

An aerial photograph taken from an airplane, showing the wing and engine nacelle in the upper right corner. The view below is a vast, deep blue lake, Lake Iliamna, surrounded by numerous small, forested islands and peninsulas. In the distance, a range of rugged, snow-capped mountains stretches across the horizon under a clear blue sky with some light clouds.

Freshwater harbor seals in Lake Iliamna

Dave Withrow and Kym Yano
NMML, AFSC, NOAA



Newhalen Tribal Council

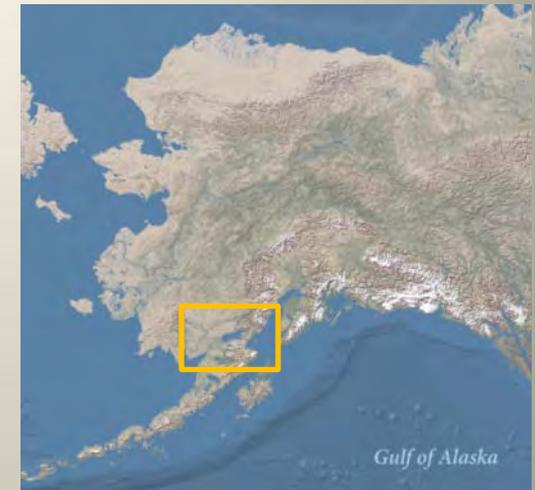
UAA UNIVERSITY of ALASKA ANCHORAGE



Lake Iliamna

- Largest lake in Alaska

- 225 miles (362 km) southwest of Anchorage
- 77 miles (124 km) long, 22 miles (35 km) wide covering approx. 1,000 sq. miles (2,600 km²)
- Maximum depth is 988 feet (301 m)
average depth is 144 ft (44 m).
- Connected to Bristol Bay by the Kvichak River approx. 75 miles (120 km) in length



Lake Iliamna

- The name Iliamna is derived from the Athabascan "Nila Vena" which means island's lake.
- Has also been referred to as
 - Lake Shelekov (Russian chart 1802)
 - Oz(ero) Bol (shoy) Ilyamna, meaning Big Ilyamna Lake (Russian chart 1852)
- **My Favorite:** USGS, Iliamna is said to be "the name of a mythical great blackfish supposed to inhabit this lake, which bites holes in the bidarkas of bad natives"
- Local people still report sightings of the Lake Iliamna Sea Monster today
 - websites
 - Discovery Channel
 - -probably a sturgeon.

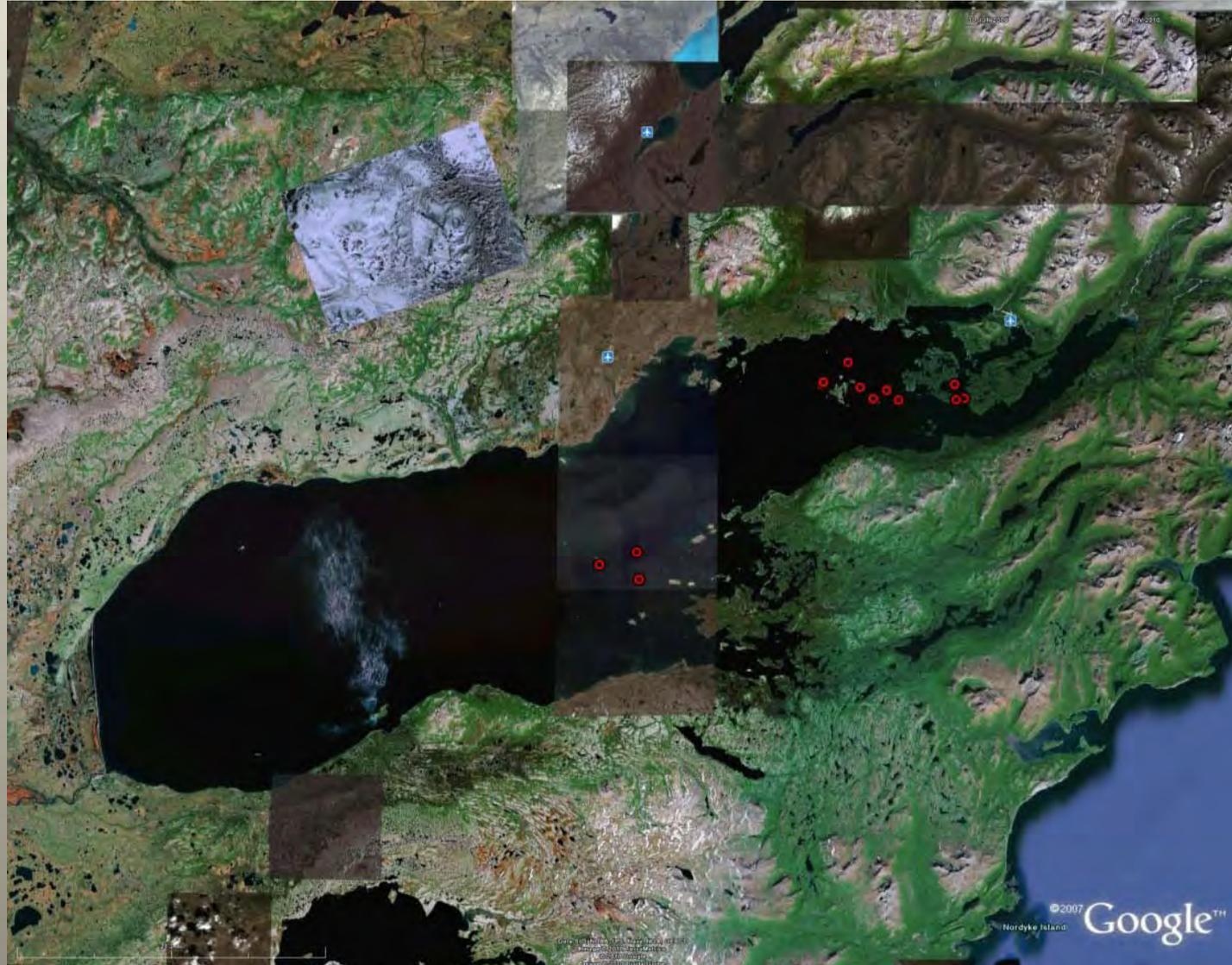
What is Lake Iliamna really famous for?

Lake Iliamna famous for Red Salmon



- Lake Iliamna is home to a small colony of harbor seals (*Phoca vitulina*) that are thought to live there year-round.
- There are no known accounts of immigration or emigration despite access to Bristol Bay via the Kvichak River

- Newhalen
- Iliamna
- Kokhanok
- Pedro Bay
- Igiugig

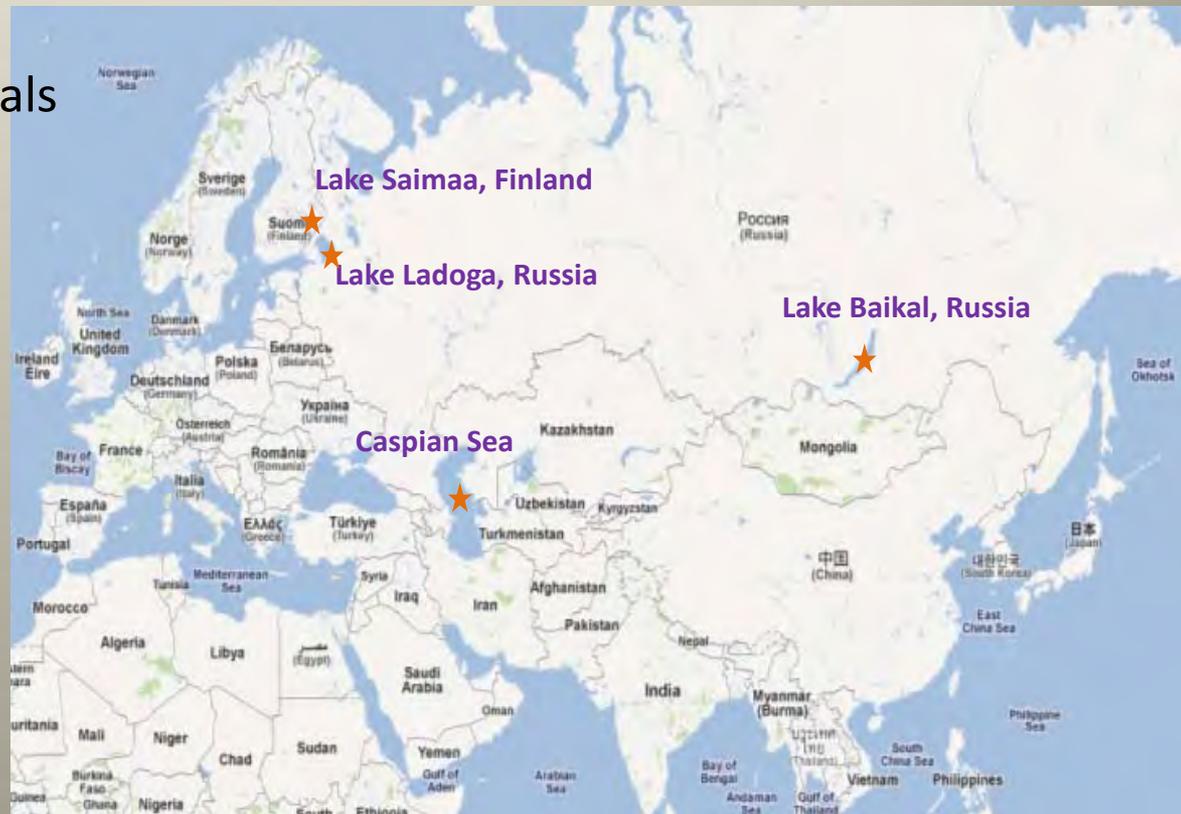


Lake Iliamna seal population is quite unique.

- The only other instance of a freshwater population of harbor seals exists in Lacs des Loups Marins on the Ungava Peninsula of northern Québec, Canada (*P. v. mellonae*).

- Lake-dwelling ringed seals

- Lake Baikal, Russia
- Lake Saimaa, Finland
- Lake Ladoga, Russia
- Caspian Sea (1.2% saltwater)



- My interest goes back almost 30 years
(potential master's topic under Ole Mathisen at UW)
- Donna Hauser UW
 - Masters 2001 which lead to PhD 2008

Resident Harbor Seals (*Phoca vitulina*) in Iliamna Lake, Alaska: Summer Diet
and Partial Consumption of Adult Sockeye Salmon (*Oncorhynchus nerka*)

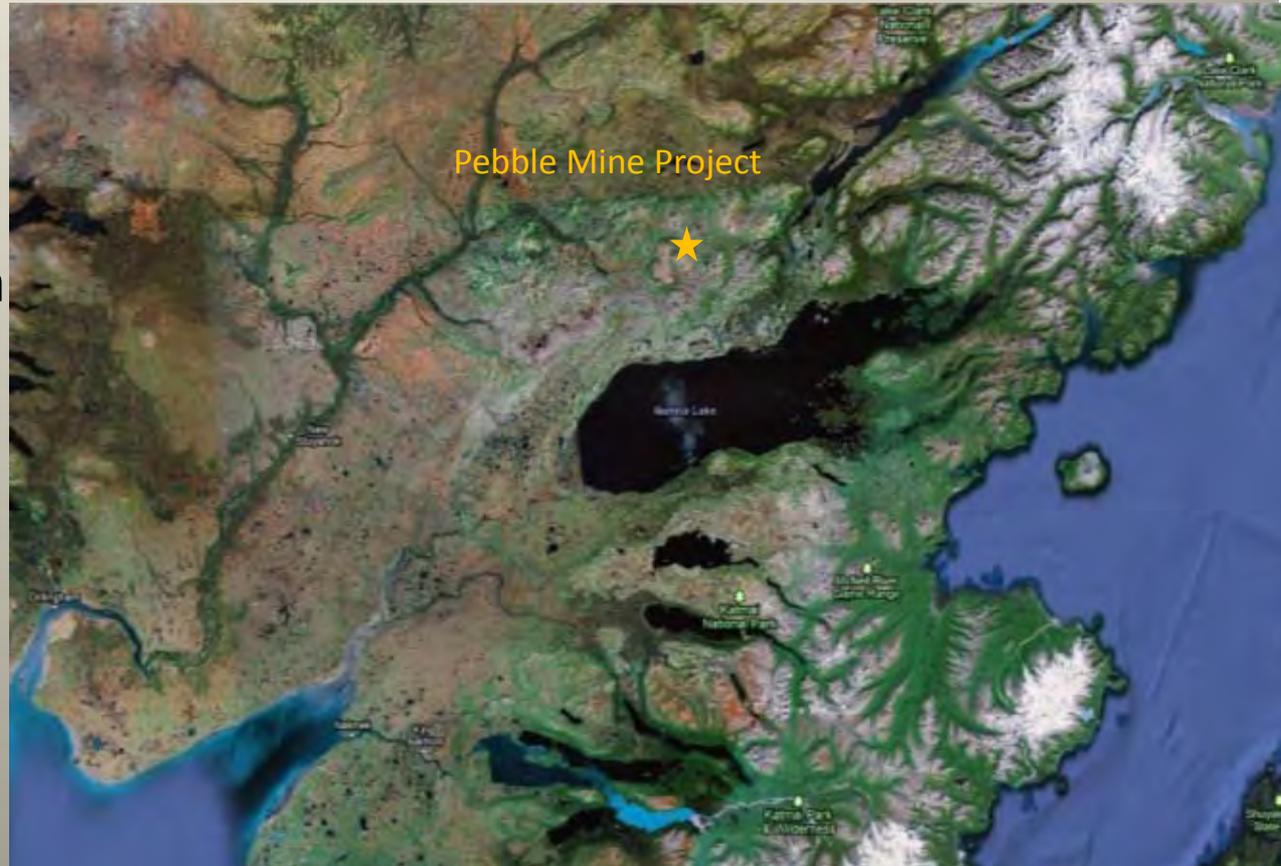
Donna D. W. Hauser, Christopher S. Allen, Harry B. Rich, Jr., and Thomas P. Quinn

- Convinced ADF&G to begin opportunistic surveys in 1998
- NMML in 2005 and yearly since 2008
- Our Database includes counts from:
 - Kline 1984, 87, 88
 - Mathisen and Kline 1991
 - ADF&G Bob Small 1998
 - ADF&G John Wells 2003
 - NMML Withrow 2005
 - NMML Withrow, Yano, others 2008-2011

 - Other data sources: Pebble Partnership and Newhalen Tribe

- Harbor seal surveys in Alaska are typically done in August during the molt when most seals are hauled out.
- Need to get good baseline on counts during other times of the years (Seasonally)

- -Pebble
- -Stock delineation
- -Subsistence



- NMML, along with our Native partners, pooled resources and developed a research plan which includes conducting aerial surveys
 - while the lake is still frozen (April)
 - after breakup {pupping?} (Late May-June)
 - molt (August)
 - pre freeze-up (October)
- Other components include:
 - LTK {Local Traditional Knowledge} interview village elders and hunters
 - surveys conducted by BBNA and Newhalen tribal youths
 - in 2011-12 surveys conducted by ADF&G Subsistence Division
- - collect samples from harvest
 - genetics
 - contaminates

8/16/2011 12:01 am



Hat Island

Grassy Island

Flat Island

Triangle Island

Seal Islands

Porcupine Island

Pedro Bay

Pedro Bay

Pedro Bay

JF16G

JF16A

JF16E&F

JF16C

JF16D

JF16H 1

JF16NEW

JF15C

JF15B

JF15A

JF15A2

JF15B2

0015

0040

0017

0016

0014

3.31 mi

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Image © 2011 TerraMetrics

lat 59.723174° lon -154.304769° elev 46 ft

© 2010 Google

Eye alt 13.93 mi

Take aerial photographs from the air 800-1000'



Count digital images



TOTAL = 69 + 25 = 94

IMAGE

69





Covariates

- Date
- Time of Day
- Weather
- Visibility
- NOT Tide,
(but what about water height)

August Seals



8/3/10



8/20/09



8/15/11



8/20/09

JF16



8/22/09

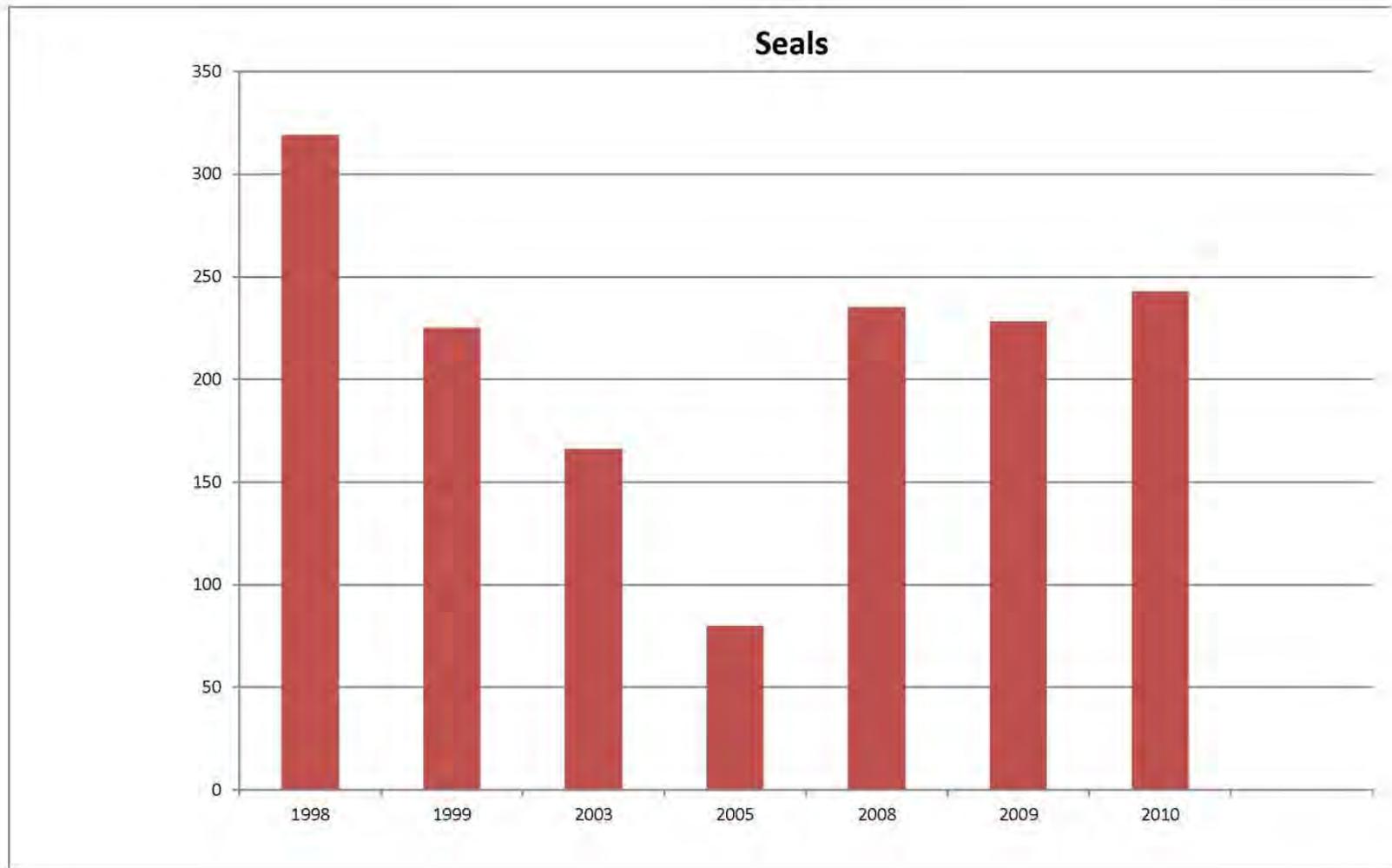
Sometimes this site is usually dry and packed with seals



This site often completely submerged



Unadjusted (raw) max. counts by year



8-15-2011 17:08



8-13-2011 22:00



- **Where are the pups?**

- In Alaska, pupping generally occurs mid May to Mid June

- How come we never see pups? Do seals pup in the lake?

Asked local hunters at meetings. Their response:

- yes, seals pup in the lake all year

- yes, seals pup in the lake in winter, on the ice

- no, seals don't pup in the lake

- I don't know

- Village Elder told me everything happens in the lake about a month later than everywhere else.

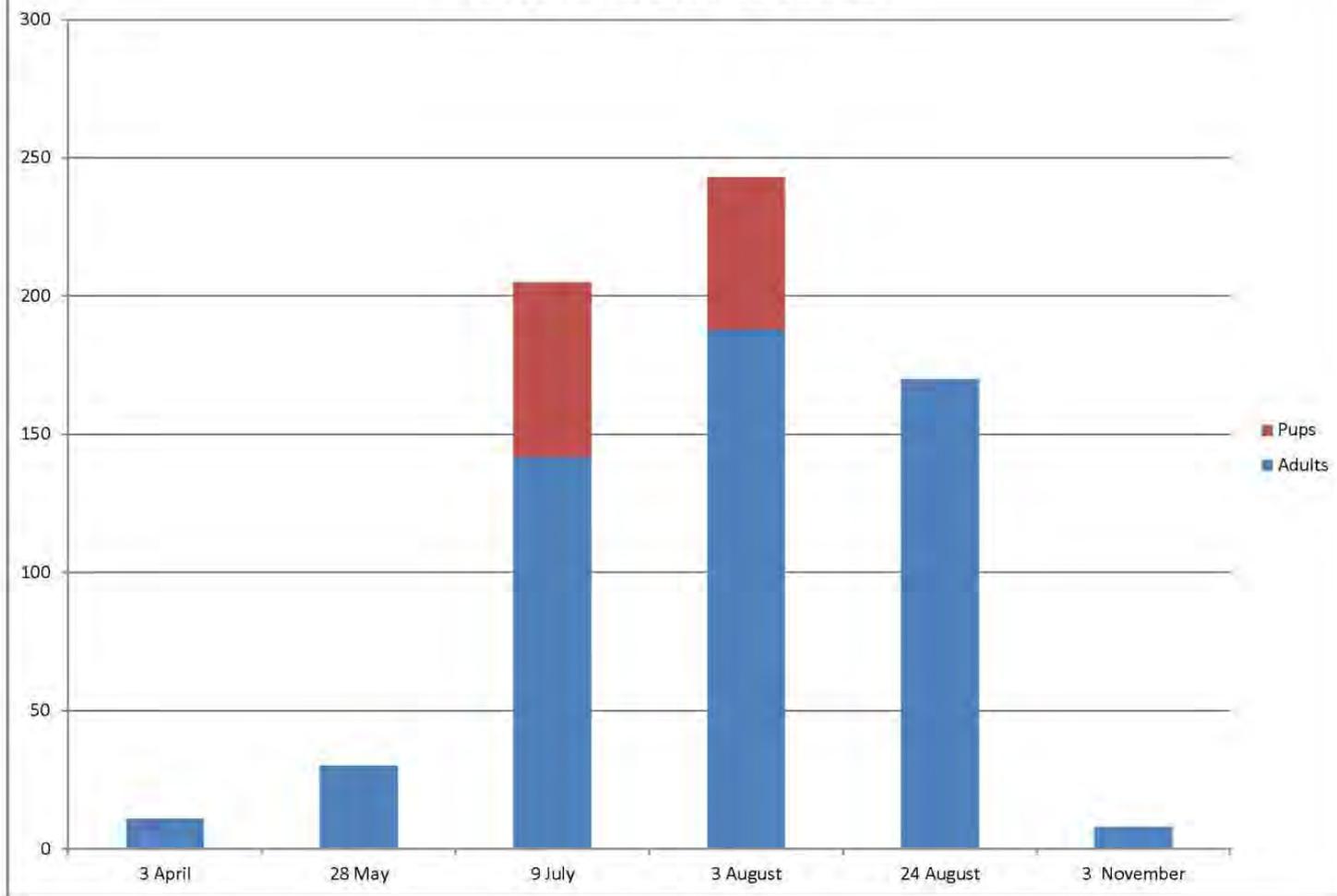
So we flew in July

Pupping occurs in July!



→ = pups

2010 Adult and Pup Counts



Are there seals in the lake when it's frozen? Where?



April 3 2010



August 24 2010

We have reports that subsistence hunting takes place in early spring.

Annual Takes about 10 seals.

Some pools exist in shallow water areas











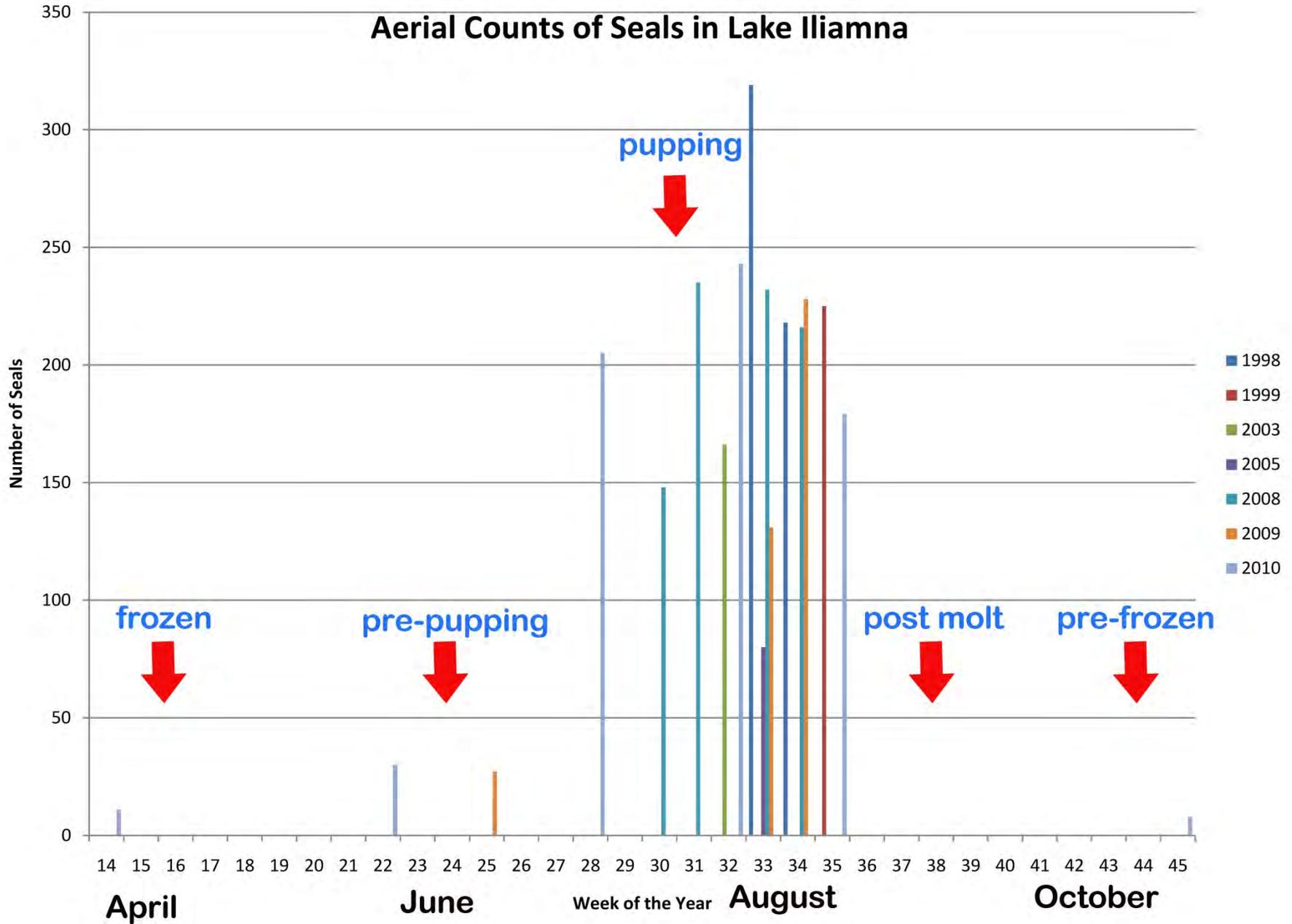
Hunters looking for breathing holes







Aerial Counts of Seals in Lake Iliamna



The End

Questions?

