

Science, Service, Stewardship



Northern Pinniped Unusual Mortality Event (UME)

Presented to the Climate, Ecosystem, & Health
Working Group
April 16, 2012

**NOAA
FISHERIES
SERVICE**

Aleria Jensen

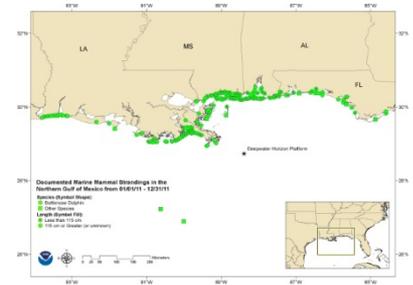
NMFS Alaska Region Stranding Program
Offsite Coordinator for Northern Pinniped UME



Current Unusual Mortality Events (UMEs)

Three high profile UMEs under investigation

- Cetaceans in the Northern Gulf of Mexico (dolphins)
 - DWH spill and Brucella
- Pinnipeds in New England (harbor seals)
 - Influenza
- Pinnipeds in the Arctic and Bering Strait (ice seals and walrus)
 - Unknown pathogen





What is an "unusual mortality event"?

An unusual mortality event (UME) is defined under the Marine Mammal Protection Act as:

"a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response."

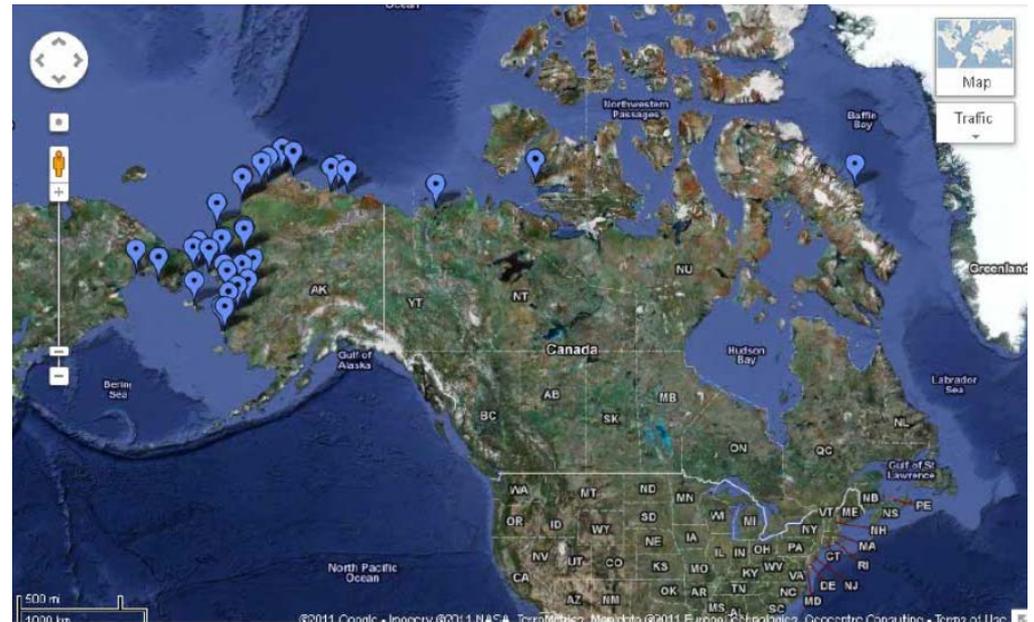


UME Criteria

1. A marked increase in the magnitude or a marked change in the nature of morbidity, mortality or strandings compared with prior records.
2. A temporal change in morbidity, mortality or strandings is occurring.
3. A spatial change in morbidity, mortality or strandings is occurring.
4. The species, age, or sex composition of the affected animals is different than that of animals that are normally affected.
5. Affected animals exhibit similar or unusual pathologic findings, behavior patterns, clinical signs, or general physical condition (e.g., blubber thickness).
6. Potentially significant morbidity, mortality or stranding is observed in species, stocks or populations that are particularly vulnerable (e.g., listed as depleted, threatened or endangered or declining).
7. Morbidity is observed concurrent with or as part of an unexplained continual decline of a marine mammal population, stock, or species.



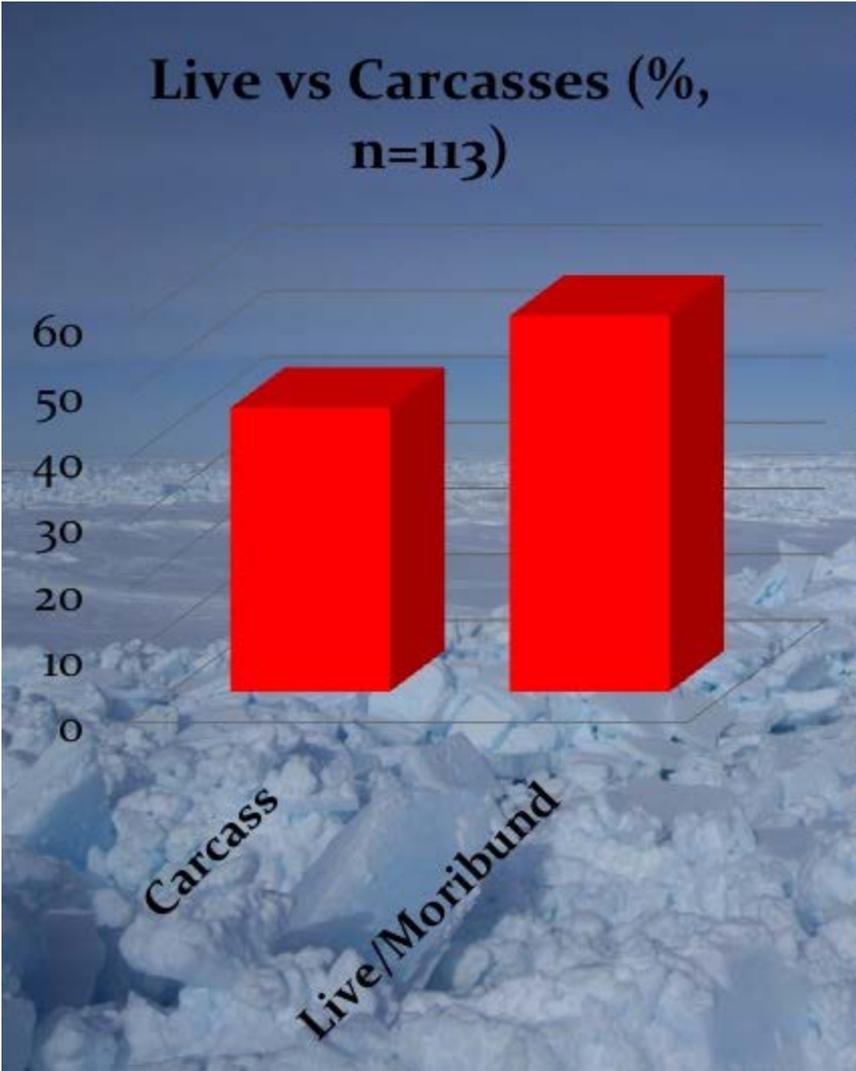
Northern Pinniped UME



Reported location of illness in Arctic marine mammals (ringed seals, spotted seals, bearded seals and walrus). Map represents reports of illness cases from July to November 10, 2011. Created by M. Brubaker, Center for Climate and Health, Alaska Native Tribal Health Consortium.

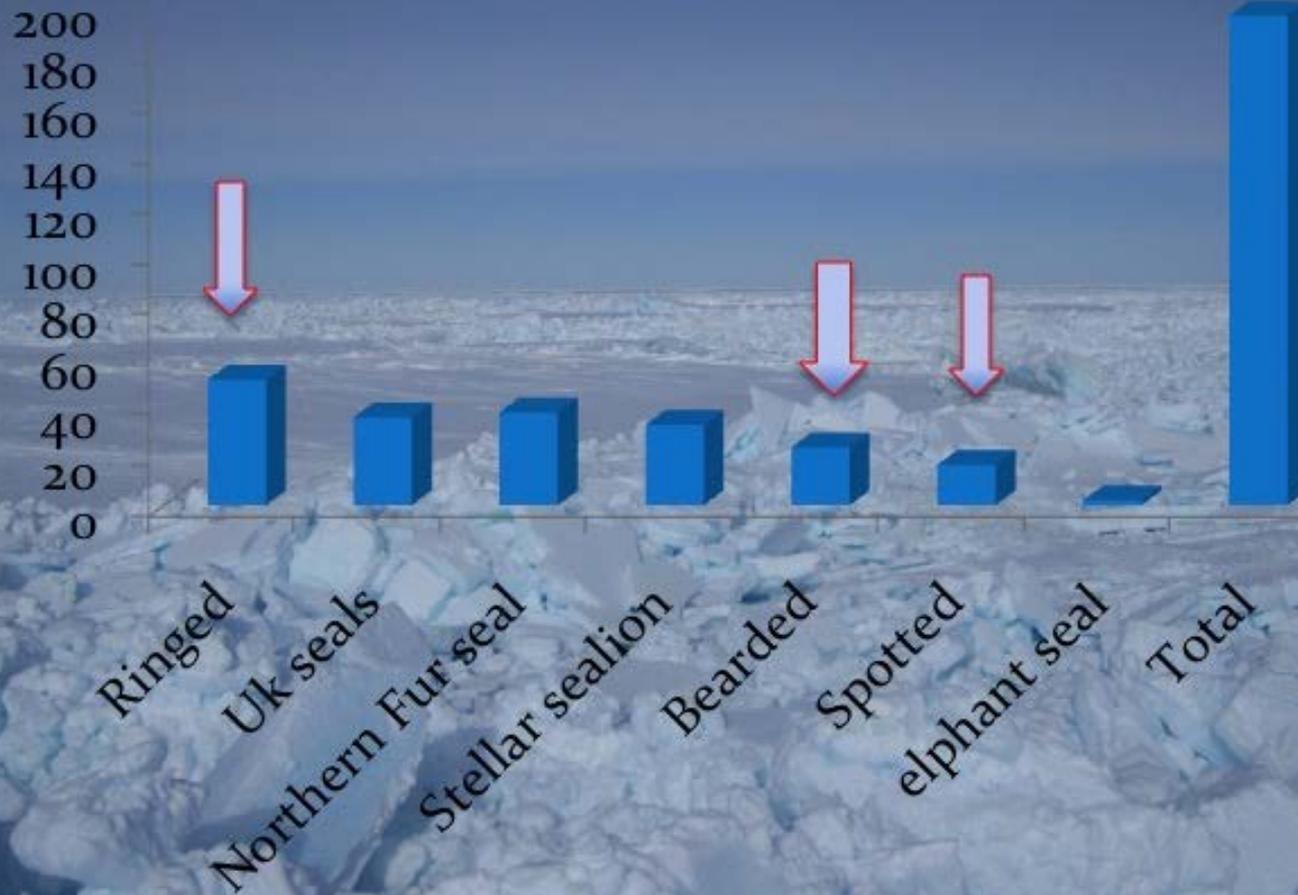


Slide Courtesy of the North Slope Borough



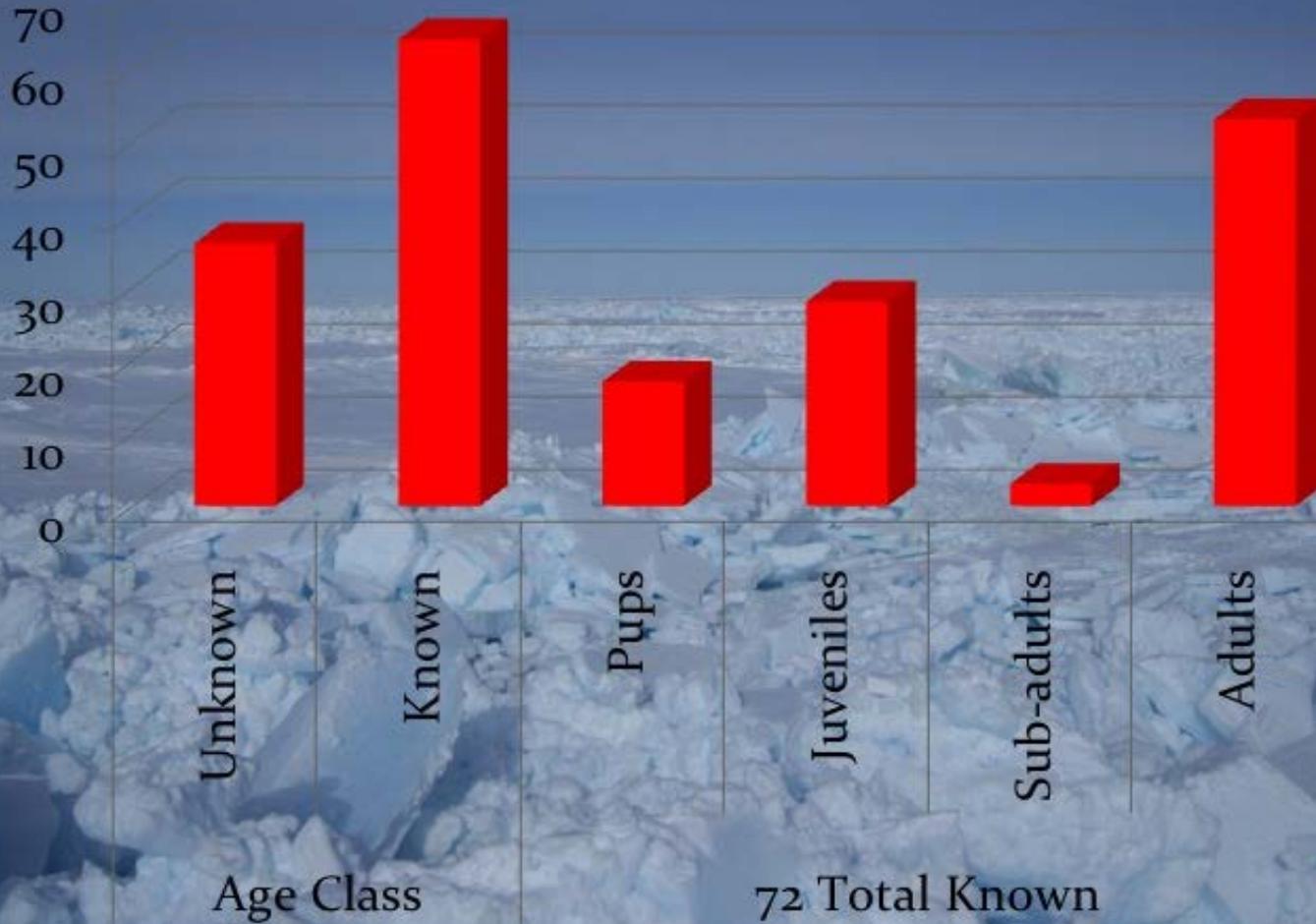
Slide Courtesy of the North Slope Borough

Historical Stranding Data: 30 years

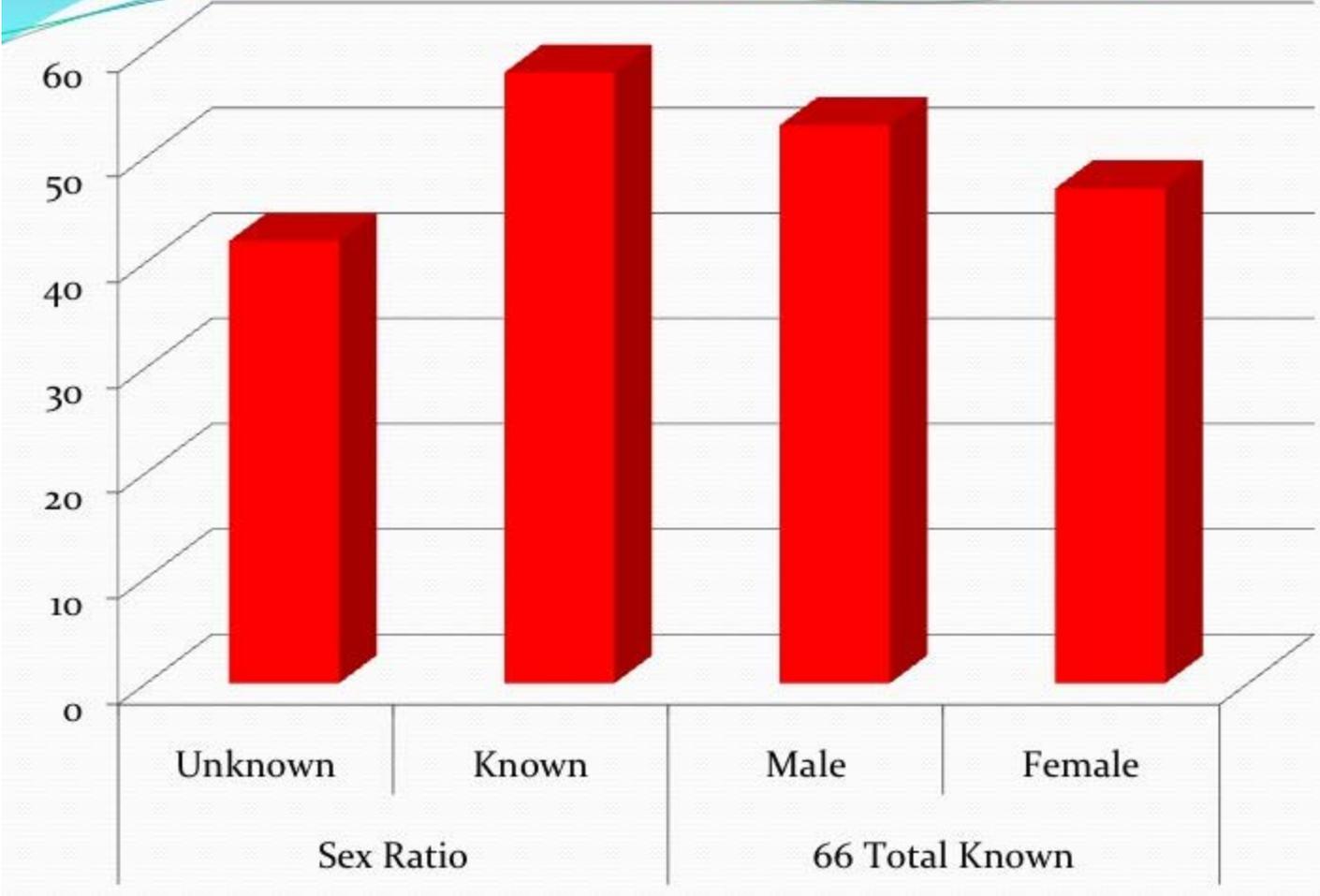


Slide Courtesy of the North Slope Borough. Data courtesy NMFS Stranding Program, 2012.

Age Distribution (%; n=113)

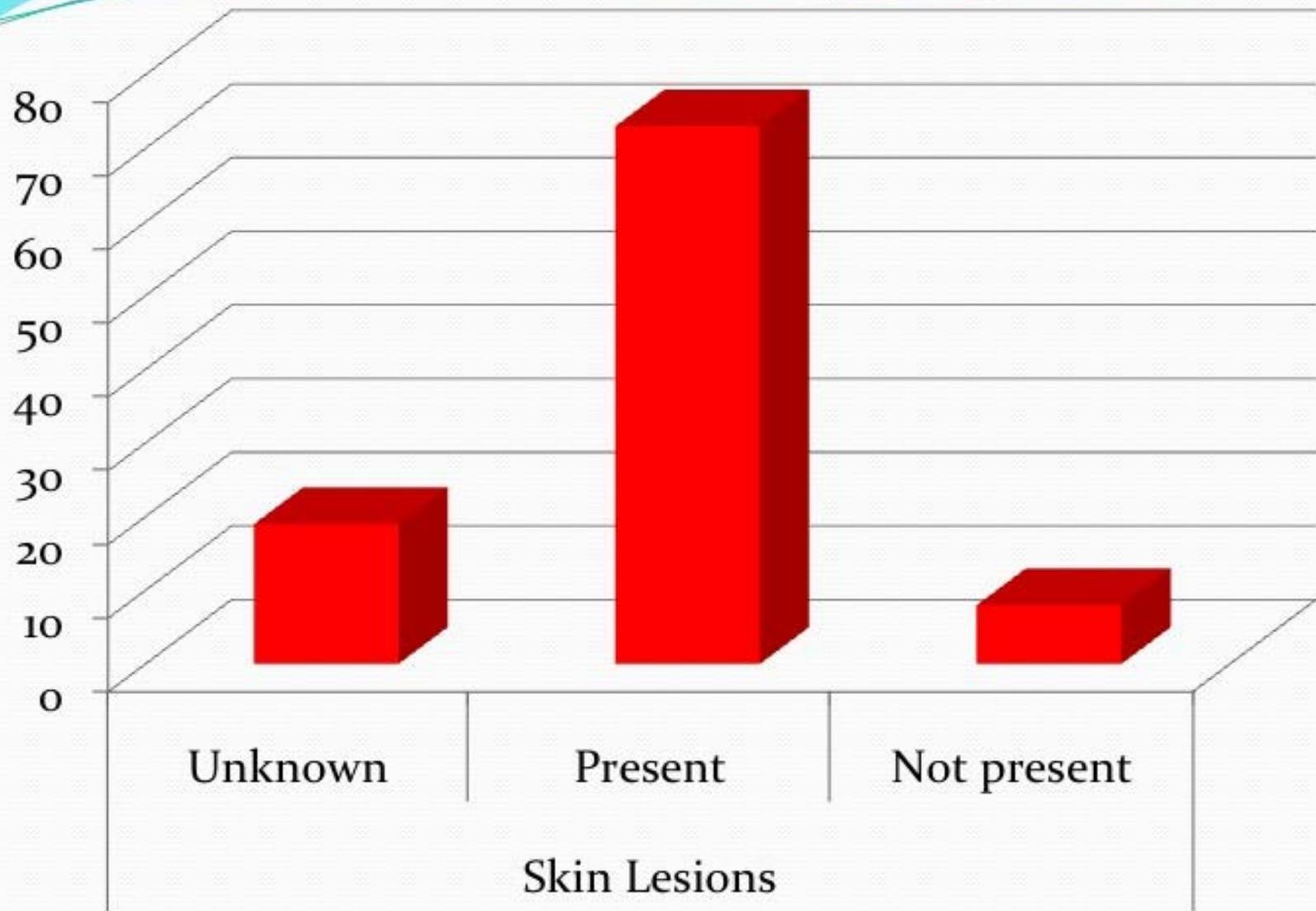


Sex Distribution (%; n=66)



Slide Courtesy of the North Slope Borough

Skin Lesions (%; n=113)





Progress following UME declaration

- UME declared jointly by NMFS and USFWS for ice seals and walrus, December 2011
 - On-site Coordinator: Dr. Raphaela Stimmelmayer, North Slope Borough
 - Off-site Coordinators: Joel Garlich-Miller, USFWS, and Aleria Jensen, NMFS
 - Liaison to the WGMMUME: Dr. Stephen Raverty
- Co-management approach: EWC and ISC part of investigative team
- Disease workshop at the Alaska Marine Science Symposium, Jan 2012
 - Tribal leaders, hunters, scientists, veterinarians, managers, and diagnosticians
 - Developed strategies for moving forward with investigation re field protocols, diagnostics, and communications



*Arctic UME Workshop, Alaska Marine Science Symposium, January 18, 2012.
Photo courtesy of Dr. Carrie Goertz, Alaska SeaLife Center*



Necropsies to date

(as of 4/13/12)

- Dr. Kathy Burek, AK Veterinary Pathology Services: lead pathologist
- 27 seal necropsies (ringed, bearded, spotted, ribbon)
- 2 walrus necropsies and 4 biopsies
- Gross symptoms: ulcerative dermatitis and hair loss, abnormalities in lungs and heart, softening of liver tissue (in some animals)
- Most dying of septicemia (bacterial infection)



Photo: Gay Sheffield, UAF MAP Program



Findings To Date

- No definitive cause yet identified
- Tests for common known viral pathogens (poxvirus, herpesvirus, papillomavirus, morbillivirus, calicivirus) have been negative
- Domoic acid and PSP results negative
- Bacterial and fungal testing underway
- Additional testing underway on chemical contaminants, radionuclides
- Nutritional assessment planned
- Ongoing effort to do exploratory evaluation using viral discovery methods (i.e. deep sequencing 4-5-4) for unidentified infectious agents



Federal Funding for UME

- Emergency Prescott Grants
 - Current Award (April 2012)
 - UAA (Dr. Kathy Burek)
 - Application pending
 - North Slope Borough
- UME Contingency Fund



Yakutat Seal

February 29, 2012

- Bald, sickly-looking, and lethargic
- Animal captured and transferred to Anchorage for examination
- Seal found to be very ill and euthanized
- Necropsy findings: seal exhibited similar symptoms to those in the UME, including almost total hair loss and nodular, ulcerated scabbed skin sores
- Sample of the seal's DNA sent to NMFS to confirm species identity, along with skull ID revealed it to be RIBBON SEAL





Harbor Seal Necropsy

April 1, 2012

Juneau

- Hunter harvested and turned in due to suspicion of 'lesion'
- Necropsy revealed normal body condition
- Wound does not appear to be lesion symptomatic of UME
- Animal not considered diseased at this time





Polar Bears—Has the disease spread?

- Noted by USGS researchers in March/April 2012
- 13 of 48 individuals had unusual skin presentation (lesions, alopecia) from Barrow and Kaktovik
- Most common areas affected include the muzzle and face, eyes, ears and neck
- Otherwise healthy in appearance and behavior
- Field sampling will screen for broad array of pathogens
- Unclear whether symptoms related to the UME



Photo: Elizabeth Labunski / USFWS



UME Planning and Response 2012

- **Designated investigative teams:** expert subgroups (diagnostic, clinical medicine, radionuclide, contaminants, biotoxins, trans-boundary, media/outreach, community/hunters, oceanography)
- Subsistence harvest disease monitoring during spring hunt (no new cases March/April)
- Outreach: state-wide flier, PSAs, radio shows, monthly fact sheets, public website
- Presentations:
 - Co-Management partners: IPCoMM, EWC, ISC, ANHSC
 - AK Marine Science Symposium, AK Regional Stranding Network Meeting
- UME website for investigators to share cases: necropsy/pathology findings
- State-wide contact: AK Stranding Network Hotline **1-877-925-7773**



Northern Pinniped UME Cooperating agencies and institutions

- United States
- Alaska Department of Fish and Game
- Alaska Native Tribal Health Consortium, Center for Climate and Health
- Alaska Veterinary Pathology Service
- Alaska Department of Health and Social Services
- Alaska Department of Environmental Conservation
- Athens Veterinary Diagnostic Laboratory, University of Georgia
- The Center for Infection and Immunity, School of Public Health, Columbia University
- Eskimo Walrus Commission
- Ice Seal Committee
- Indigenous People's Council for Marine Mammals
- Marine Advisory Program/UAF-Northwest Campus
- National Marine Fisheries Service
- North Slope Borough, Department of Wildlife Management
- United States Fish and Wildlife Service
- United States Geological Survey
- University of Florida-Gainesville, College of Veterinary Medicine
- United States Department of Agriculture-Foreign Animal Disease Lab
- The Working Group on Marine Mammal Unusual Mortality Events
- Washington Animal Disease Diagnostic Laboratory

- Canada
- British Columbia Animal Health Center
- Fisheries and Oceans Canada

ALASKA UME = ONE HEALTH PERSPECTIVE

Subsistence is essential



Food Safety

Food Security

Food Web

Trophic Effects

R.Stimmelmayr 2011 N. Slope Borough