



TEACHERS AND RESEARCHERS
EXPLORING AND COLLABORATING

Polar Professional Development
ED 593: Applied Life Science Concepts for Educators

Passport to Antarctica

8 November 2012

Presented by

PolarTREC teacher
Alex Eilers

In conjunction with

Dr. Jennifer Burns
University of Alaska Anchorage



Blackboard collaborate

Sides will be shown here

Exit the presentation

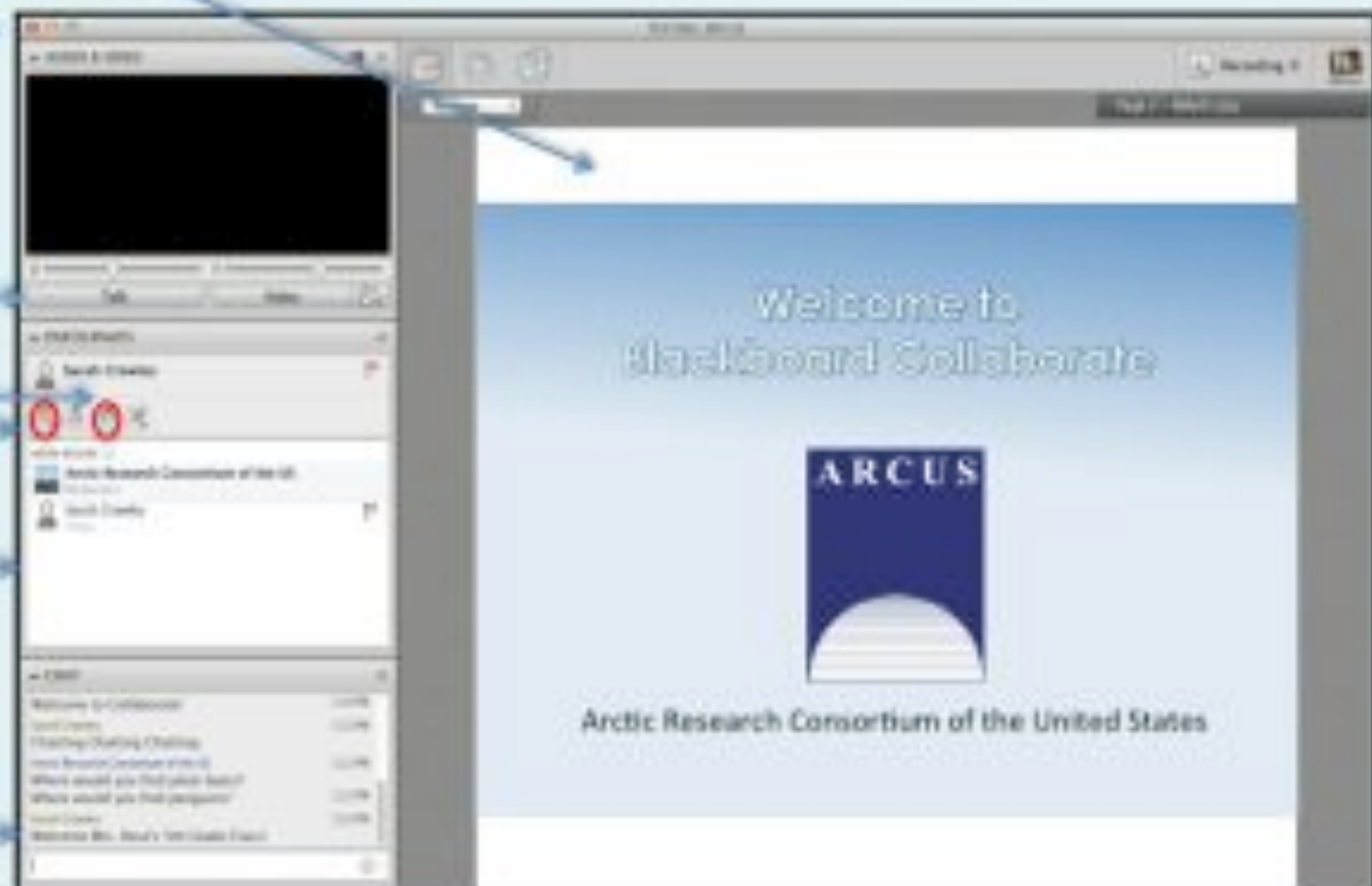
Click to Talk,
Unclick to finish talking

Raise your hand to ask a question

Share with emoticons

List of all participants

Chat with one person or the entire group



The screenshot shows the Blackboard Collaborate interface. On the right, a presentation slide displays the text "Welcome to Blackboard Collaborate" and the ARCUS logo (Arctic Research Consortium of the United States). On the left, a sidebar contains various controls: a "Talk" section with a microphone icon, a "Hand" section with a hand icon, an "Emoticons" section with a smiley face icon, a "Participants" list showing names and status, and a "Chat" section with a text input field and a send button. Arrows from the text labels on the left point to these specific controls in the sidebar.

Please Note:

- Participants using the telephone can mute/unmute by **pressing *6** on the phone.
- Today's event will be recorded and archived.



TEACHERS AND RESEARCHERS
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What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers for 2-6 week research experiences in the polar regions.

From 2010-2013, nearly 50 teachers from around the United States will join scientists in the Arctic and Antarctica to learn about science, the polar regions, and to share what they have learned with their students and communities.

Participant Introductions

Please type in the chat box:

- ✓ Name
- ✓ Affiliation (School, Institution, Etc.)
- ✓ The number of students and adults participating with you in the same location



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Questions

During the Presentation:

- Type your question in the text chat box

At the End of the Presentation:

- Raise your hand with the “hand button”.
- PolarTREC staff will call on you.
- Speak loud and clear and directly into the phone to ask your question.

Click on the Talk button to speak.

Unclick when you are done.

The Preparation

What is IT?

Polar Sundae

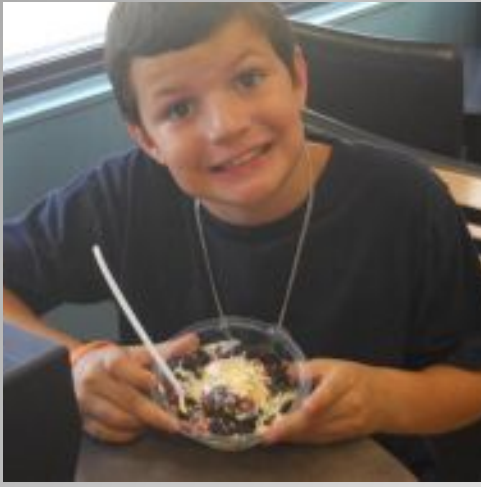
Antarctica R.A.W.

Misconceptions

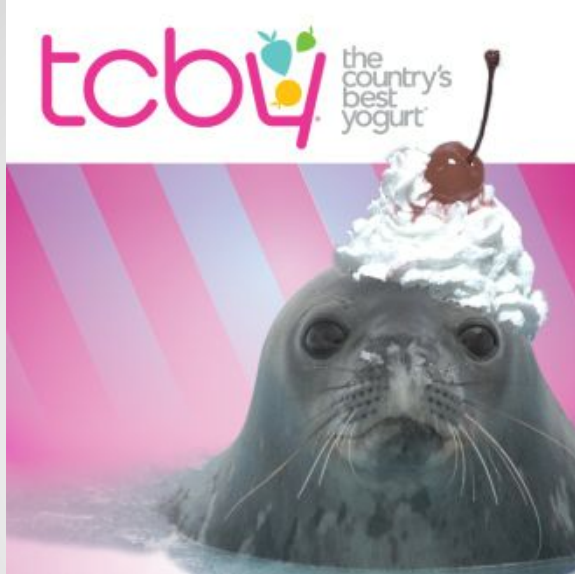
Postcards

Scavenger Hunt





Antarctic Night



Polar Sundae

Journal – May 1, 2011 June 1, 2011



Cozy Crunch



Misconceptions

Journals:

- September 18, 2011
- October 16, 2011



Journals:

- November 12, 2011
- December 22, 2011

Scavenger Hunts

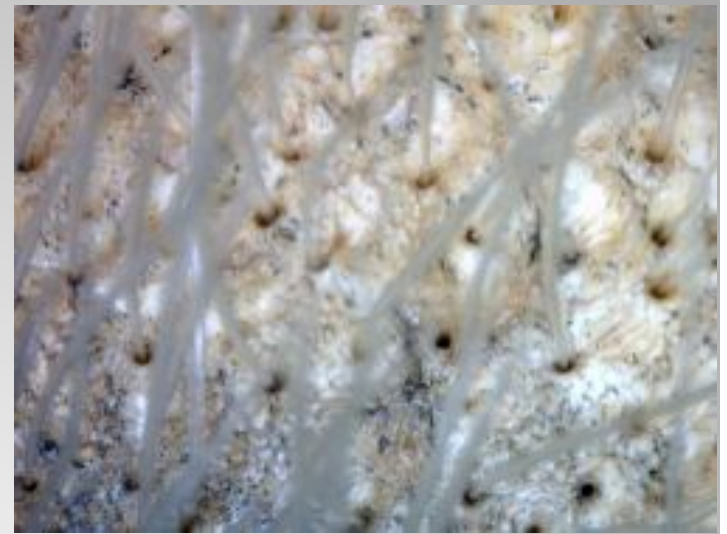


Journals

- April 25, 2011
- June 15, 2011
- July 18, 2011



What is it?



Journals

May 13, 2011

June 8, 2011

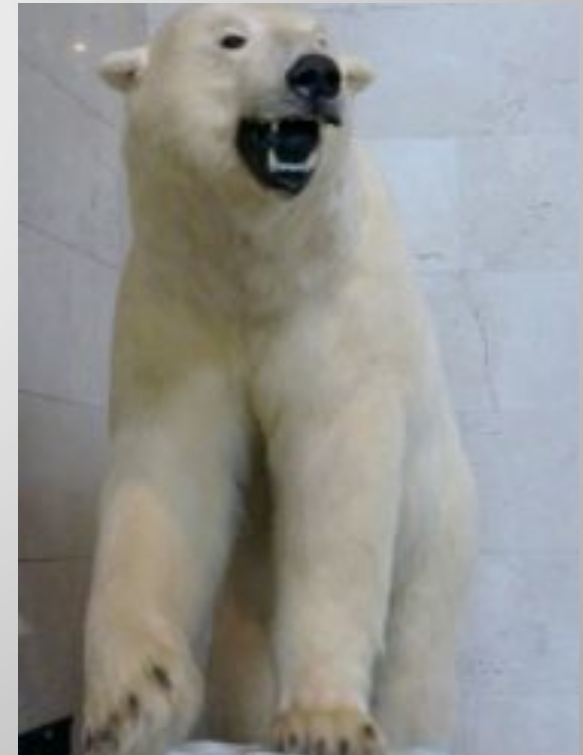
September 2, 2011

October 3, 2011

October 30, 2011

November 6, 2011

December 3, 2011



Antarctica R.A.W.



R – Read
A – Art
W – Write



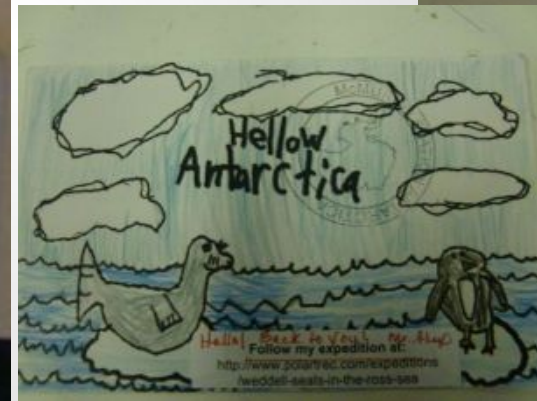
Topics:

- September
 - Polar Regions
- October
 - Whales
 - Weather, Climate or Seasons
- November
 - Penguins
 - Glaciers, Snow or Ice
- December
 - Seals
 - Explorers – Arctic and Antarctic


Journals:

- September 12, 2011
- October 9, 2011
- November 7, 2011
- November 20, 2011
- December 4, 2011
- December 11, 2011

Postcards



Journal – November 27, 2011



A Closer Look at...

The Journals...

Take a
closer
look at...

Explorers

- Roald Amundsen
- Robert F. Scott
- Sir Ernest H. Shackleton

Weather

- Antarctic Weather Conditions
- Katabatic Winds
- Wind Chill

Other Animals and Animal Info

- Adélie Penguins
- Emperor Penguins
- Predators

Earth & Space Topics

- Ice and Glaciers
- Mt. Erebus

Other FUN Topics

- Antarctica
- Extreme Cold Weather Gear
- McMurdo Station

Take a Closer Look at...

Weather

- Antarctic Weather Conditions - February 16, 2012
- Katabatic Winds - February 17, 2012
- Wind Chill - February 1, 2012



Explorers


- Roald Amundsen - February 3, 2012
- Robert F. Scott - February 4, 2012
- Antarctic 1st – January 18 and 19

Other Animals

- Adélie Penguins - February 2, 2012
- Emperor Penguins - February 2, 2012
- Predators - February 12, 2012



Take a
closer
look at...



The Weddell Seal

- Blood
- Blubber
- Body
- Diet
- Eyes
- Family
- Flippers
- Fur & Molting
- Habitat
- Lungs
- Milk
- Muscles
- Nose
- Teeth & Jaw
- Temperament
- Seal “Stats”
- Sound/
Vocalization
- Whiskers

A Closer Look at the Weddell Seal

January 24, 2012 Weddell Seal **Temperament**

January 27, 2012 It's All in the **Family**

January 28, 2012 The Weddell Seal's **Body**

January 29, 2012 Weddell Seal **Eyes!**

January 31, 2012 Weddell Seal **Whiskers**

February 3, 2012 The **Nose** of a Weddell seal

February 7, 2012 Weddell Seal **'Stats'**

February 7, 2012 Weddell Seal **Flippers**

February 8, 2012 What's on the Menu? The **Diet** of a Weddell seal!

February 8, 2012 Weddell Seal's **Habitat**

February 9, 2012 Weddell Seal **Fur**

February 9, 2012 Open wide! Weddell Seal **Teeth**

February 14, 2012 Weddell Seal **Blood**

February 14, 2012 Weddell Seal **Lungs**

February 15, 2012 Weddell Seal **Muscle**

February 16, 2012 **Sounds** of a Weddell seal

February 18, 2012 Weddell Seal **Milk**

February 19, 2012 Weddell Seal **Blubber**



All in the Family

All in the Family
Walrus, sea lions, seals, are related. They are members of the superfamily called Pinnipedia - which means "wing" or "fin" footed.

Pinnipeds share 5 Characteristics

1. Mammals
2. Carnivores
3. Live on land and at sea
4. Four webbed flippers
5. Body shape for efficient swimming

There are three families of Pinnipeds, each with their own distinguishing characteristics.

Atlantic Walrus
Family *Odobenidae*
Walrus are one of the largest pinnipeds and the only members of the *Odobenidae* family. Walrus live in the Arctic region.

Weddell Seal
Family *Phocidae*
Weddell seals are one of 28 species of "true seals". Most live in the oceans of polar, sub-polar, and temperate climates.

California Sea Lion
Family *Otariidae*
Sea Lions and 17 other members of the *Otariidae* family live in most of the world's ocean basins.

Illustrations:
- A yellow silhouette of a walrus with labels for its tusks and whiskers.
- A green silhouette of a seal with labels for its flippers and body shape.
- A purple silhouette of a sea lion with labels for its flippers and body shape.

Muscles

Journal – February 15, 2012

No myoglobin

Lots of myoglobin



Weddell seal muscle

MUSCLES

Muscles need oxygen for energy. The darker the color of the muscle, the greater its ability to store oxygen.

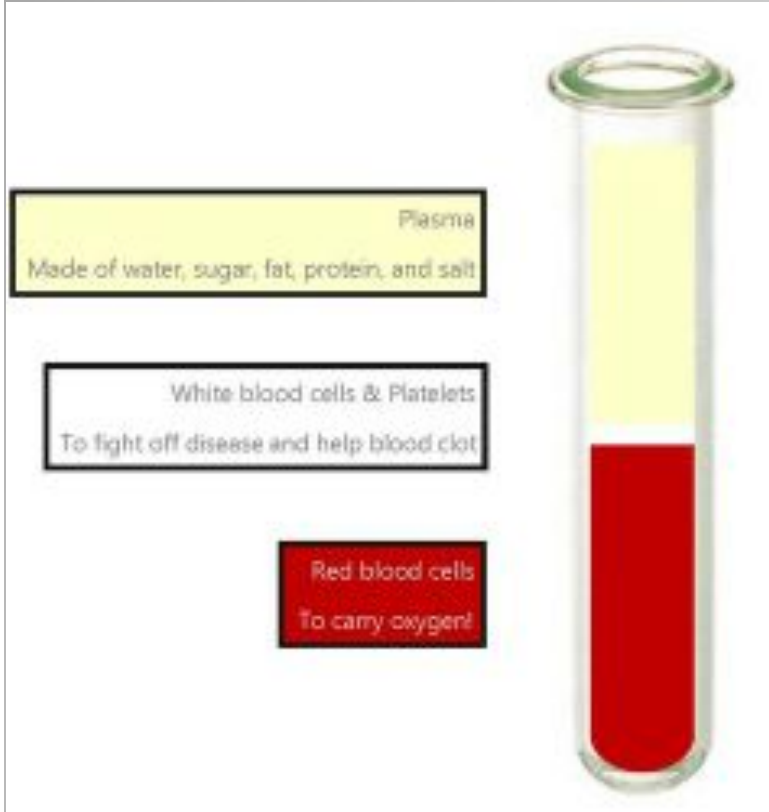
Look at the flesh of these animals. Which has the greatest ability to store oxygen?

Cows muscles have an ability to store a lot of oxygen, but the muscles of Weddell Seals can store even more.

Weddell Muscles

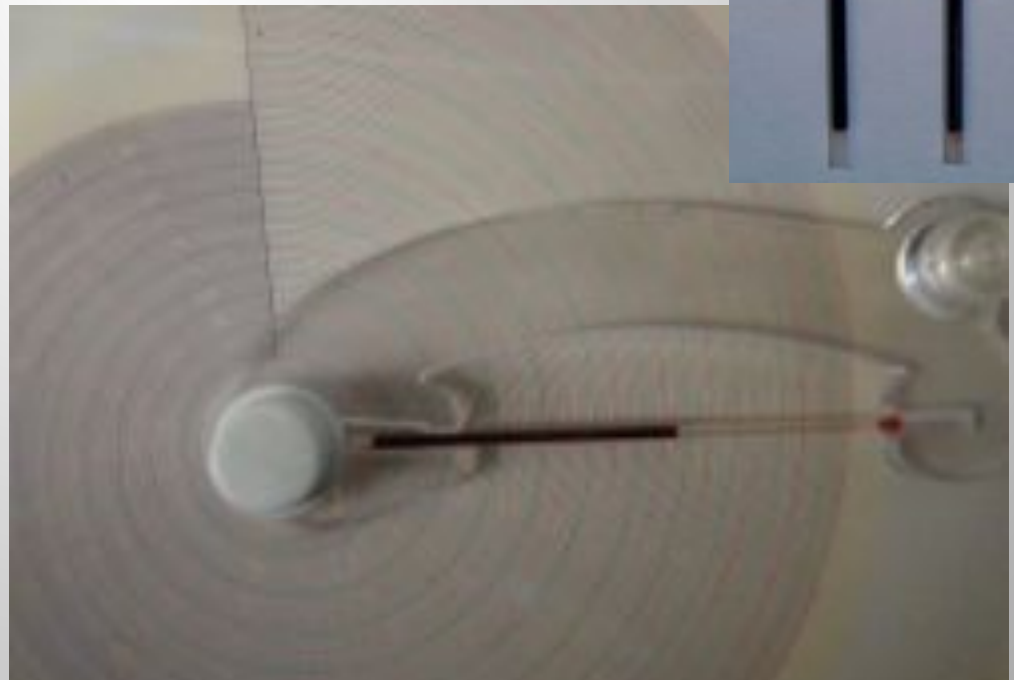
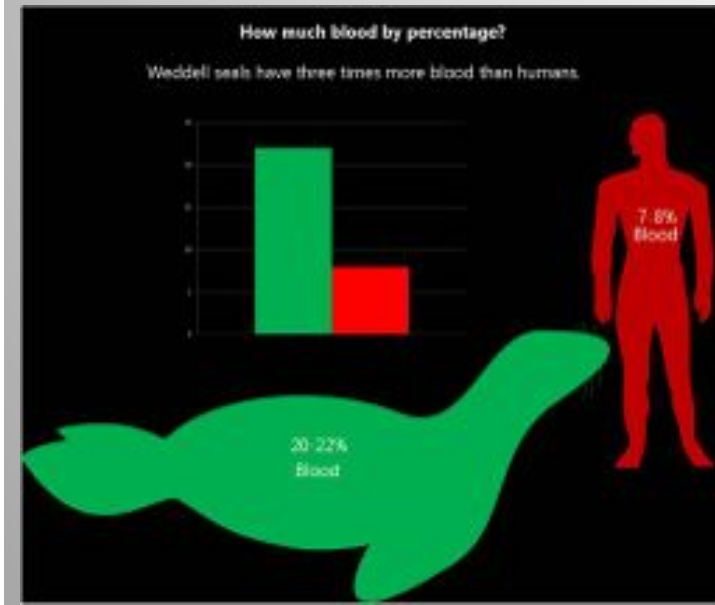
The magnified muscle to the left is highly efficient and almost black in color.

Weddell muscle is particularly good at storing oxygen because it has a lot of myoglobin. This large amount of myoglobin makes it possible for Weddell seals to dive underwater for long periods of time.



Blood

Journal – February 14, 2012





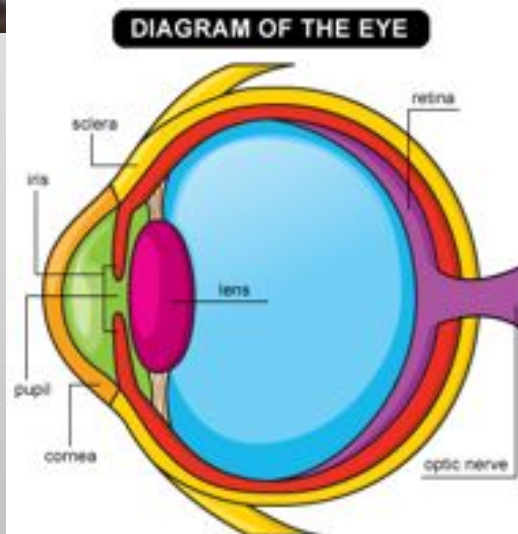
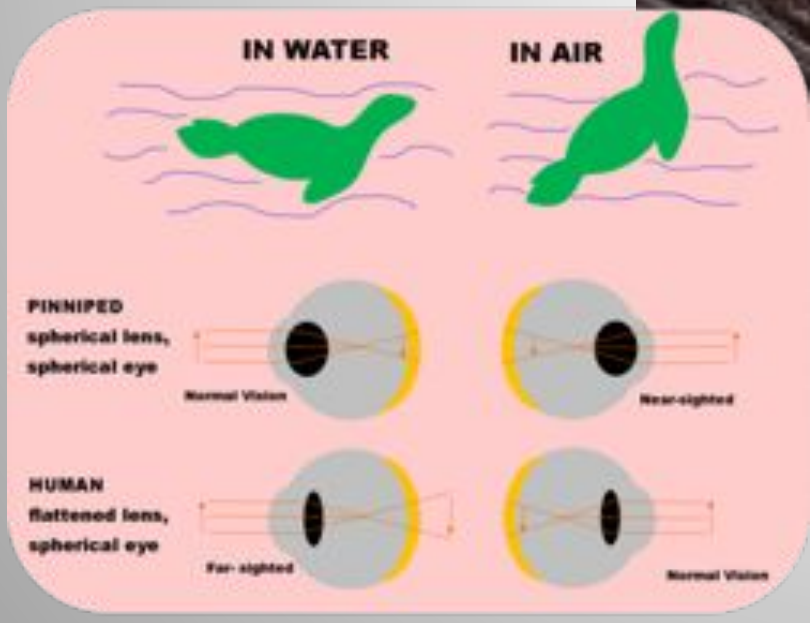
Teeth

Journal – February 9, 2012



Eyes

Journal – January 29, 2012



A photograph of a seal resting on a snowy, icy landscape. The seal is dark with light spots and is lying on its side, facing right. The background shows a vast, flat, white expanse of snow or ice, with several snow-capped mountains or hills in the distance under a clear blue sky. The text "At the Museum" is overlaid in the center of the image.

At the Museum

The Mini Exhibit...



Photo Gallery





Journal – January 18 and 19



Antarctica Extreme

The bulletin board displays several informational cards about Antarctic extremes:

- Extreme Lights**: Includes a diagram of the sun's path.
- Extreme Days and Nights**: Includes a diagram of the sun's path.
- Extreme Dryness**: Includes a bar chart showing precipitation levels.
- Extreme Wind**: Includes a circular diagram showing wind patterns.
- Extreme Ice**: Includes a diagram of ice formation.
- Extreme Continent**: Includes a diagram of the continent's shape.
- Extreme Temperature**: Includes a bar chart showing temperature fluctuations.

A large white map of Antarctica is pinned to the right side of the board.



Journal – January 23, 2012

at -55°
Stay Alive

Journal - January 12, 2012



Passports

- ECW gear
- Weddell Seal kit



Take a Closer Look at the Weddell Seal



A photograph of a seal resting on a snowy, mountainous landscape. The seal is dark with light spots, lying on its side in the foreground. The background shows snow-covered mountains under a clear blue sky. The text "My Personal Experience..." is overlaid in a large, bold, dark font with a white outline.

**My
Personal
Experience...**



**Back to
School
Training, training
and more
training!**





Scouting for seals!



Finding the right Seal!



Vs



The process begins!



Health & condition assessment

Deployment / Physiology

Seal ID: _____ Date/Time: _____
 C_Tag: _____ Latitude: _____
 _____ Longitude: _____
 Sex: M / F / ? Location: _____
 Crew: _____

	US-D	US-L	US-V	Grh	Len
Ark	-----	-----	-----		
Fel					
Umb					
Md					
Str					
Ar					
Neck					
Eart	-----	-----	-----		

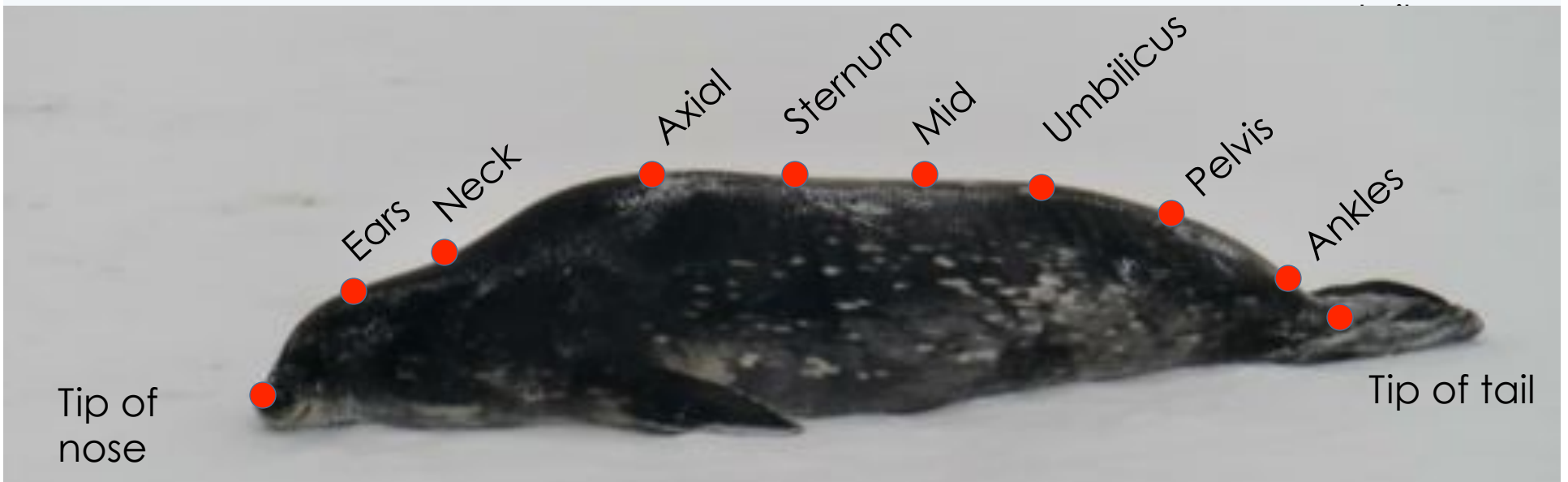
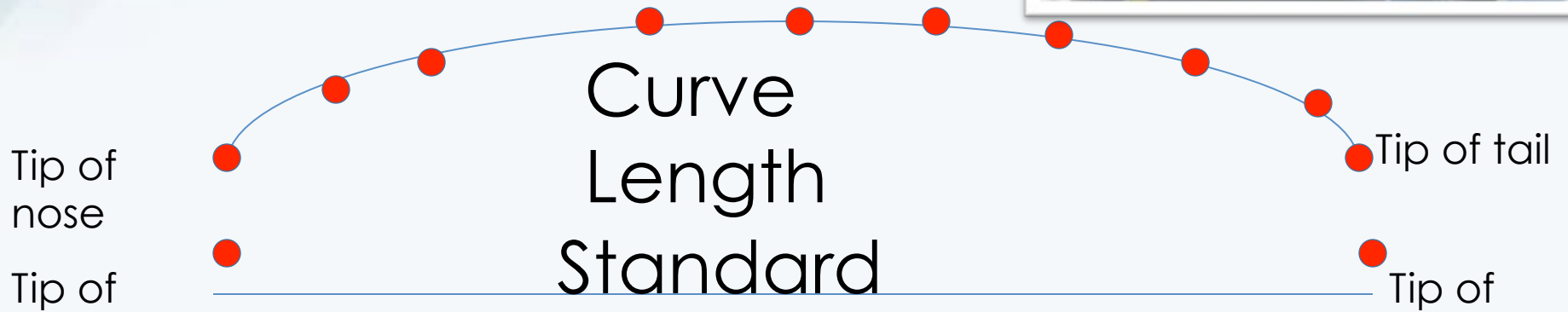
Curve Len: _____ Sat Tag: _____
 Standard: _____ PTT ID: _____
 Mass: _____ VHF Tag: _____
 Tare: _____ VHF frequency: _____
 Actual mass: _____

Pre-Blood TT_ | GT_ | PT_ | DFG_ | TanT_ | BlueT_
 Whisker: Y N
 Fur: Y N
 Muscle: GM / LNF2
 Hubber: Y N
 Photo: Y N

Comments: _____



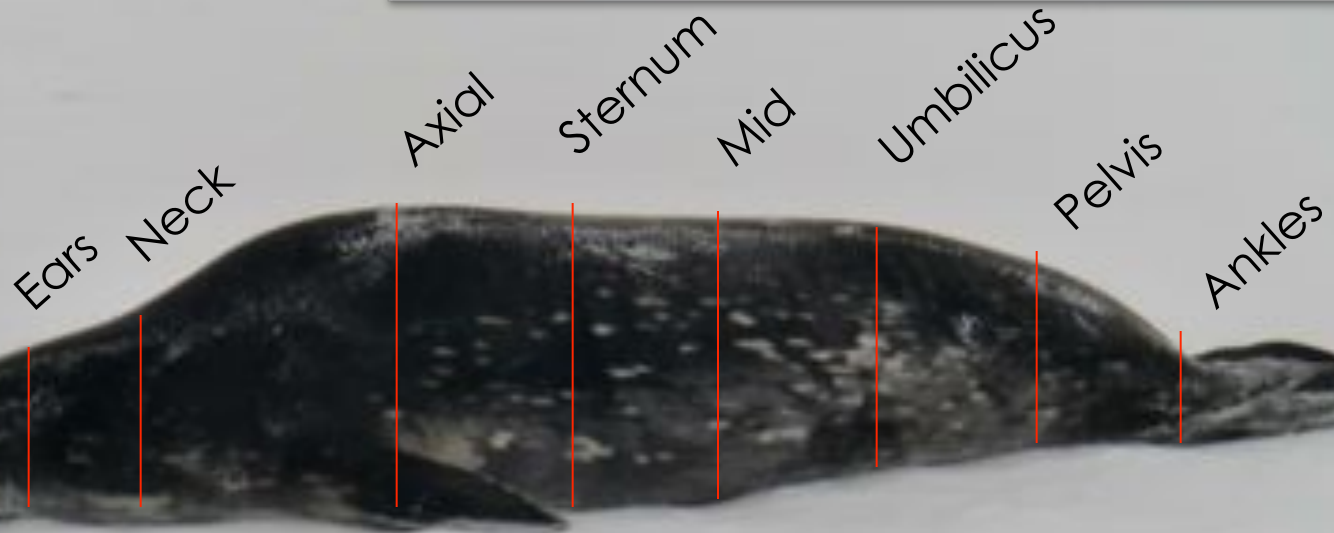
Measurement



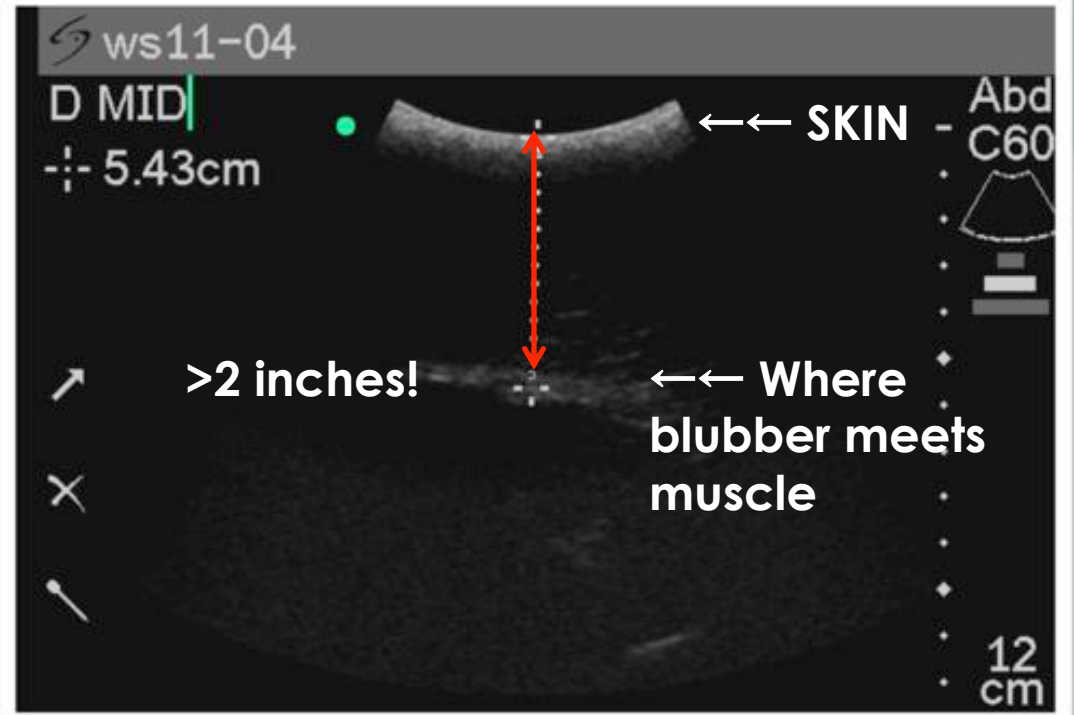
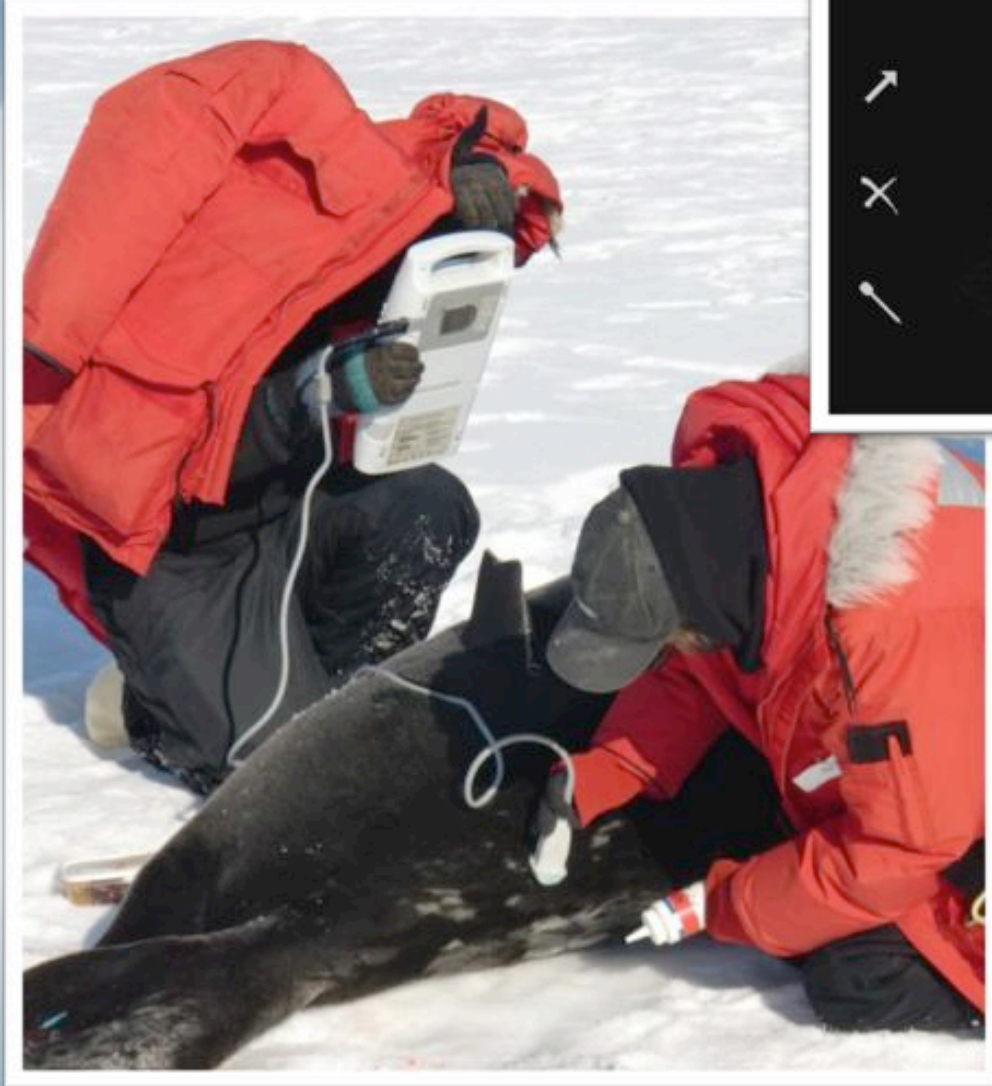


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Measurement Girth

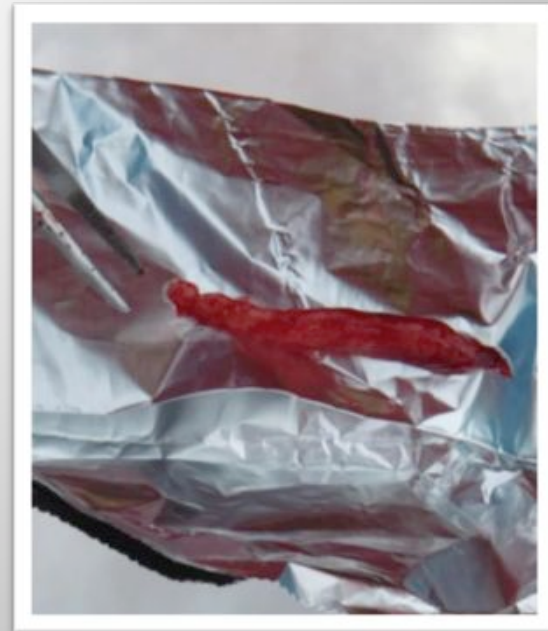
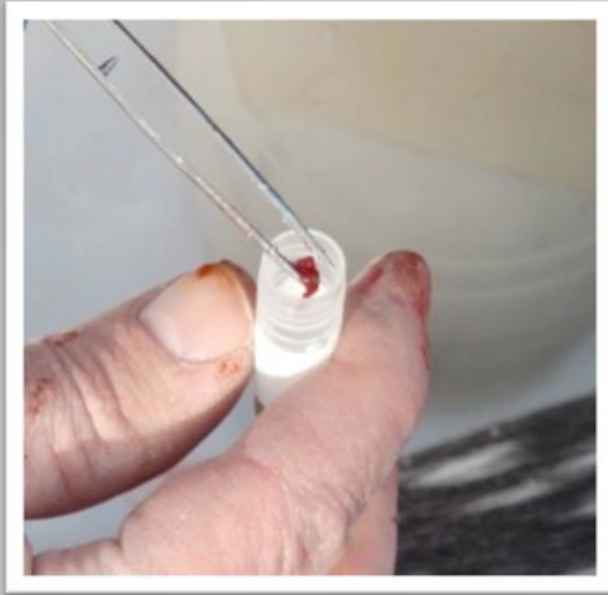


Ultrasound



Measures
blubber
thickness

Muscle Biopsy and Blubber samples



Diet – Fur and Whiskers



New fur →→

Old fur →→



Tagging



ID



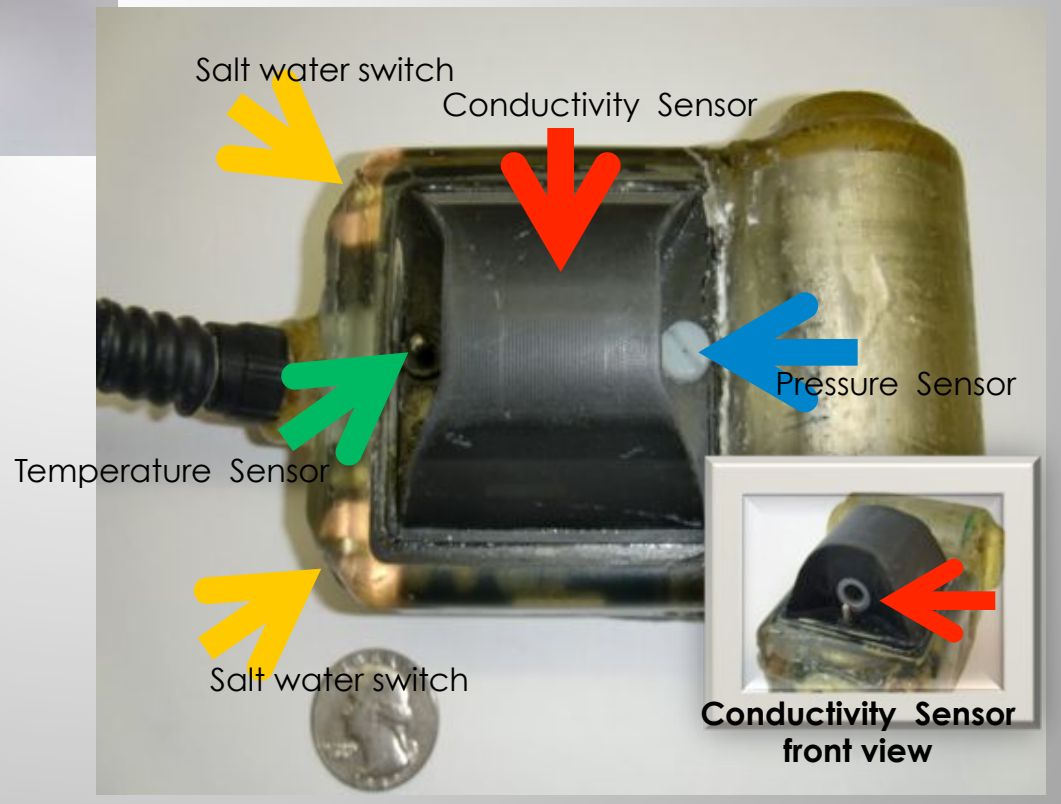
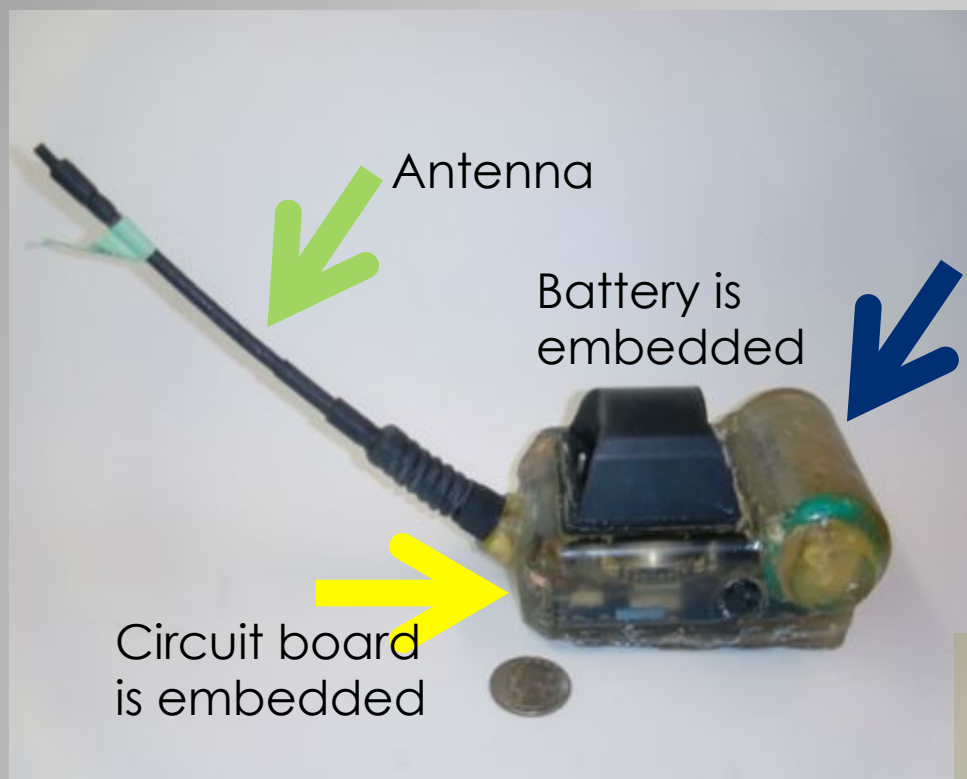
VHF



Satellite



A Closer Look at the Satellite Tag



Questions...

A Special
Thanks to
PolarTREC,
NSF and UAF





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Upcoming Events

Watch for and register for upcoming events at www.polartrec.com!



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Thank You!

An archive of the event will be available shortly.
<http://www.polar-trec.com/polar-connect/archive>

