

What we will cover today

Wildlife Mortality

- 1. Why it matters, what it is, who does it**
 - 2. Where it occurs, how to determine it**
 - 3. Diseases, Parasites Necropsies and Population**
 - 4. Extinction, Management and Conservation**
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Why Mortality matters

Affects Population Survival

Can be used for Disease Monitoring

Increases Biological Knowledge, e.g. predator-prey



Factors counteracting Mortality

Animal health

Food conditions

Weather conditions

Social interactions

(Reproduction)

others...

Specific Types of Wildlife Mortality

Senescence

Predation

Disease

Hypothermia

Starvation

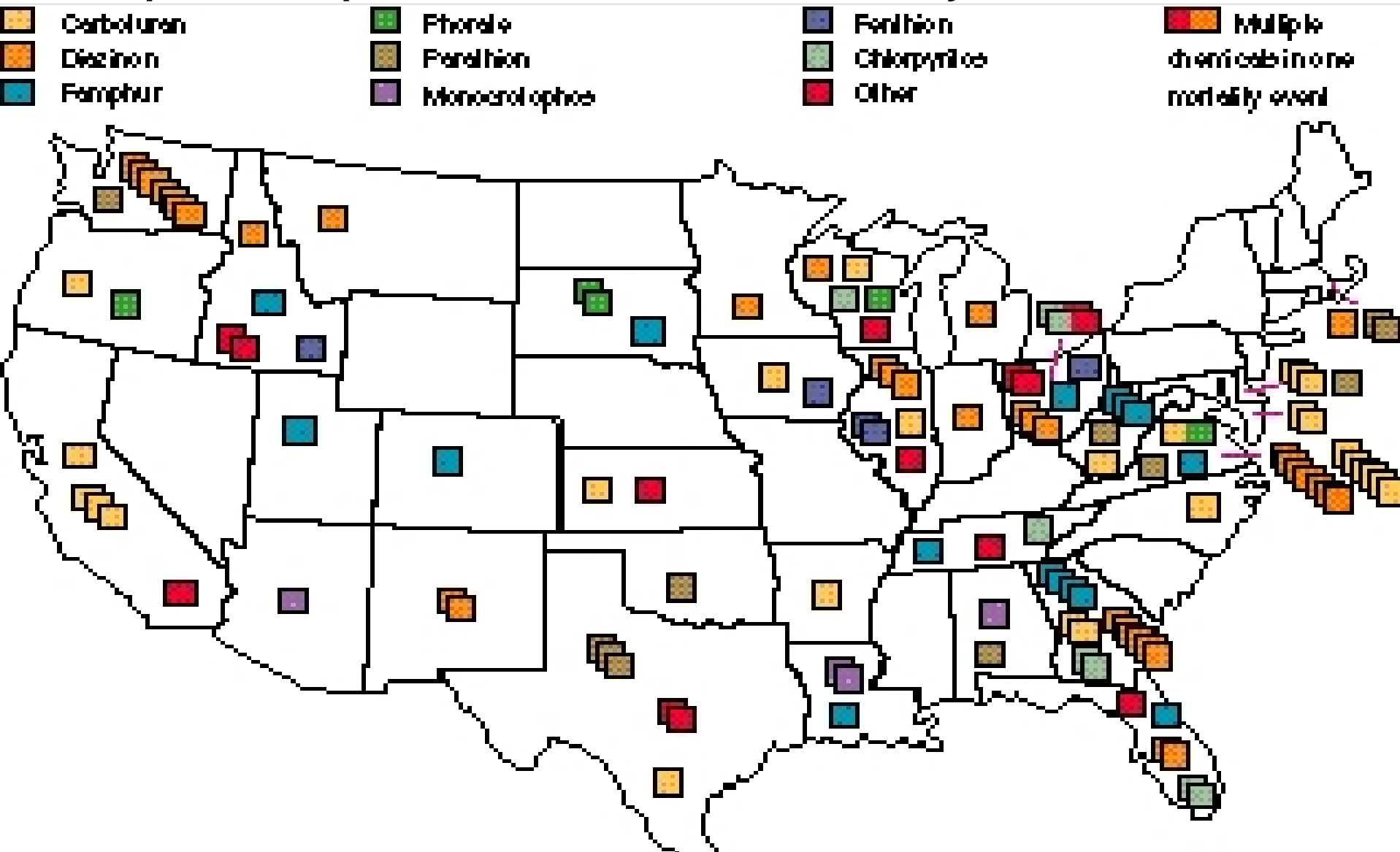
Injury

Pollution/Toxicology

Combination of Factors



Location by state of organophosphorus and carbamate compounds in pesticide-related wildlife mortality incidents, 1980-93



What is Wildlife Mortality ?

Mortality is the end-product of a sequence of events involving the host animal, its environment, and the lethal or causative agent



Deer Nose Bots

Dept. of Nat. Res.

Michigan

http://www.michigan.gov/dnr/0,1607,7-153-10370_12150_12220-26640--,00.html

How to determine Mortality: Important field observations

Environment
Onset of Problems
Species Affected
Age
Sex
Number of sick or dead
Clinical signs
Population at risk
Population movement
Specific features of the problem area



Locations of Wildlife Mortality

Where death of animal occurred

-on site

-removed

-delayed

=> landscape features, e.g. roads



Who did it ...

- tracks
- bite marks
- food remnants
- species specific attacks and fights



PS. Not always easy to find out

Who did it again ?

(Predation Statistics for the Wolf Recovery Areas in the Rockies)

Sheep Mortality	Idaho	Wyoming	Montana
<i>Total Non-Predator</i>	30,400	39,000	66,000
Weather (1 of 8 categories)	3,600	12,600	7,000
<i>Total Predator</i>	11,600	48,000	18,900
Dogs (1 of 8 listed predators)	1,300	600	1,300
Wolves	54	34	50
<i>Total Mortality</i>	42,000	87,000	84,900
Total Sheep by State	275,000	1,580,000	2,600,000

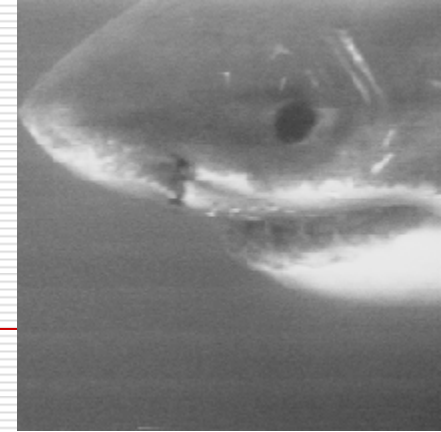
Compared with total sheep mortality, wolves are responsible for:

Idaho: 1 out of 778 sheep or .1%

Montana: 1 out of 1,698 sheep or .06%

Wyoming: 1 out of 2,558 sheep or .04%

Predators



"Considerable controversy exists over whether predation can regulate populations of moose, as well as the intensity of predation and species of predators that might be necessary to bring about regulation." Bowyer et al. Moose. in Feldhamer et al. 2003



Sickness

Wildlife can be 'sick', e.g. coughing, sneezing, fever

Common Wildlife Diseases and Parasites in Alaska a)

Contagious ecthyma
Papillomas (Warts)
Samson hair loss (foxes)
Moose fly
Warbles
Lice
Nose bots
Lump jaw
Alveolar hydatid disease
Liver tapeworm cysts
Tularemia
Cystic hydatid disease
Lungworms
Muscle tapeworm cysts
Trichinosis
Sarcocystosis



Squirrel Pox
(Dept. of Nat. Res.
Michigan.gov)
Roundworms



Common Wildlife Diseases and Parasites in Alaska b)

Rabies
Abscesses
Brucellosis
Exertional myopathy
Hoof rot
Injuries
Besnoitiosis
Starvation/Malnutrition



Malnutrition & Starvation
(Dept. of Nat. Res.
Michigan.gov)

Specimen Collection and Preservation

Basic Supplies

Specimen Selection

Sample Collection

Tissue Selection and Preservation

- Photography
- Histology
- Preservation of Parasites
- Blood Smears
- Blood Samples

Specimen Preservation

Specimen Shipment



Sei Whale
Smithsonian Inst.

Necropsy Procedures: The basics

General Guidelines

1. Be methodical, thorough and complete
2. Describe and record what you see
3. Maintain complete and accurate records
4. Guard against contamination of samples



Watch for 'biosafety'

Other relevant factors than Mortality

Remember:

Productivity

Survival



Recently Extinct Species (Various Mortality Factors)

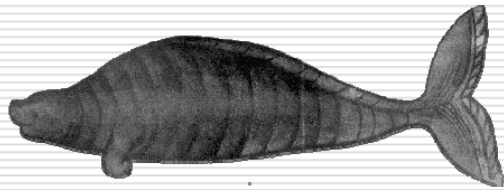


Passenger Pigeon



Labrador Duck

Steller's Seacow



Bison



Sea Mink

Carolina Parakeet



Bachman's Warblers

(+ Plants + insects ...)



Recently Extinct (Sub-)Species (Various Mortality Factors)



Queen Charlotte Island/Dawson Caribou

Grizzly Bear Range Shrinkage

Wolf Range Shrinkage

Pronghorn Range Shrinkage

Eastern Subspecies of Elk (app. 1900)

Merriam's Elk

Audubon Bighorn Sheep (app. 1906)

Eastern Subspecies of White-tail Deer (app. 1870)

Musk Oxen probably shot out in Alaska by hunters

Sea Otter

Beaver (app. 1830; again huntable in U.S. 1961 onwards)

Aleutian Geese

Heath Hen (app. 1900)

California Condor

Salmonids



Opposite Effects: Population Explosion and Extension



Snow Geese

Canada Geese

Elk into Alaska

Red Fox into Arctic

Magpies into Western North America



End of Session

Any Questions ?

