

Human interaction



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HI Form

OMB Control No. 0648-0178; Expiration Date: 3/31/2020

MARINE MAMMAL HUMAN INTERACTION REPORT

Exam Information (fill in or circle most appropriate)

1 Field #: _____ Species: _____
 2 Examiner: _____ Recorder: _____
 3 Date of exam: _____ Condition code (at exam): 1 2 3 CBD
 4 Preservation: alive fresh frozen frozen/thawed Body condition: emaciated not emaciated CBD
 5 Documentation: digital print slide video Image disposition: _____
 6 Integument: normal abnormal decomposed % Skin missing: <10% 10-25% 25-50% >50%

Explanation of terms:
 YES = I have examined the area and/or found signs of this pathology, natural marking, or human interaction
 NO = I have examined the area and/or did not find signs of this pathology, natural marking, or human interaction
 CBD = I have examined the area and could not determine whether there were signs of human interaction (i.e. the part was missing, degraded, or signs were ambiguous)
 NE = I did not examine the area
 NA = this animal doesn't normally have that part (i.e. seals have no dorsal, dolphins have no rear flippers)

	WHOLE BODY EXAM	YES	NO	CBD	NE	NA	Image taken
8	External pathology (pox, tattoo lesion, abscess, fungal patches)						
9	Natural markings (scars, tooth rakes, unusual pigmentation)						
10	Appendage(s) removed / Mutilation (with instrument)						
11	Pelt removed / Mutilation (with instrument)						
12	Body sliced / Mutilation (with instrument)						
13	Gear / Debris present on animal (including tags)						
14	Gear / Debris retained (name & contact info in Comments)						
15	HI lesions (fishery, gunshot, propeller, healed HI scar, brand)						

16 Predation / scavenger damage (circle all anatomical areas where damage hinders evaluation; numbers coincide with anatomical areas below): 17 18 19 20 21 22 23 24 25 26 27 28 29 NONE

FILL IN TABLE FOR ALL POSSIBLE FINDINGS OF HI

Do not use for natural markings/pathology.

DETAILED EXAM OF ANATOMICAL AREAS	Origin of Lesion													Image taken?				
	Type of Lesion			Gear- Line		Gear/Debris		Other										
YES	NO	CBD	NE/NA	Impression/Laceration	Penetrating wound	Healed HI scar	Abrasion	Other / CBD	Twine / line	Net	MOM/UCBD*	Hook	Packing Band	Other / CBD	Propeller	Gunshot	Other / CBD	
17																		
18																		
19																		
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26																		
27																		
28																		
29																		

*If Gear-Line is the lesion origin, mark the MOM/UCBD column: "MO" for monofilament, "MU" for multifilament, and "CBD" if the type of line cannot be determined.

Field #: _____

INTERNAL EXAM	Date	YES	NO	Partial	CBD	Image taken	Detailed Info (circle all that apply)
31	Bruising/blunt trauma						Details in Comments section -use line number
32	Skeleton examined						Details in Comments section -use line number
33	Broken bones present						Associated tissue reaction: YES NO CBD
34	Mouth/GI tract examined (circle contents)						intact prey partially digested hard parts only debris/gear empty other
35	Lungs/bronchi examined						Details in Comments section -use line number
36	Lung/bronchi contents						froth fluid air (color:)
37	Bullet/projectile found						found using: CT X-ray dissection (collected? Y N)
38	Other lesions noted						Details in Comments section -use line number

39 Comments (note line number from left margin before each comment):

40 Findings of Human Interaction: YES NO CBD (Exam Type: external__ internal__ both __) (transfer to Level A Datasheet)

41 Type of HI: (provide details in comments)

Entanglement (gear__ debris__ CBD__)
 Hooking (recreational__ commercial__ CBD__)
 Ingestion (gear__ debris__ CBD__)
 Vessel trauma (sharp__ blunt__ both __)
 Gunshot
 Harassment
 Mutilation
 CBD/Other_____

42 Stranding Event History/Circumstances:

43 INITIAL HUMAN INTERACTION EVALUATION: If you marked YES above (line 40) evaluate the external exam, necropsy, carcass condition and circumstances surrounding the stranding event to answer the question below. Remember to be conservative in your subjective evaluation. What is the likelihood that the finding of human interaction (line 40), contributed to the stranding event?

0: Uncertain (CBD) 1: Improbable 2: Suspect 3: Probable

44 Justification:

Final human interaction evaluation requires additional data from level B and C analyses as well as review by experts (e.g. a veterinary pathologist)

PAPERWORK REDUCTION ACT INFORMATION

PUBLIC REPORTING BURDEN FOR THE COLLECTION OF INFORMATION IS ESTIMATED TO AVERAGE 45 MINUTES PER RESPONSE, INCLUDING THE TIME FOR REVIEWING INSTRUCTIONS, SEARCHING EXISTING DATA SOURCES, GATHERING AND MAINTAINING THE DATA NEEDED, AND COMPLETING AND REVIEWING THE COLLECTION OF INFORMATION. SEND COMMENTS REGARDING THIS BURDEN ESTIMATE OR ANY OTHER ASPECT OF THE COLLECTION INFORMATION, INCLUDING SUGGESTIONS FOR REDUCING THE BURDEN TO: CHIEF, MARINE MAMMAL AND SEA TURTLE CONSERVATION DIVISION, OFFICE OF PROTECTED RESOURCES, NOAA FISHERIES, 1315 EAST-WEST HIGHWAY, SILVER SPRING, MARYLAND 20910. NOT WITHSTANDING ANY OTHER PROVISION OF THE LAW, NO PERSON IS REQUIRED TO RESPOND, NOR SHALL ANY PERSON BE SUBJECT TO A PENALTY FOR FAILURE TO COMPLY WITH, A COLLECTION OF INFORMATION SUBJECT TO THE REQUIREMENTS OF THE PAPERWORK REDUCTION ACT, UNLESS THE COLLECTION OF INFORMATION DISPLAYS A CURRENTLY VALID OFFICE OF MANAGEMENT AND BUDGET (OMB) CONTROL NUMBER.

Human Interactions

- Gunshot wounds
- Boat strikes
- Nets/Fishing gear
- Propellers
- Sound
- Other...
 - What is the prevalence?
 - What evidence do you look for?
 - What is being done/enforcement



Human Interaction in Southeast Alaska, 2014

Marine Mammal Species

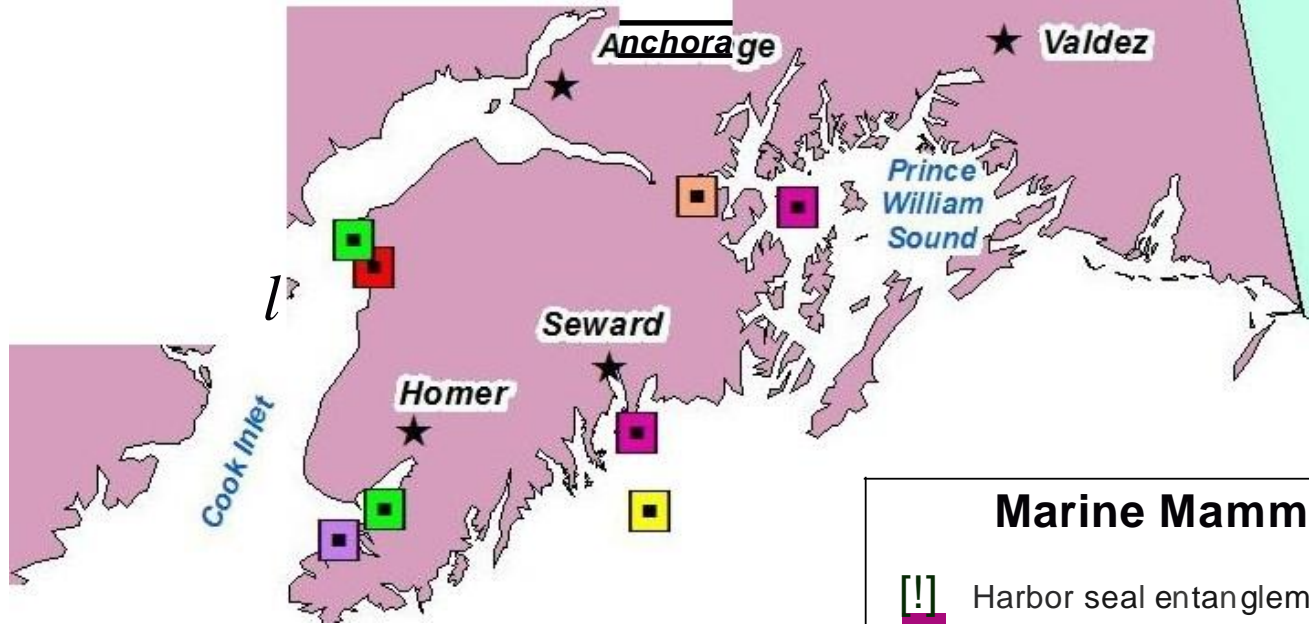
- Steller sea lion entanglement (12)
- Humpback whale entanglement (10)
- Ship strike (5)
- harbor seal gunshot (2)
- Harbor porpoise entanglement (1)



0 65 130
Kilometers



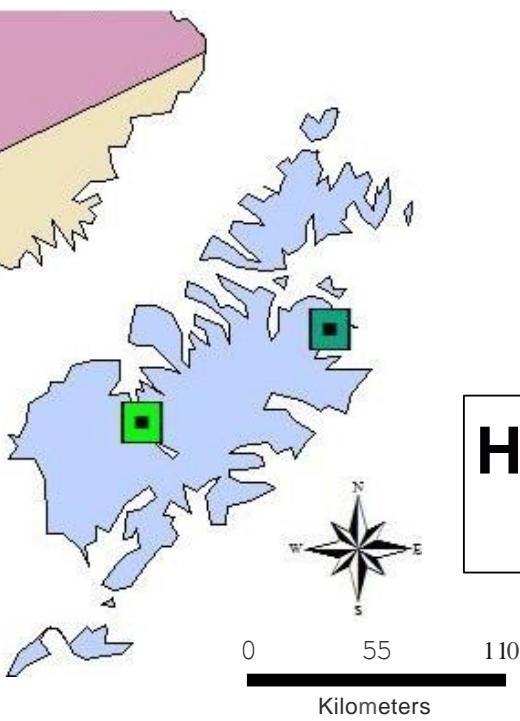
Resources Division (K. Savage), 2015



Marine Mammal Species




- [!] Harbor seal entanglement (3)
- Humpback whale entanglement (2)
- 0 SSL entanglement (1)
- [!] Harbor porpoise entanglement (1)
- 0 Unknown cetacean species entanglement (1)
- Harbor seal gunshot (1)
- Ship strike (1)

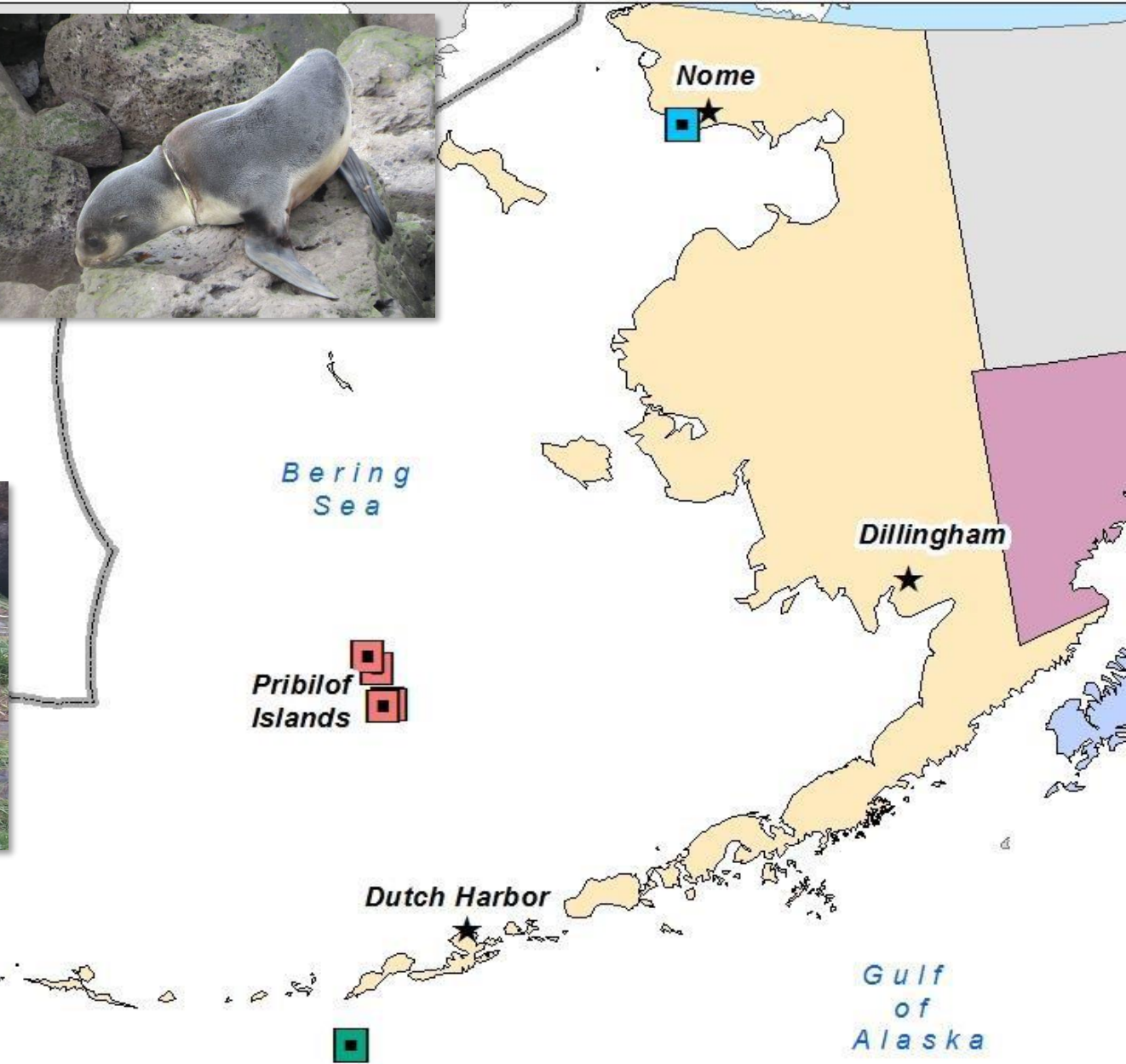
Human Interaction in Southcentral Alaska and Kodiak, 2014



Gulf of Alaska

Marine Mammal Species

-  Northern fur seal entanglement (26)
-  Beluga whale entanglement (1)
-  Ship strike (1)



Human Interaction in Western Alaska, 2014

Gunshot wounds (GSW)

2007 ADF&G Report

- 1428 HS
 - 11% struck and lost
- 217 SSL
 - 23.5% struck and lost



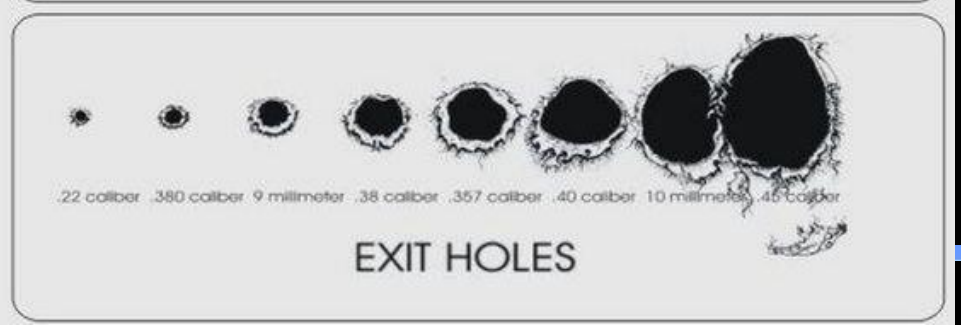
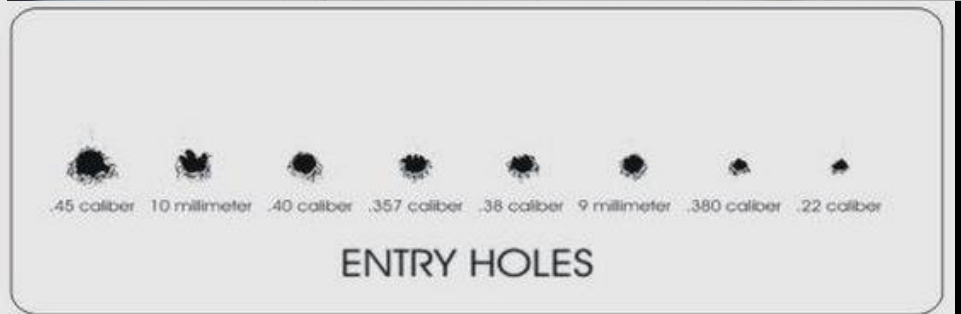
Evidence

Not that easy!!

- External
- Soft and bony tissues



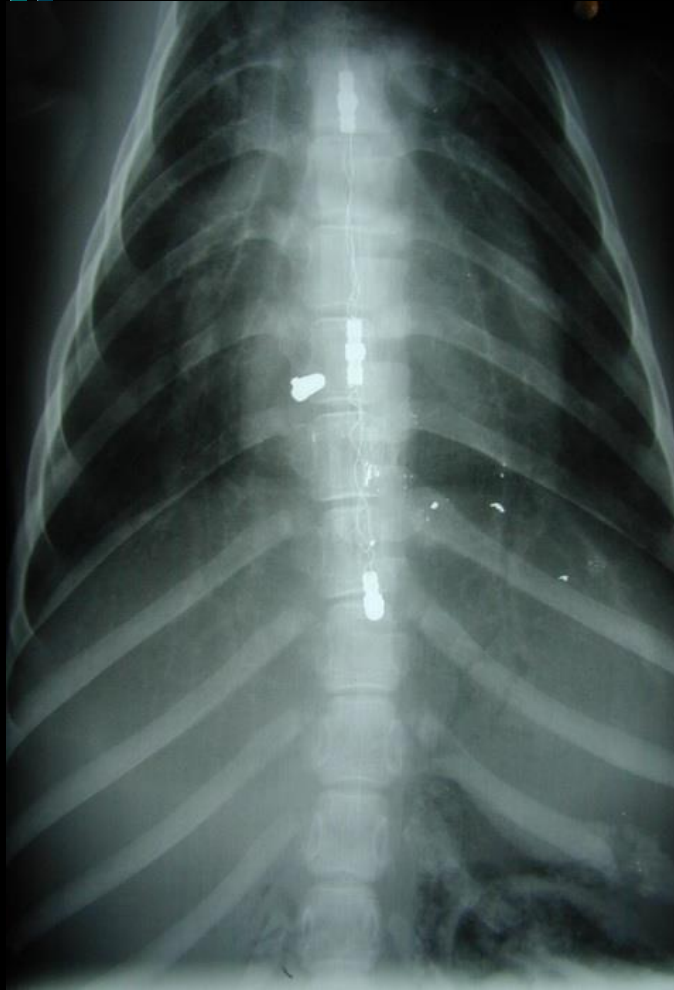
Gunshot wounds





Gunshot wounds (GSW)

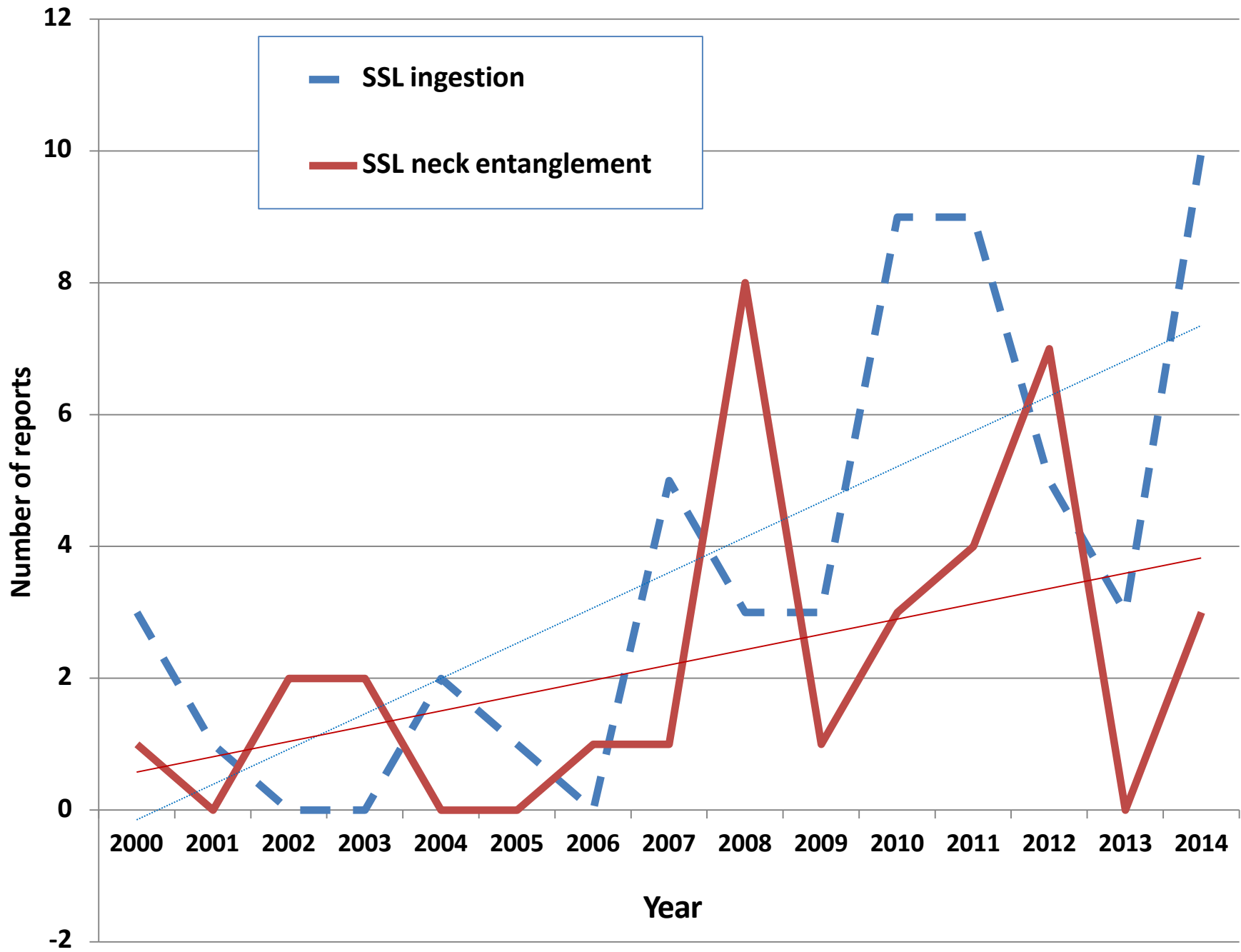
Radiographs



Remove using fingers, wash, dry,
weigh, measure, photograph =
evidence

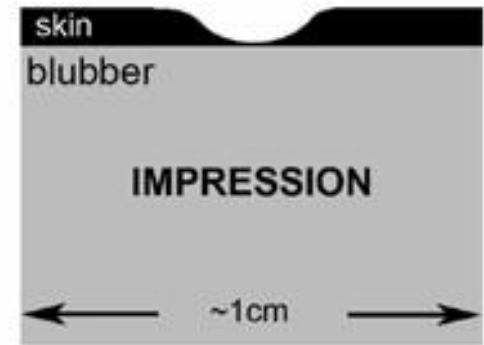
Net or Fishing Gear Entanglement

An underwater photograph showing several seals entangled in a fishing net. The scene is set in a deep blue ocean with a rocky seabed visible in the lower half. Numerous small fish are swimming in the background. The seals are dark-colored and appear to be struggling or trapped within the mesh of the net. The lighting is somewhat dim, highlighting the texture of the net and the sleek bodies of the seals.



Types of Lesions

- Impression
- Laceration
- Incision
- Penetrating wound
- Healed HI scar
- Abrasion



Origin of the lesion

- LINE is made up of many individual strands (multifilament) and is large in diameter.
- TWINE is a small diameter line and can be multi- or mono-filament.

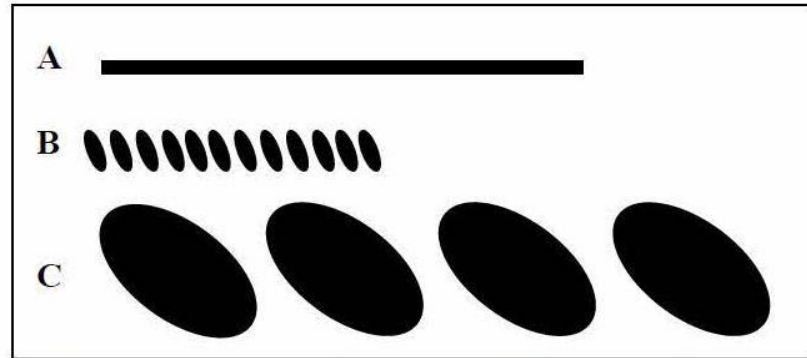


Figure 1. Impressions left by (A) monofilament, (B) twisted twine and (C) twisted line. Impressions are most visible on cetaceans.

Net

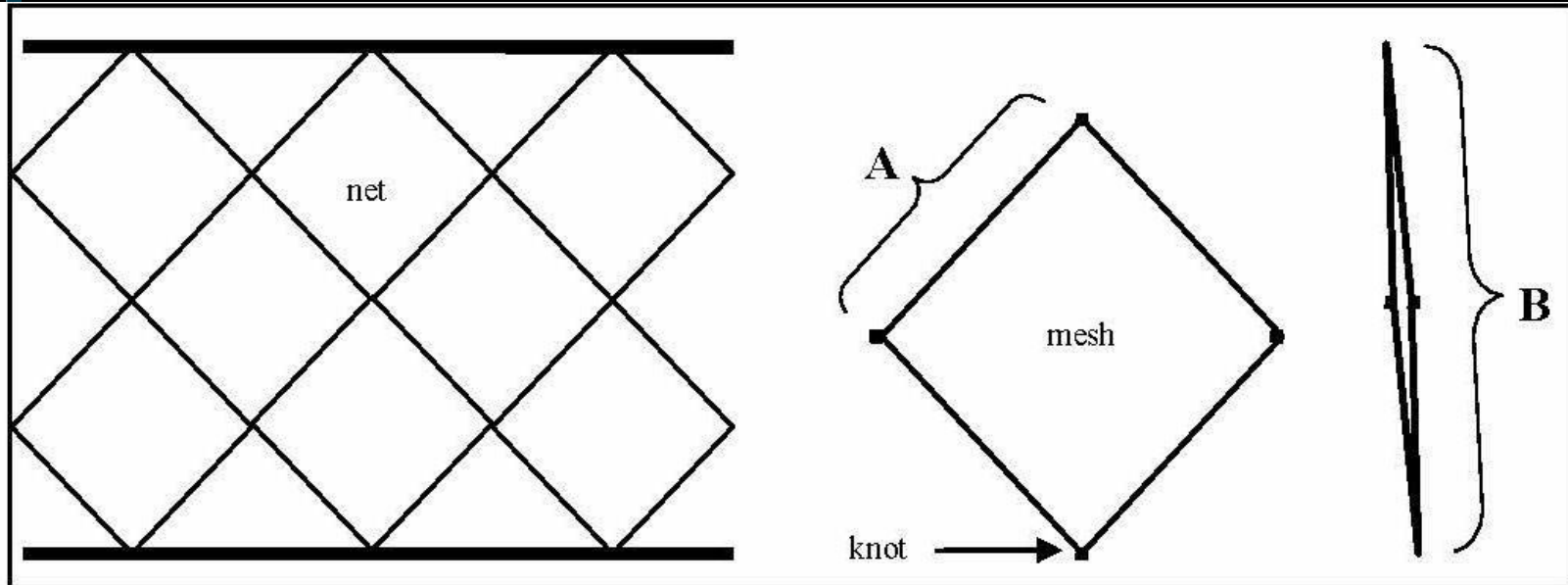


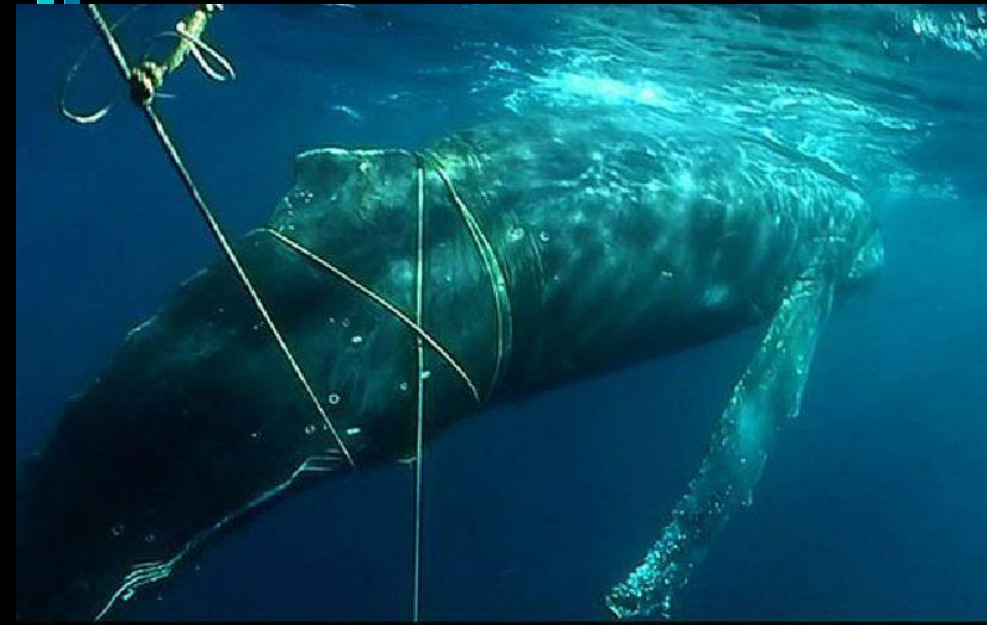
Figure 2. Typical net design. Nets are measured by the depth and length of the meshes hung between the top and bottom lines (float line and lead line on gill nets) and the horizontal length of the meshes. The mesh size can be measured from knot to knot (A) which is called the square or bar mesh size or (B) at its maximum diagonal width which is called a stretch mesh size. Twine size is the diameter of the twine the makes up the mesh.

- Typically around the neck
- Chronic, inflammation
- Deep linear cuts
- Secondary bacterial infections



Large Cetaceans

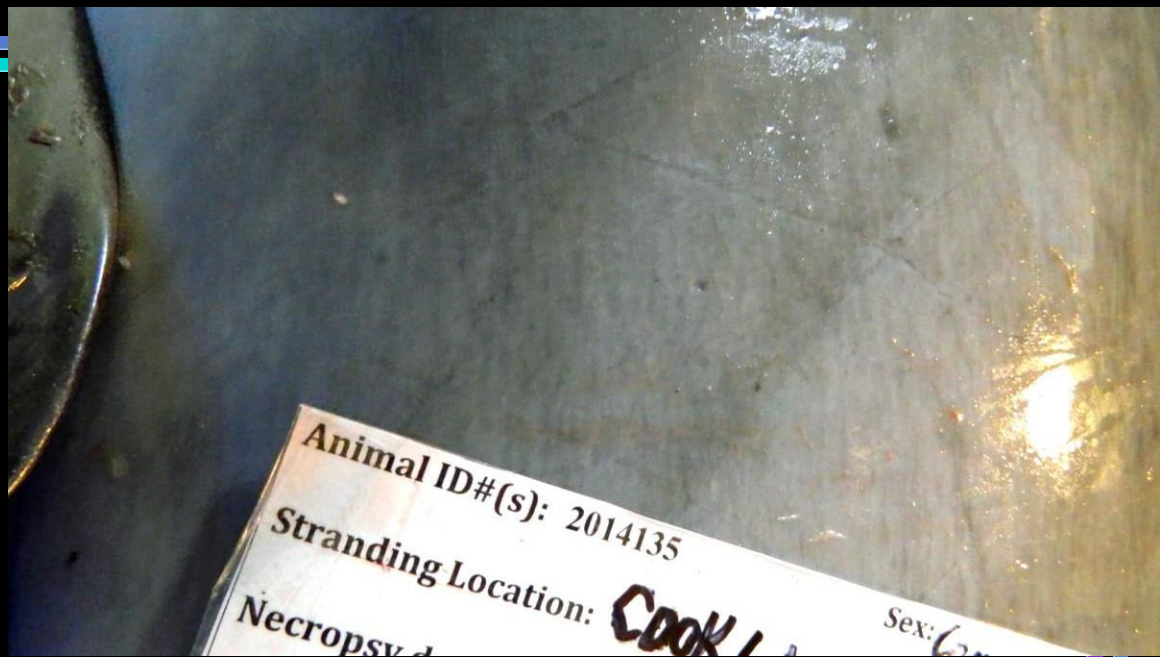
- Typically around the fluke stock, pectoral fins
- Inflammation
- Deep linear cuts
- Secondary bacterial infections
- Difficulty diving



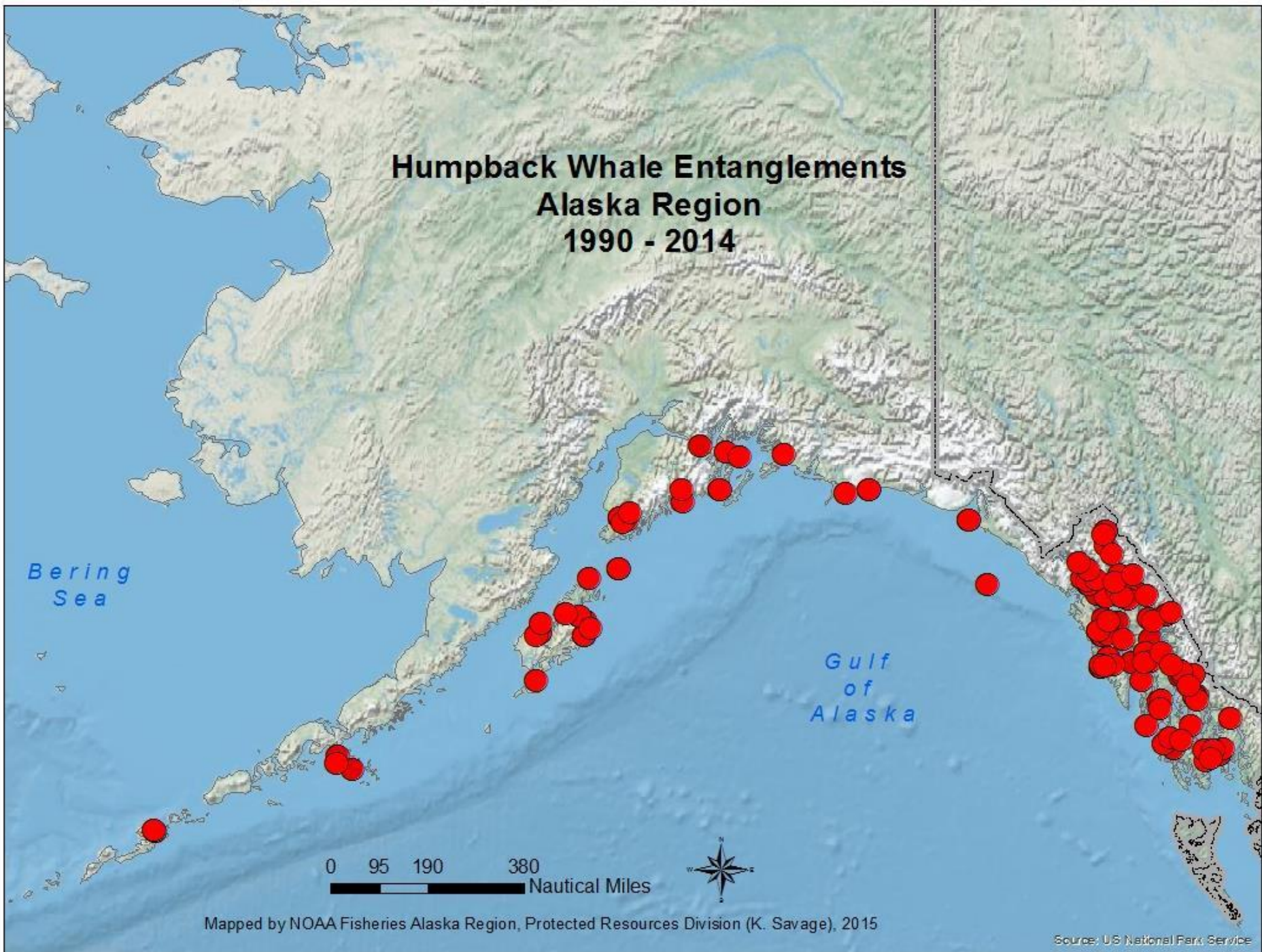
- Gill nets/entanglement
 - Small odontocetes typically
- Inflammation
- Deep linear cuts
- Secondary bacterial infections
- Drowning



Lesions can be
very subtle



Humpback Whale Entanglements Alaska Region 1990 - 2014



Mapped by NOAA Fisheries Alaska Region, Protected Resources Division (K. Savage), 2015

Source: US National Park Service

Gear / Debris

- Hook
- Packing Band
- CBD



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<http://theanimal-zone.blogspot.com>



NOAA permit 18786

<https://www.nps.gov/glba/blogs/>

Fishing Gear

External:

- Draining lesion
- Visible line or flashers

Internal:

- Chronic esophageal impaction/perforation



Boat Strikes



Boat Strikes

- Lacerations
 - (multiple, evenly spaced)
- Blunt trauma
- Broken bones
- Amputations
- Damage to major blood vessels
exsanguination are frequent

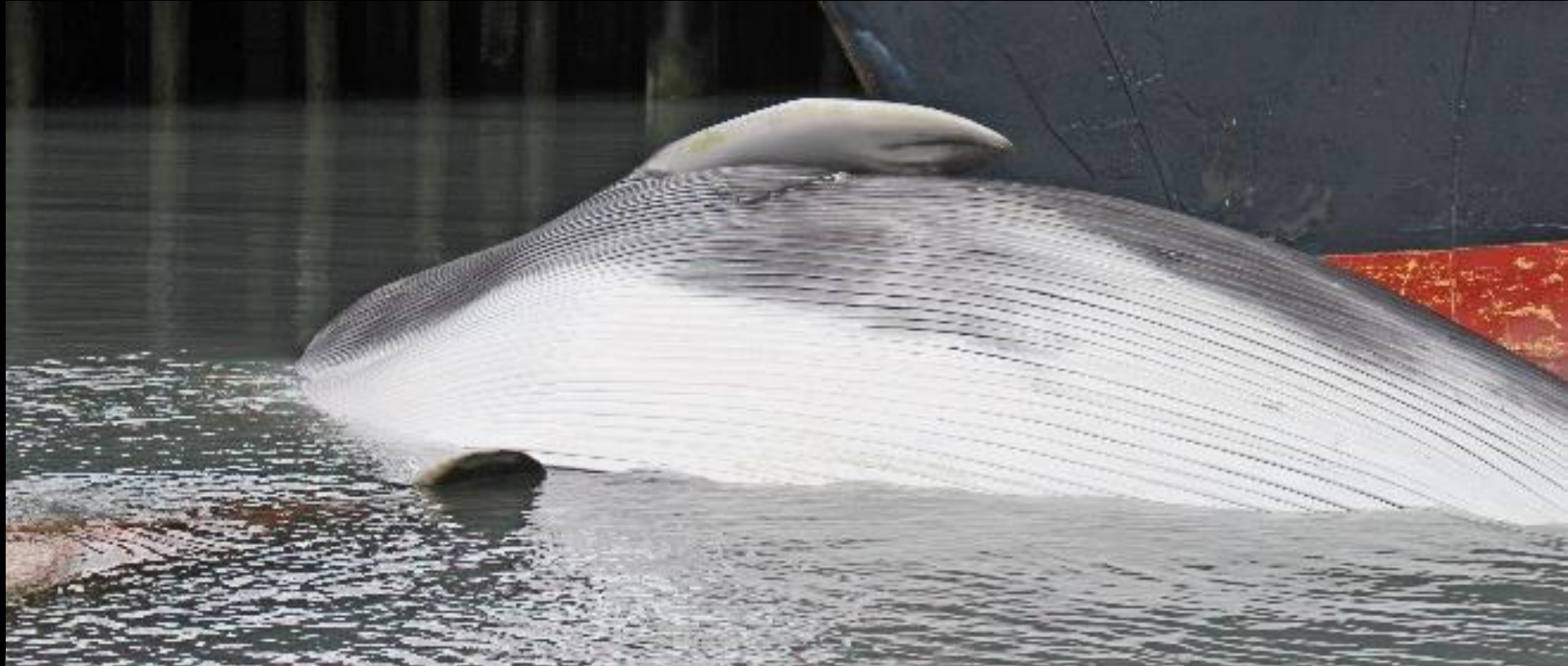


Boat Strikes

Ante- or post mortem?

- Muscle pallor
- Bruising/hemorrhage histopath
- Granulation/scar tissue
- Purulent inflammation
- Bone regrowth





Prop Wounds

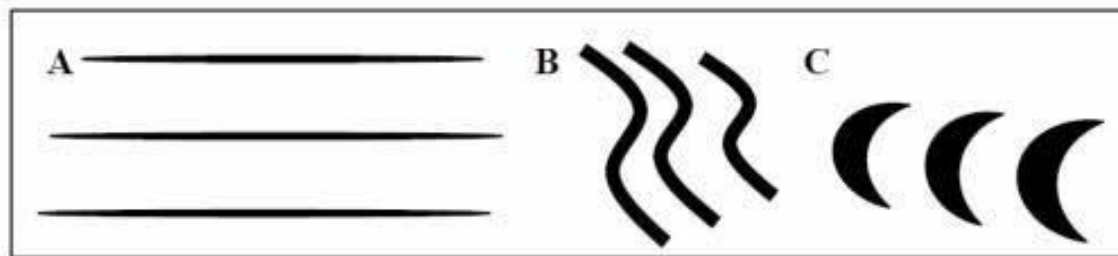
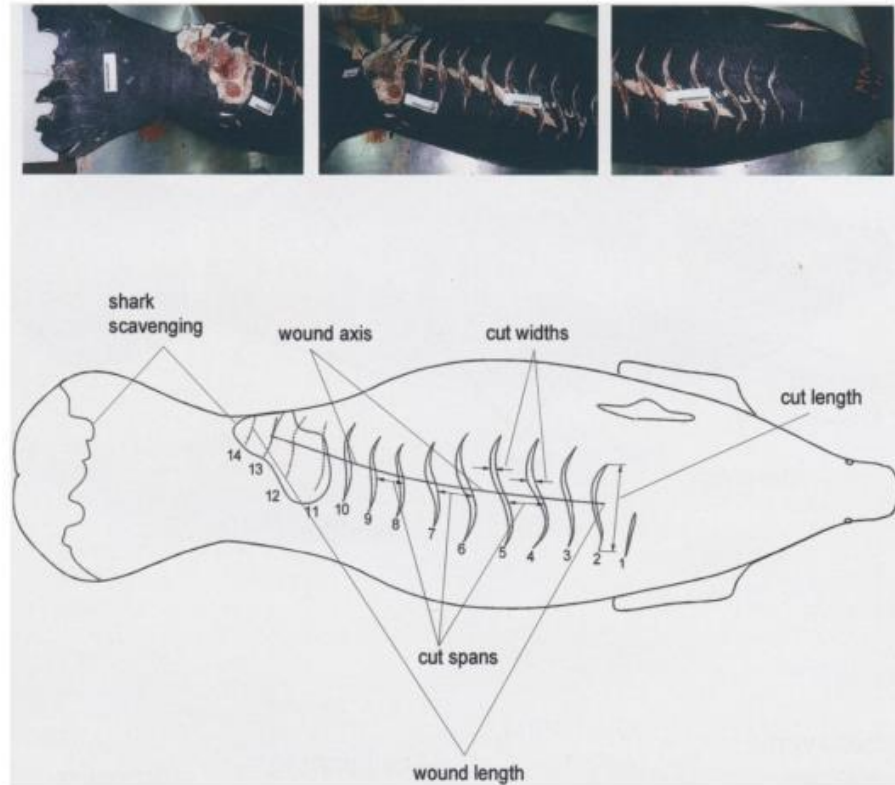


Figure 3. Types of propeller lesions left by different styles and sizes of propeller. The length, depth, and spacing between lesions can provide information as to the type of propeller and, thus, type of vessel.



Enforcement

Slow it down!
Boat strikes kill sea otters.

Sea otter on port side of boat



- Speed restrictions
 - Enforced (10/10/2008, 73 FR 60173)
 - Voluntary/Suggested



Other Marine Debris Interactions



Table 1.

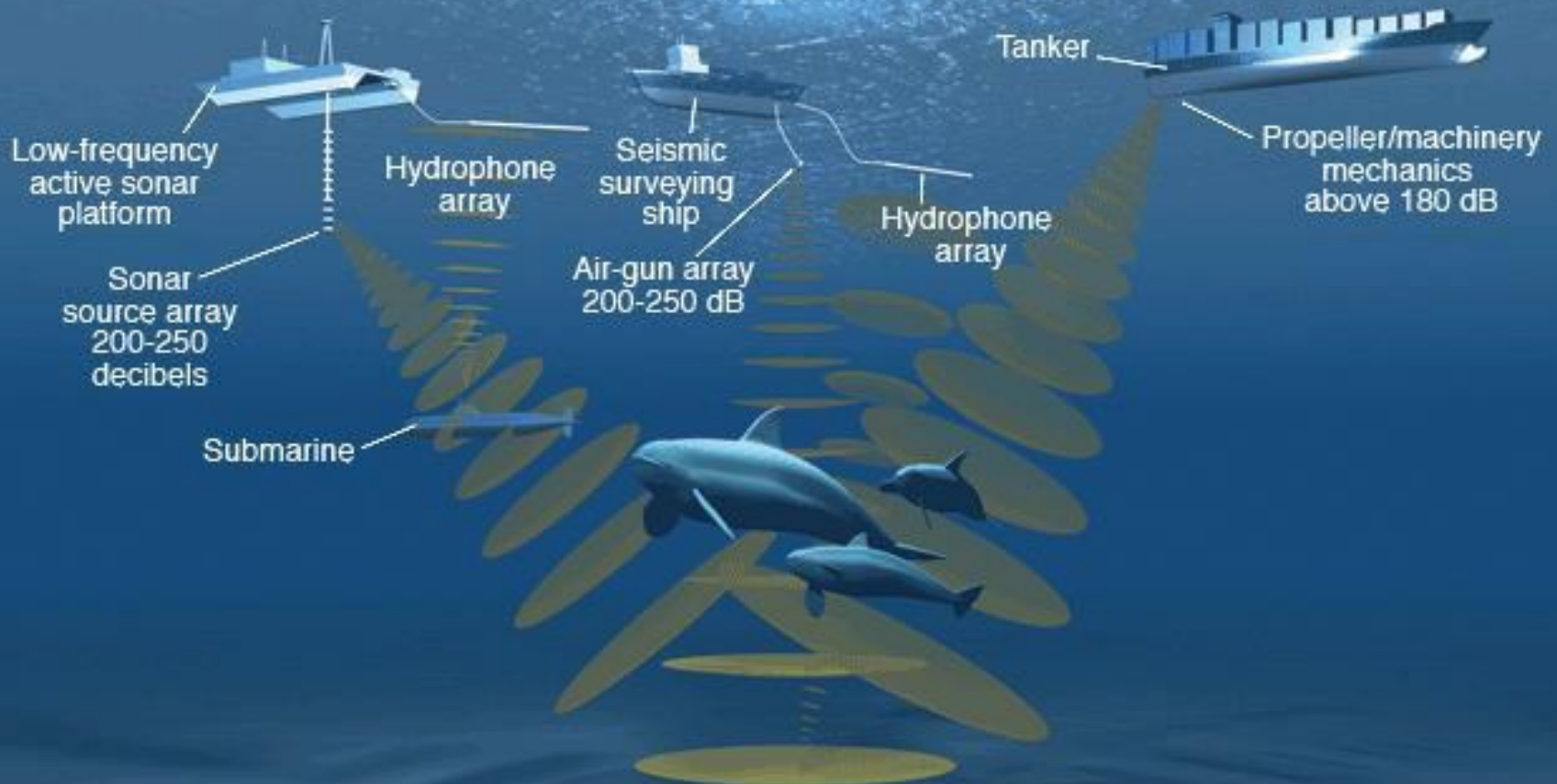
Composition of derelict floating debris found in two sperm whale stomachs stranded in northern California, 2008.

	HSUVM 2673	TMMC C251	Total
Number of net pieces	59	105	164
Number of net types	44	96	134
Dry weight of netting (kg)	22.16	57.14	79.30 (81%)
Dry weight of line pieces (kg)	1.47	15.41	16.88 (17%)
Dry weight of bags (kg)	0.57	1.08	1.65 (2%)
Total dry weight (kg)	24.20	73.63	97.83

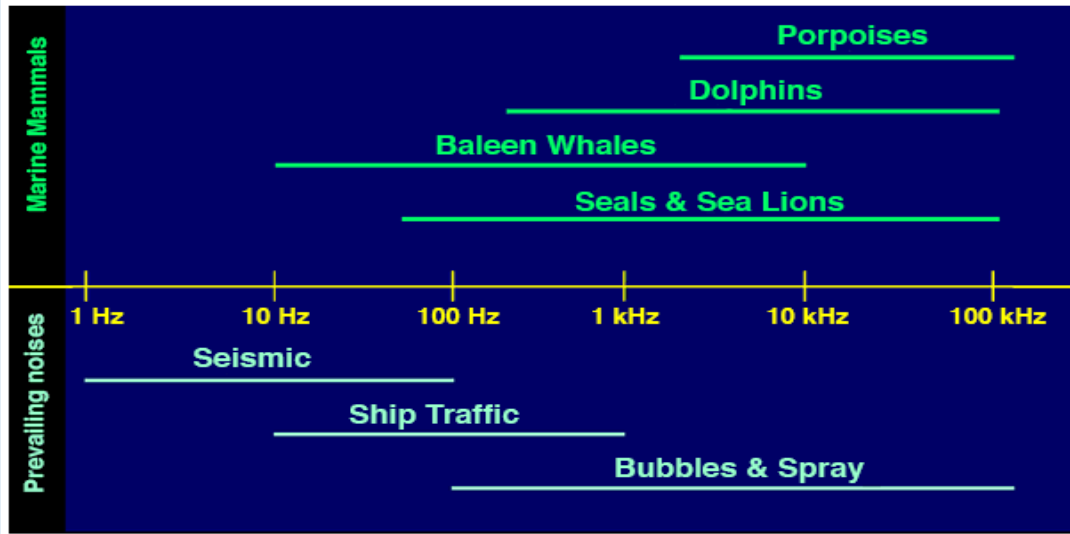
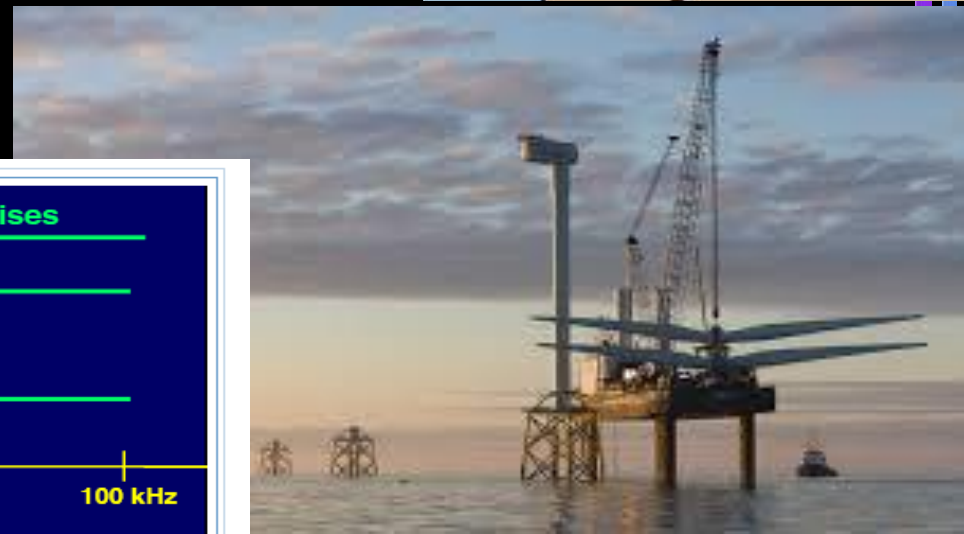
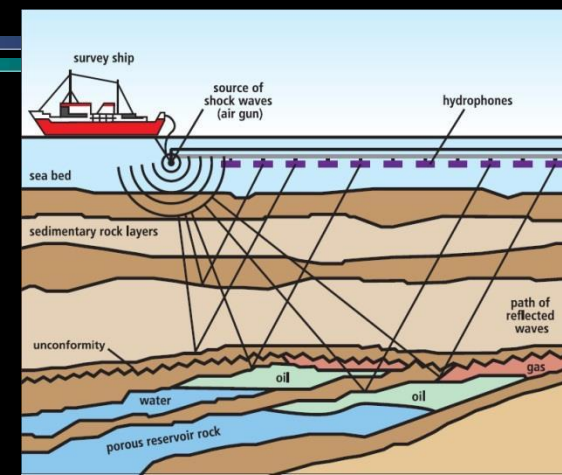
Jacobson et al. 2010



Industry and Noise



- Hearing loss
- Behavioural changes
- Stranding



Strandings & Military Exercises

- **Greece 1996:** 12 Cuvier's B. Whales
- **Bahamas 2000:** 14 B. whales, 1 spotted dolphin, 2 minke whales
- **Madeira 2000:** 3 Cuvier's B. Whales
- **Canary Is. 2004:** 4 Cuvier's B. Whales
- **Scotland 2011:** 19 Pilot Whales



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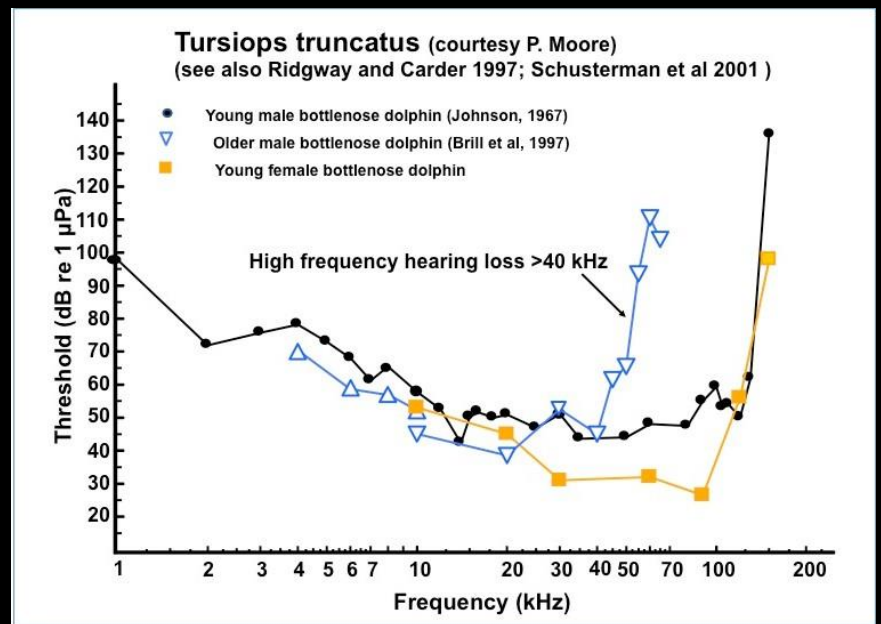
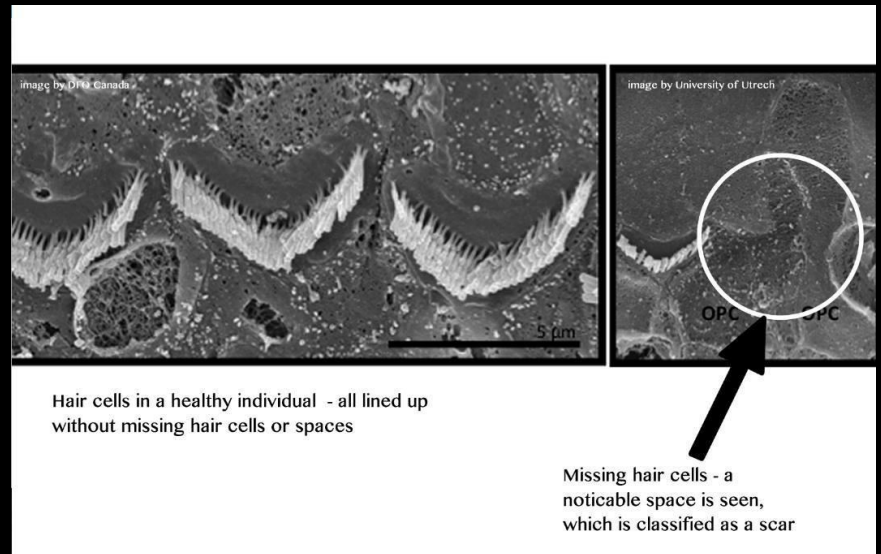
Royal Navy bomb explosions caused mass whale deaths, report concludes

Noise from underwater bombs caused 19 pilot whales to beach and die off the coast of Scotland in 2011, say government scientists

Industry and Noise

EVIDENCE?

- All the evidence isn't in...
 - Air embolisms
 - Hemorrhaging
 - Damage to the inner ear
- Hearing Loss
 - TTS/PTS
 - With age
 - Trauma
 - Necropsies:



Other Human Interactions & Strandings



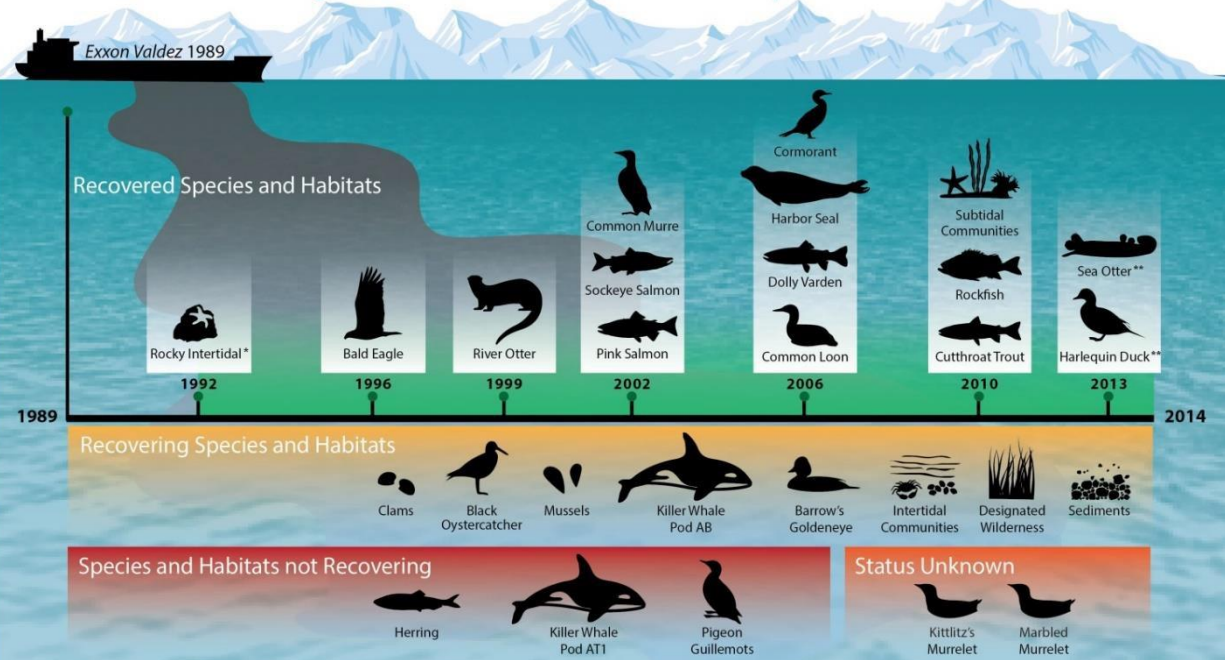
25 YEARS LATER

The tanker *Exxon Valdez* spilled almost 11 million gallons of oil into Alaska's Prince William Sound on March 24, 1989, injuring 28 types of animals, plants, and marine habitats. How long has it taken them to recover from this spill? Twenty-five years later, which ones have not yet recovered?

Here is a timeline showing when natural resources were declared officially "recovered," though actual recovery could have occurred earlier than this official designation from the Exxon Valdez Oil Spill Trustee Council.



Timeline of Recovery from the *Exxon Valdez* Oil Spill



* Data from NOAA

** Data from USGS

Data were taken from the Exxon Valdez Oil Spill Trustee Council's 2010 Update on Injured Resources and Services (www.evostc.state.ak.us), U.S. Geological Survey, and National Oceanic and Atmospheric Administration's Office of Response and Restoration. This infographic was produced by the National Oceanic and Atmospheric Administration.