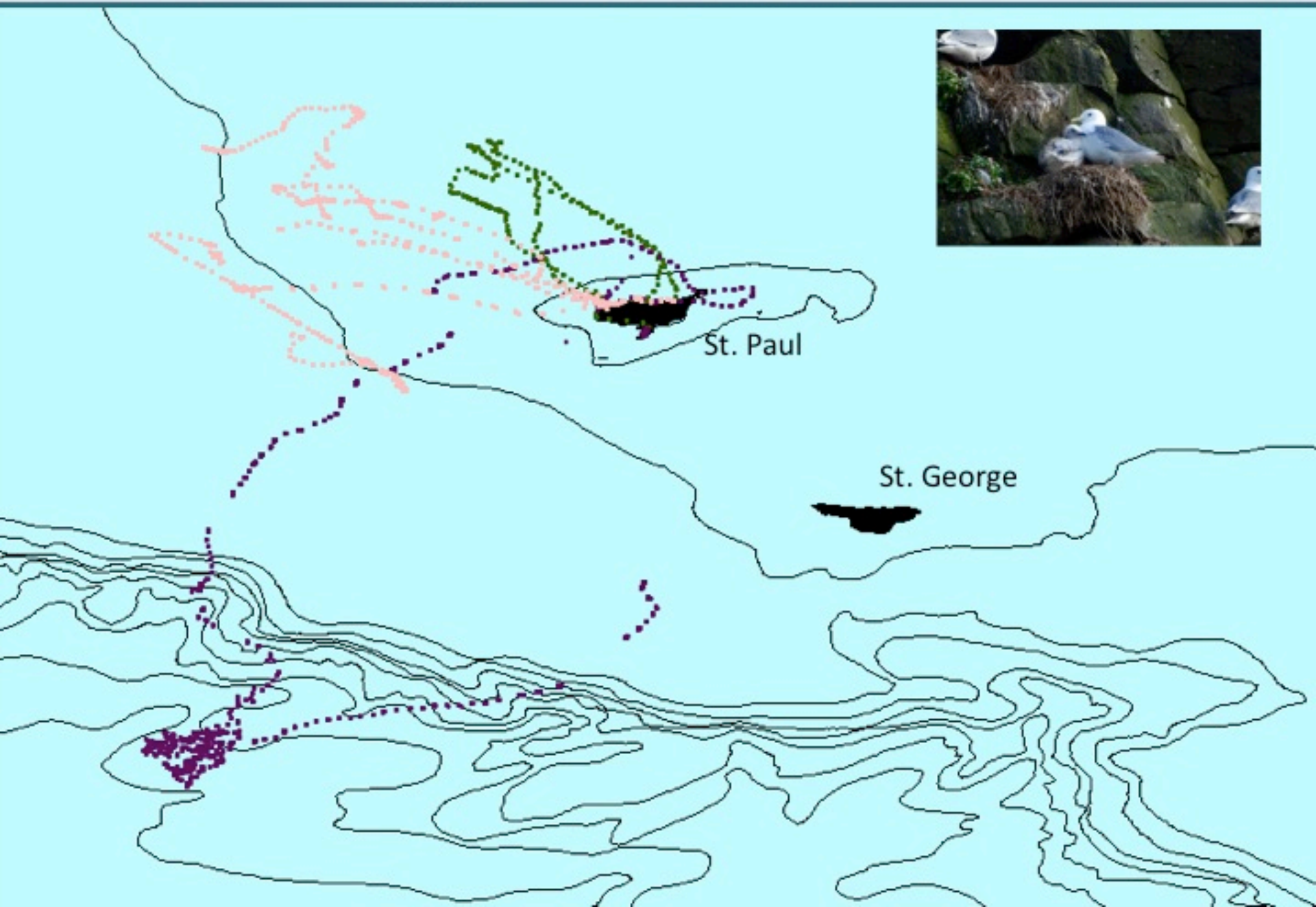
Tags are taped on to feathers



St. Paul Black-legged Kittiwakes – 2009



St. Paul Black-legged Kittiwakes – 2009



Bird Species

- Various levels of the food chain
 - Least auklets: specialized on copepods
 - Crested auklets: specialized on euphausiids
 - Thick-billed murre: forages on both euphausiids and fish
 - Common murre: specialized on fish



What do we do with the birds

- We draw blood for several lab measurements
- We attach Time-Depth-Temperature loggers to obtain information on diving behavior



Why blood?

Red Blood Cells:
packed cells

- Cell contents for
stable isotopes: what
kind of food has the
bird been eating?

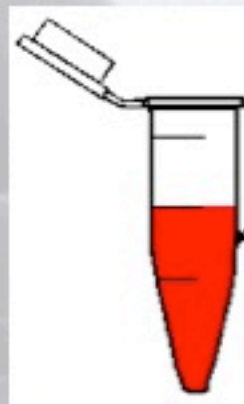
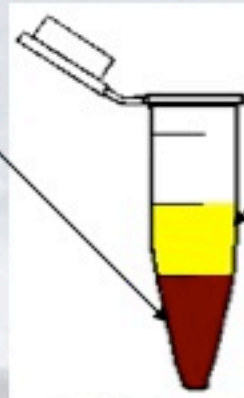
Plasma: cell fragments,
watery between-cell
fluid

- Hormones: how
stressed is the bird?

Whole blood:

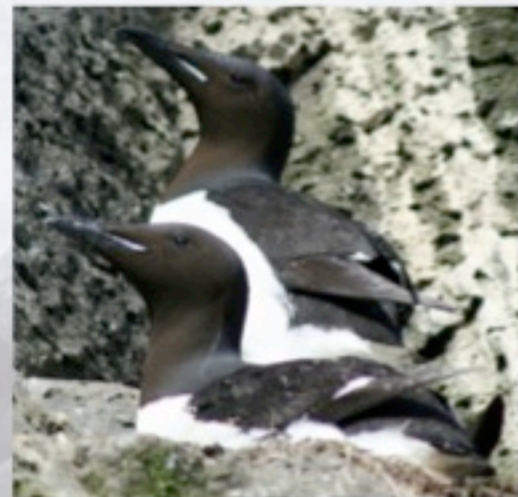
- DNA: is the bird
male or female?

- DNA for telomeres:
age and life
expectancy of the bird



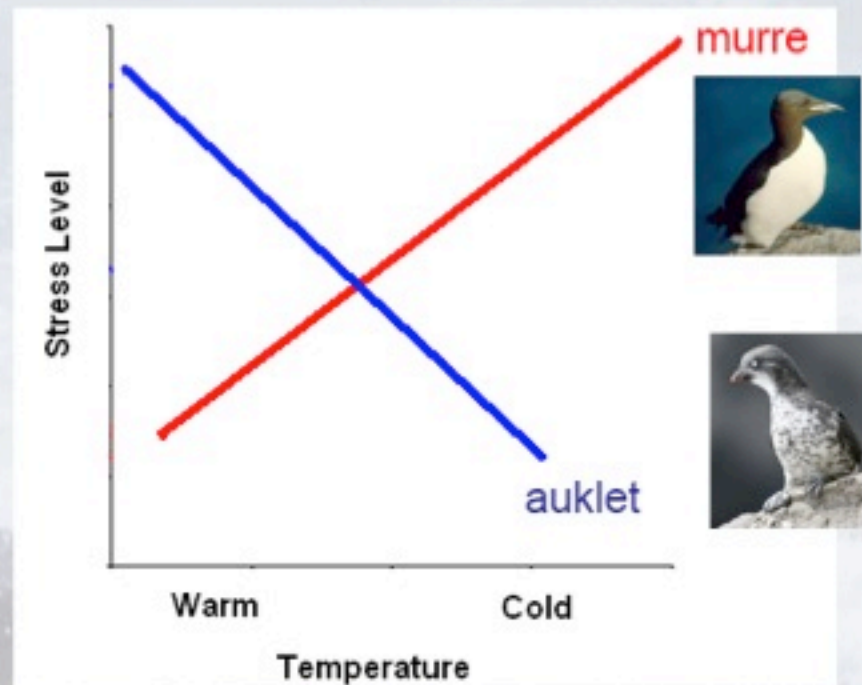
What have we learned

- Murre diving behavior:
 - Max. depth: 135m/442ft
 - Max. foraging time: 2.5 days
 - Max. flight distance: 105 km/65 miles
- Crested auklet dive behavior:
 - First logger retrieved
 - Max. depth: 43m/140ft

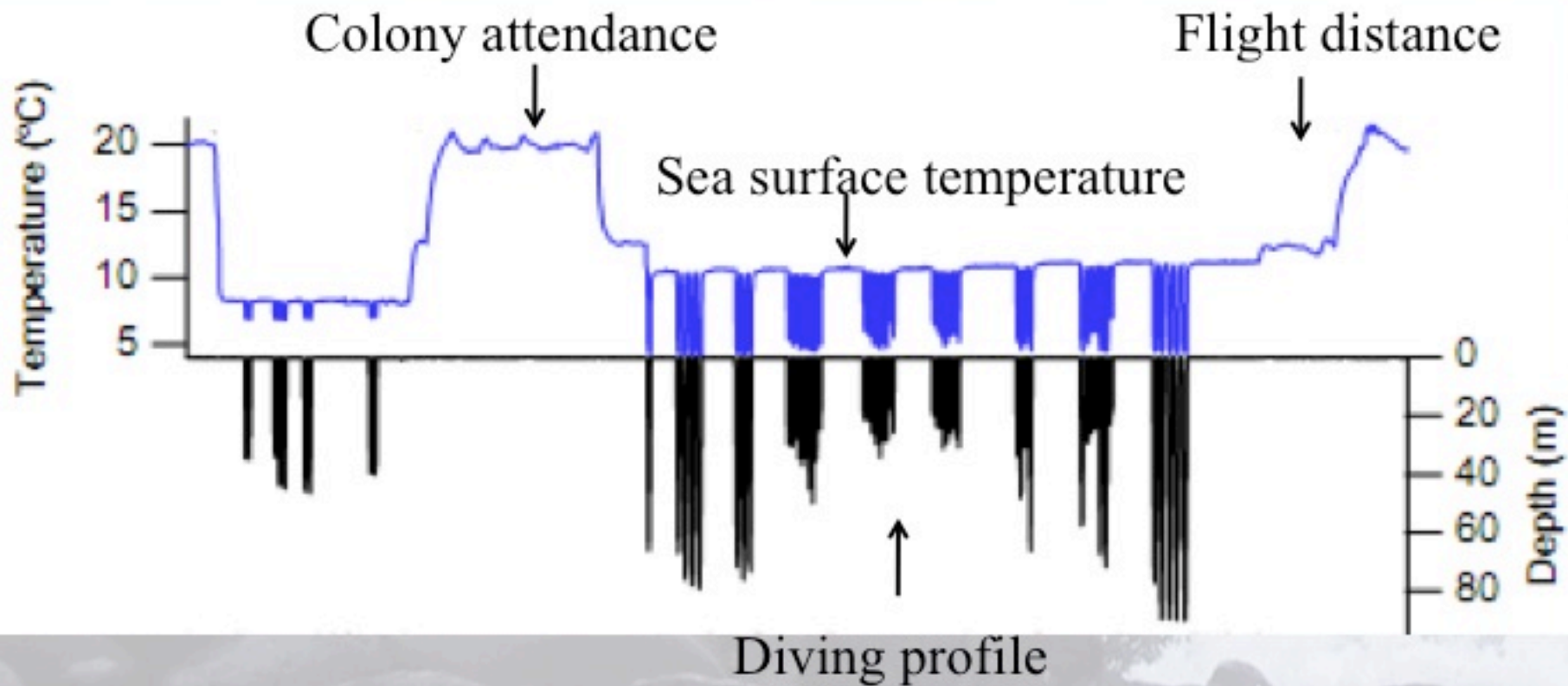


What have we learned

- When it is a cold year, small sea animals do better (copepods, euphausiids) and so do the birds that eat them (auklets)
- In warm years small fish do better and so do the larger fish-eating birds



Why loggers?



Questions?

When asking a question, speak slow, loud, and clear and say your:

- Name
- School or Organization
- Who your question is for
- Question



Special Thanks to

- Dan Roby, Rachael Orben, John Warzybok, Dan Cushing, Ine Dorrensteijn, Thibaut Vergoz for their help and guidance during my experience here on St. Paul Island.
- Michelle Daubon, JoAnn Roberts, John Pellock and Steve Van Rees for keeping our summer programs and everything else at CHESPAX, running like clockwork in my absence.
- The PolarTREC/ARCUS staff: Janet Warburton, Kristin Timm, Ronnie Owens, Zeb Polly and Reija Shnoro for their support and immediate follow up to my many questions!

With a heartfelt gratitude for making this experience even possible

- Gary and Lois Fritz
- Suzy, Mike, Kate and Andrew Lombardo
- Mike, Joni, Lizzie, Maggie, and Charlie Harten

And of course, my **biggest thank you:**

For turning their summer and their lives
upside down and inside out to let me have
this experience



Tracy Fritz



Jacob Harten

I'll be home soon!



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Thank You!

The archive of this event will be available shortly at:

[www.polartrec.com!](http://www.polartrec.com)

If you have further questions, please contact us at:

info@polartrec.com

or call 1-907-474-1600

