



SEA OTTER INTERN: THE DATA



WHAT WE DID

- Responded to stranded otters
 - Level A data
 - SeaLife Center Training
 - John Maniscalco's study
 - Live observation
- Marine Mammal Forum
 - Educational materials
 - Tabling





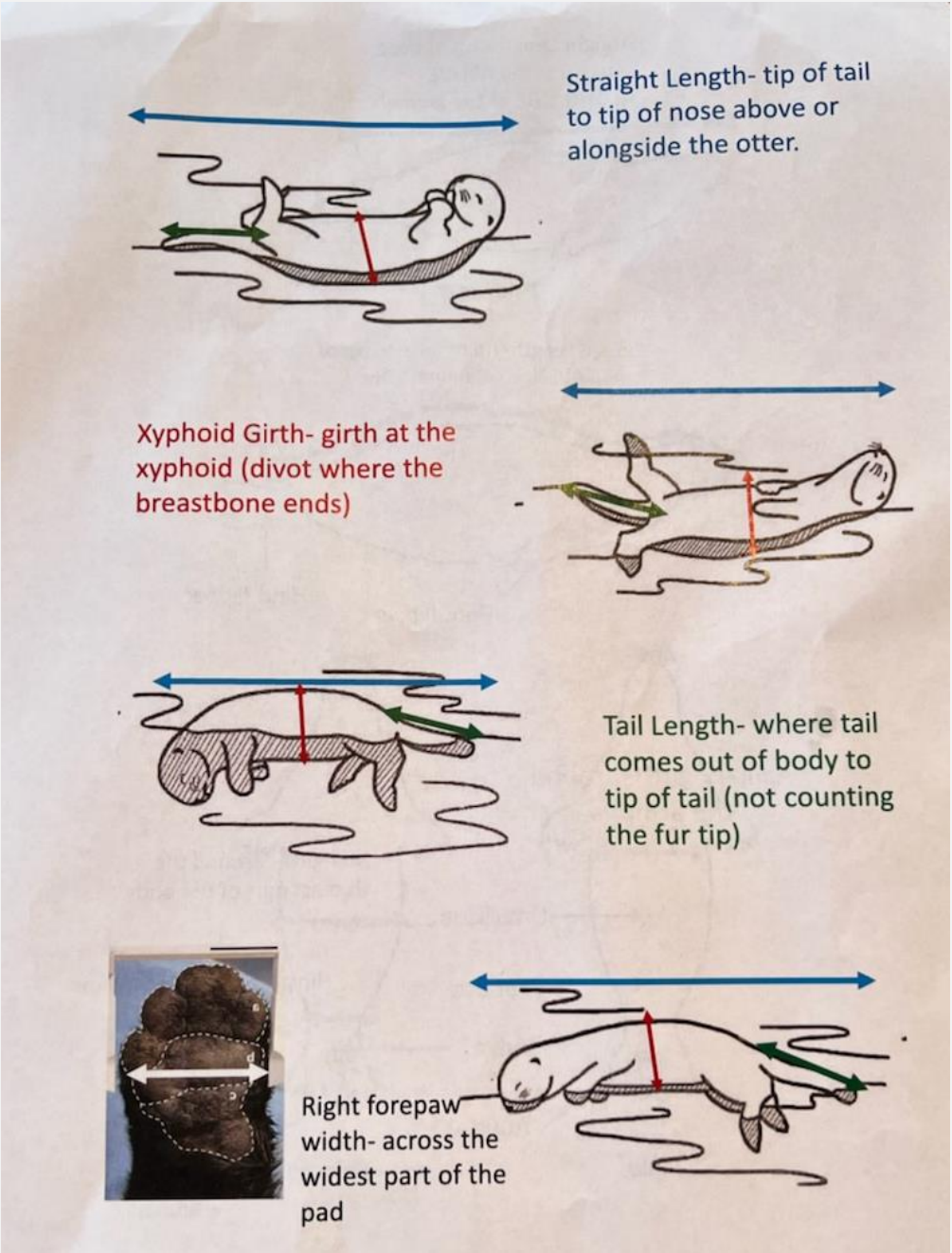
WHAT CAUSES OTTERS TO STRAND?

- Kachemak Bay has ~6,000 otters (Garlich-Miller et al., 2018)
- **Strep syndrome:** a bacterial infection with an unknown origin caused by the bacteria *Streptococcus*. Studies point to mussel consumption, specifically blue mussels, as the likely route of infection (Counihan-Edgar et al., 2012). This disease causes a variety of health issues for otters:
 - **Endocarditis:** an inflammation of the heart lining which can lead to blood clots.
 - **Septicemia:** a blood infection caused when *Streptococcus* enters the blood stream.
 - **Encephalitis:** an inflammation of the brain due to *Streptococcus* infection.
- **Trauma:** stranded otters may show signs of trauma indicating boat strike, gunshot, mating or fighting wounds, or predation.

IN THE FIELD

Measurements (cm)

- Straight length
- Tail length
- Head length
- Head width
- Right front paw
- Xiphoid girth





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IN THE FIELD

Measurements (cm)

- Straight length
- Tail length
- Head length
- Head width
- Right front paw
- Xiphoid girth

Pictures

- Whole body
- Teeth
- Abnormalities



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IN THE FIELD

Measurements (cm)

- Straight length
- Tail length
- Head length
- Head width
- Right front paw
- Xiphoid girth

Completion

- Tag
- Dump
- Necropsy

MARINE MAMMAL STRANDING REPORT - LEVEL A DATA

FIELD # _____ NMFS REGIONAL # _____ NATIONAL DATABASE# _____
(NMFS USE) (NMFS USE)

COMMON NAME _____ GENUS _____ SPECIES _____

EXAMINER Name: _____ Affiliation: _____

Address: _____ Phone: _____

Stranding Agreement or Authority: _____

CONFIDENCE CODE (Check ONE) Unconfirmed - Low Confirmed - Minimum Confirmed - Medium Confirmed - High

INITIAL OBSERVATION Same Information for Level A Examination

DATE: Year: _____ Month: _____ Day: _____

First Observed: Beach/Land/Ice Floating Swimming

LOCATION: State: _____ County: _____ City: _____

Body of Water: _____

Locality Details: _____

Lat (DD): _____ N

Long (DD): _____ W

Actual Estimated

How Determined: (check ONE)

GPS Map Internet/Software Other _____

CONDITION AT INITIAL OBSERVATION (Check ONE)

1. Alive 4. Advanced Decomposition

2. Fresh Dead 5. Mummified/Skeletal

3. Moderate Decomposition 6. Condition Unknown

7. Other: _____

LIVE ANIMAL INFORMATION

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)

1. Left at Site 5. Died at Site

2. Immediate Release at Site 6. Died During Transport

3. Relocated and Released 7. Euthanized

4. Disentangled 8. Transferred to Rehabilitation:

a. Partially Date: Year: _____ Month: _____ Day: _____

b. Completely Facility: _____

9. Other: _____

CONDITION/DETERMINATION (Check one or more)

1. Sick 7. Location Hazardous

2. Injured a. To animal

3. Out of Habitat b. To public

4. Deemed Releasable 8. Unknown/CBD

5. Abandoned/Orphaned 9. No Rehabilitation Options

6. Inaccessible 10. Other: _____

MORPHOLOGICAL INFORMATION

SEX (Check ONE) ESTIMATED AGE CLASS (Check ONE)

1. Male 1. Adult 4. Pup/Calf

2. Female 2. Subadult 5. Unknown

3. Unknown 3. Yearling

Whole Animal Partial Animal

Straight Length: _____ cm In

Actual Estimated Not Measured

Weight: _____ kg lb

Actual Estimated Not Weighed

SAMPLES COLLECTED (Check one or more)

1. Histology 2. Other Diagnostics 3. Life History

4. Skeletal 5. Other: _____

PARTS TRACKING (Check one or more)

1. Scientific Collection 2. Educational Collection

3. Other: _____

LEVEL A EXAMINATION Examined? YES NO

DATE: Year: _____ Month: _____ Day: _____

First Examined: Beach/Land/Ice Floating Swimming

LOCATION: State: _____ County: _____ City: _____

Body of Water: _____

Locality Details: _____

Lat (DD): _____ N

Long (DD): _____ W

Actual Estimated

How Determined: (check ONE)

GPS Map Internet/Software Other _____

CONDITION AT EXAMINATION (Check ONE)

1. Alive 4. Advanced Decomposition

2. Fresh Dead 5. Mummified/Skeletal

3. Moderate Decomposition

DEAD ANIMAL INFORMATION

CARCASS STATUS (Check one or more)

1. Frozen for Later Examination/Necropsy Pending

2. Left at Site 5. Landfill 8. Towed: Lat _____ Long _____

3. Buried 6. Incinerated 9. Sunk: Lat _____ Long _____

4. Rendered 7. Composted 10. Unknown/Other _____

NECROPSIED YES NO Limited Complete

Carcass Fresh Carcass Frozen/Thawed

CARCASS CODE AT NECROPSY Code 2 Code 3 Code 4

NECROPSIED BY: _____

Date: Year: _____ Month: _____ Day: _____

PHOTOS/VIDEOS TAKEN: YES NO

Photo/Video Disposition: _____

OCCURRENCE DETAILS Restrand GE# _____ (NMFS Use)

Group Event: YES NO

If Yes, Type: Cow/Calf Pair Mass Stranding LME # Animals: _____ Actual Estimated

Was the Marine Mammal Human Interaction Report completed? YES NO

Findings of Human Interaction: YES NO Could Not Be Determined (CBD)

If YES evidence of: 1. Vessel Interaction YES NO CBD

2. Shot YES NO CBD

3. Fishery Interaction YES NO CBD

4. Other Human Interaction: _____

If YES, what was the likelihood that the human interaction contributed to the stranding event?

Uncertain (CBD) Improbable Suspect Probable

Gear/Hi Items Collected? YES NO Gear Disposition: _____

Other Findings Upon Level A: YES NO Could Not Be Determined (CBD)

If Yes, Choose one or more: 1. Illness 2. Injury 3. Pregnant 4. Other: _____

How Determined (Check one or more): External Exam Internal Exam Necropsy

Other: _____

TAG DATA	ID#	Color	Type	Placement*	Applied	Present	Removed
Tags Were:				(Circle ONE) D DF L L R LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Present at Time of Stranding (Pre-existing):	<input type="checkbox"/> YES <input type="checkbox"/> NO						
Applied during Stranding Response/Release:	<input type="checkbox"/> YES <input type="checkbox"/> NO				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applied during Rehabilitation/Release:	<input type="checkbox"/> YES <input type="checkbox"/> NO						
Absent but Suspect Prior Tag:	<input type="checkbox"/> YES <input type="checkbox"/> NO				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* D= Dorsal; DF= Dorsal Fin; L= Left Lateral Body; R= Right Lateral Body; LF= Left Front; LR= Left Rear; RF= Right Front; RR= Right Rear

ADDITIONAL IDENTIFIER: _____ (If animal is restranded, please indicate any previous field numbers here)

ADDITIONAL REMARKS:

DISCLAIMER

THESE DATA SHOULD NOT BE USED OUT OF CONTEXT OR WITHOUT VERIFICATION. THIS SHOULD BE STRICTLY ENFORCED WHEN REPORTING SIGNS OF HUMAN INTERACTION DATA.

DATA ACCESS FOR LEVEL A DATA

UPON WRITTEN REQUEST, CERTAIN FIELDS OF THE LEVEL A DATA SHEET WILL BE RELEASED TO THE REQUESTOR PROVIDED THAT THE REQUESTOR CREDIT THE STRANDING NETWORK AND THE NATIONAL MARINE FISHERIES SERVICE. THE NATIONAL MARINE FISHERIES SERVICE WILL NOTIFY THE CONTRIBUTING STRANDING NETWORK MEMBERS THAT THESE DATA HAVE BEEN REQUESTED AND THE INTENT OF USE. ALL OTHER DATA WILL BE RELEASED TO THE REQUESTOR PROVIDED THAT THE REQUESTOR OBTAIN PERMISSION FROM THE CONTRIBUTING STRANDING NETWORK AND THE NATIONAL MARINE FISHERIES SERVICE.

PAPERWORK REDUCTION ACT INFORMATION

PUBLIC REPORTING BURDEN FOR THE COLLECTION OF INFORMATION IS ESTIMATED TO AVERAGE 30 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.



MARINE MAMMAL STRANDING REPORT - LEVEL A DATA

FIELD # _____ NMFS REGIONAL # _____ NATIONAL DATABASE# _____
(NMFS USE) (NMFS USE)

COMMON NAME: Sea Otter _____ GENUS: Enhydra SPECIES: lutris

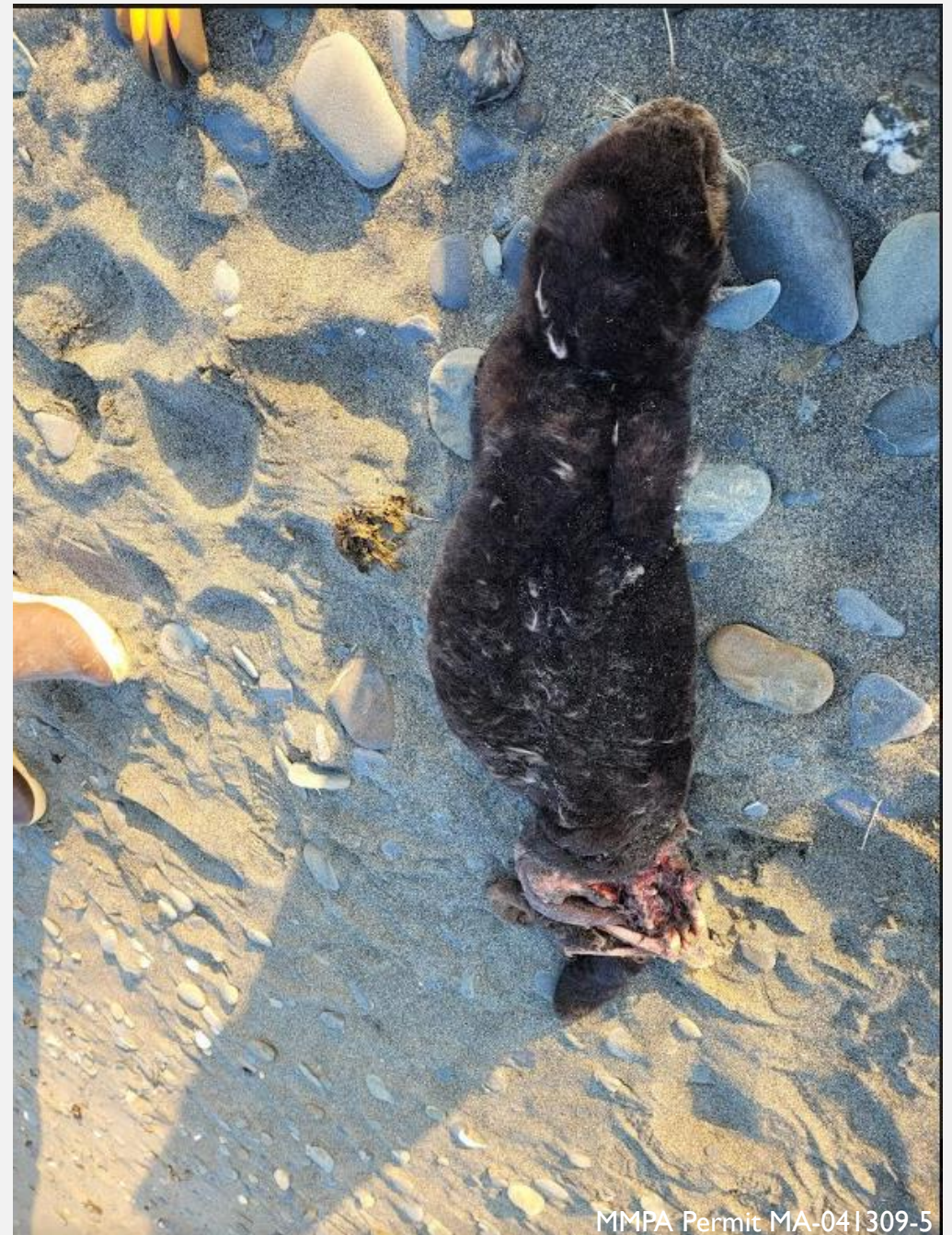
EXAMINER Name: Ana Noel and Diondre Ryan Affiliation: USFWS/ASLC

Address: _____ Phone: _____

Stranding Agreement or Authority: _____

CONFIDENCE CODE (Check ONE): Unconfirmed - Low Confirmed - Minimum Confirmed - Medium Confirmed - High

<p>INITIAL OBSERVATION <input checked="" type="checkbox"/> Same Information for Level A Examination</p> <p>DATE: Year: <u>2022</u> Month: <u>April</u> Day: <u>11</u> First Observed: <input type="checkbox"/> Beach/Land/Ice <input type="checkbox"/> Floating <input type="checkbox"/> Swimming</p> <p>LOCATION: State: <u>AK</u> County: <u>Kenai Peninsula</u> City: <u>Homer</u> Body of Water: <u>Cook Inlet</u> Locality Details: <u>Right of the parking lot</u> Lat (DD): <u>59</u> <u>7814108</u> <u>N</u> Long (DD): <u>151</u> <u>8625009</u> <u>W</u> <input type="checkbox"/> Actual <input type="checkbox"/> Estimated</p> <p>How Determined: (check ONE) <input type="checkbox"/> GPS <input type="checkbox"/> Map <input checked="" type="checkbox"/> Internet/Software <input type="checkbox"/> Other</p> <p>CONDITION AT INITIAL OBSERVATION (Check ONE) <input type="checkbox"/> 1. Alive <input type="checkbox"/> 4. Advanced Decomposition <input type="checkbox"/> 2. Fresh Dead <input type="checkbox"/> 5. Mummified/Skeletal <input checked="" type="checkbox"/> 3. Moderate Decomposition <input type="checkbox"/> 6. Condition Unknown</p> <p>LIVE ANIMAL INFORMATION</p> <p>INITIAL LIVE ANIMAL DISPOSITION (Check one or more) <input type="checkbox"/> 1. Left at Site <input type="checkbox"/> 5. Died at Site <input type="checkbox"/> 2. Immediate Release at Site <input type="checkbox"/> 6. Died During Transport <input type="checkbox"/> 3. Relocated and Released <input type="checkbox"/> 7. Euthanized <input type="checkbox"/> 4. Disentangled <input type="checkbox"/> 8. Transferred to Rehabilitation: <input type="checkbox"/> a. Partially Date: Year: _____ Month: _____ Day: _____ <input type="checkbox"/> b. Completely Facility: _____ <input type="checkbox"/> 9. Other: _____</p> <p>CONDITION/DETERMINATION (Check one or more) <input type="checkbox"/> 1. Sick <input type="checkbox"/> 7. Location Hazardous <input type="checkbox"/> 2. Injured <input type="checkbox"/> a. To animal <input type="checkbox"/> 3. Out of Habitat <input type="checkbox"/> b. To public <input type="checkbox"/> 4. Deemed Releasable <input type="checkbox"/> 8. Unknown/CBD <input type="checkbox"/> 5. Abandoned/Orphaned <input type="checkbox"/> 9. No Rehabilitation Options <input type="checkbox"/> 6. Inaccessible <input type="checkbox"/> 10. Other: _____</p> <p>MORPHOLOGICAL INFORMATION</p> <p>SEX (Check ONE) ESTIMATED AGE CLASS (Check ONE) <input type="checkbox"/> 1. Male <input checked="" type="checkbox"/> 1. Adult <input type="checkbox"/> 4. Pupa/Calf <input type="checkbox"/> 2. Female <input type="checkbox"/> 2. Subadult <input type="checkbox"/> 5. Unknown <input checked="" type="checkbox"/> 3. Unknown <input type="checkbox"/> 3. Yearling</p> <p><input checked="" type="checkbox"/> Whole Animal <input type="checkbox"/> Partial Animal Straight Length: <u>119.000</u> <input type="checkbox"/> cm <input type="checkbox"/> in <input type="checkbox"/> Actual <input checked="" type="checkbox"/> Estimated <input type="checkbox"/> Not Measured</p> <p>Weight: _____ <input type="checkbox"/> kg <input type="checkbox"/> lb <input type="checkbox"/> Actual <input type="checkbox"/> Estimated <input checked="" type="checkbox"/> Not Weighed</p> <p>SAMPLES COLLECTED (Check one or more) <input type="checkbox"/> 1. Histology <input type="checkbox"/> 2. Other Diagnostics <input type="checkbox"/> 3. Life History <input type="checkbox"/> 4. Skeletal <input type="checkbox"/> 5. Other _____</p> <p>PARTS TRACKING (Check one or more) <input type="checkbox"/> 1. Scientific Collection <input type="checkbox"/> 2. Educational Collection <input type="checkbox"/> 3. Other: _____</p>	<p>LEVEL A EXAMINATION Examined? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>DATE: Year: _____ Month: _____ Day: _____ First Examined: <input type="checkbox"/> Beach/Land/Ice <input type="checkbox"/> Floating <input type="checkbox"/> Swimming</p> <p>LOCATION: State: _____ County: _____ City: _____ Body of Water: _____ Locality Details: _____ Lat (DD): _____ <u>N</u> Long (DD): _____ <u>W</u> <input type="checkbox"/> Actual <input type="checkbox"/> Estimated</p> <p>How Determined: (check ONE) <input type="checkbox"/> GPS <input type="checkbox"/> Map <input type="checkbox"/> Internet/Software <input type="checkbox"/> Other</p> <p>CONDITION AT EXAMINATION (Check ONE) <input type="checkbox"/> 1. Alive <input type="checkbox"/> 4. Advanced Decomposition <input type="checkbox"/> 2. Fresh Dead <input type="checkbox"/> 5. Mummified/Skeletal <input type="checkbox"/> 3. Moderate Decomposition</p> <p>DEAD ANIMAL INFORMATION</p> <p>CARCASS STATUS (Check one or more) <input type="checkbox"/> 1. Frozen for Later Examination/Necropsy Pending <input checked="" type="checkbox"/> 2. Left at Site <input type="checkbox"/> 5. Landfill <input type="checkbox"/> 8. Towed: Lat: _____ Long: _____ <input type="checkbox"/> 3. Buried <input type="checkbox"/> 6. Incinerated <input type="checkbox"/> 9. Sunk: Lat: _____ Long: _____ <input type="checkbox"/> 4. Rendered <input type="checkbox"/> 7. Composted <input type="checkbox"/> 10. Unknown/Other _____</p> <p>NECROPSIED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Limited <input type="checkbox"/> Complete <input type="checkbox"/> Carcass Fresh <input type="checkbox"/> Carcass Frozen/Thawed</p> <p>CARCASS CODE AT NECROPSY <input type="checkbox"/> Code 2 <input type="checkbox"/> Code 3 <input type="checkbox"/> Code 4</p> <p>NECROPSIED BY: _____ Date: Year: _____ Month: _____ Day: _____</p> <p>PHOTOS/VIDEOS TAKEN: <input type="checkbox"/> YES <input type="checkbox"/> NO Photo/Video Disposition: _____</p> <p>OCCURRENCE DETAILS <input type="checkbox"/> Restrand GE# _____ <small>(NMFS Use)</small></p> <p>Group Event: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If Yes, Type: <input type="checkbox"/> Cow/Calf Pair <input type="checkbox"/> Mass Stranding <input type="checkbox"/> UME # Animals: _____ <input type="checkbox"/> Actual <input type="checkbox"/> Estimated</p> <p>Was the Marine Mammal Human Interaction Report completed? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>Findings of Human Interaction: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Could Not Be Determined (CBD) If YES evidence of: 1. Vessel Interaction <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> CBD 2. Shot <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> CBD 3. Fishery Interaction <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> CBD 4. Other Human Interaction: _____</p> <p>If YES, what was the likelihood that the human interaction contributed to the stranding event? <input type="checkbox"/> Uncertain (CBD) <input type="checkbox"/> Improbable <input type="checkbox"/> Suspect <input type="checkbox"/> Probable</p> <p>Gear/HI Items Collected? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Gear Disposition: _____ Other Findings Upon Level A: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Could Not Be Determined (CBD) If Yes, Choose one or more: <input type="checkbox"/> 1. Illness <input type="checkbox"/> 2. Injury <input type="checkbox"/> 3. Pregnant <input type="checkbox"/> 4. Other: _____ How Determined (Check one or more): <input type="checkbox"/> External Exam <input type="checkbox"/> Internal Exam <input type="checkbox"/> Necropsy <input type="checkbox"/> Other: _____</p>
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TAG DATA	ID#	Color	Type	Placement*	Applied	Present	Removed
Tags Were:				(Circle ONE)			
Present at Time of Stranding (Pre-existing):	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FW22054		<input type="checkbox"/> D <input type="checkbox"/> DF <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LF <input type="checkbox"/> LR <input type="checkbox"/> RF <input type="checkbox"/> RR	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applied during Stranding Response/Release:	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<input type="checkbox"/> D <input type="checkbox"/> DF <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LF <input type="checkbox"/> LR <input type="checkbox"/> RF <input type="checkbox"/> RR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applied during Rehabilitation/Release:	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			<input type="checkbox"/> D <input type="checkbox"/> DF <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LF <input type="checkbox"/> LR <input type="checkbox"/> RF <input type="checkbox"/> RR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Absent but Suspect Prior Tag:	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			<input type="checkbox"/> D <input type="checkbox"/> DF <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LF <input type="checkbox"/> LR <input type="checkbox"/> RF <input type="checkbox"/> RR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* D= Dorsal; DF= Dorsal Fin; L= Left Lateral Body R= Right Lateral Body LF= Left Front; LR= Left Rear; RF= Right Front; RR= Right Rear

ADDITIONAL IDENTIFIER: _____ (If animal is restranded, please indicate any previous field numbers here)

ADDITIONAL REMARKS:

Straight length: 119 cm
Tail length: 25 cm
Xipoid girth: 64.5 cm
Head width: 22 cm
Head length: 18.5 cm
Right paw: 5 cm

FW22054

Otter was being eaten by eagles, part of intestines sticking out, could see lower spine and pelvic bones

DISCLAIMER

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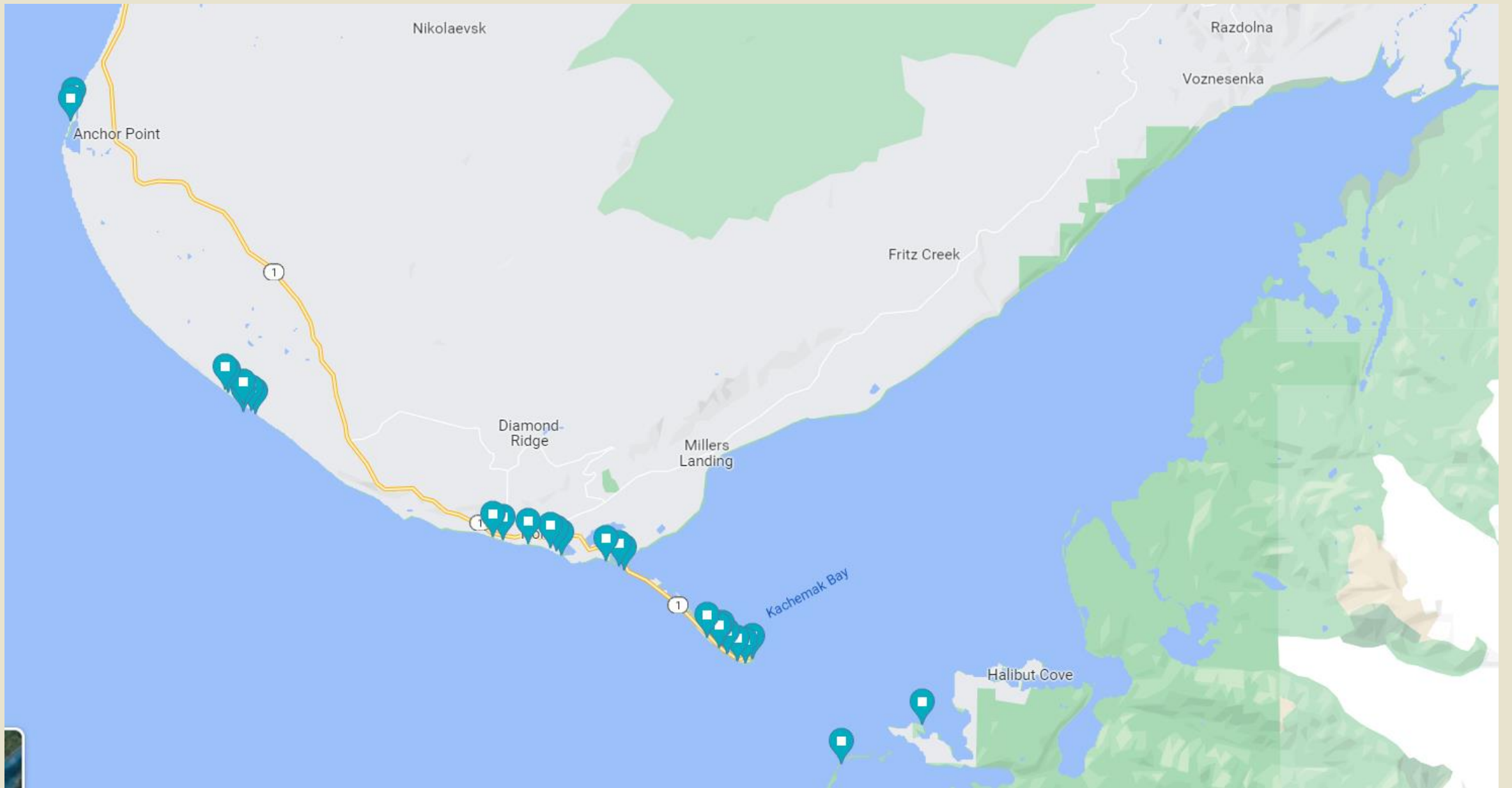
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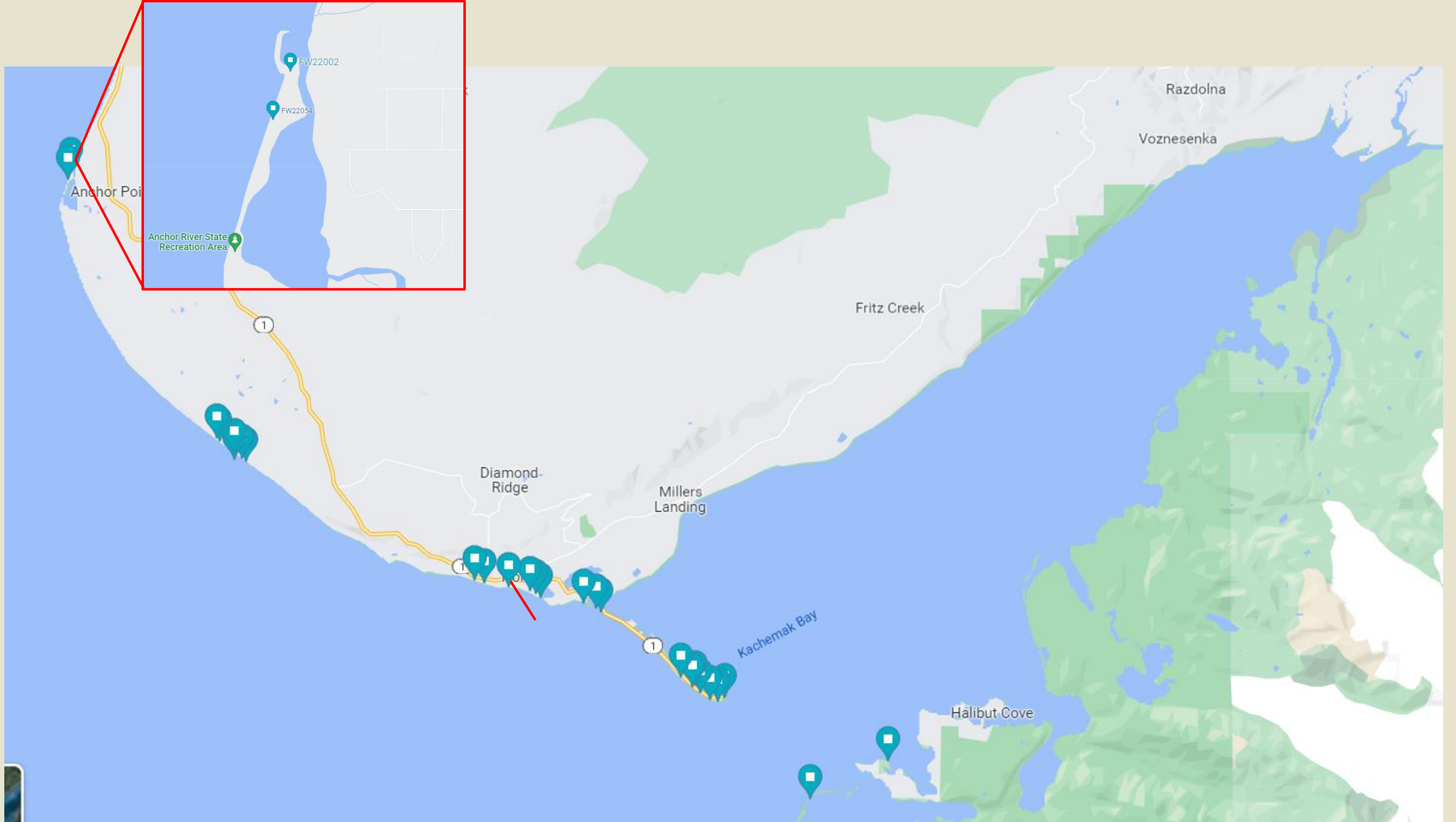
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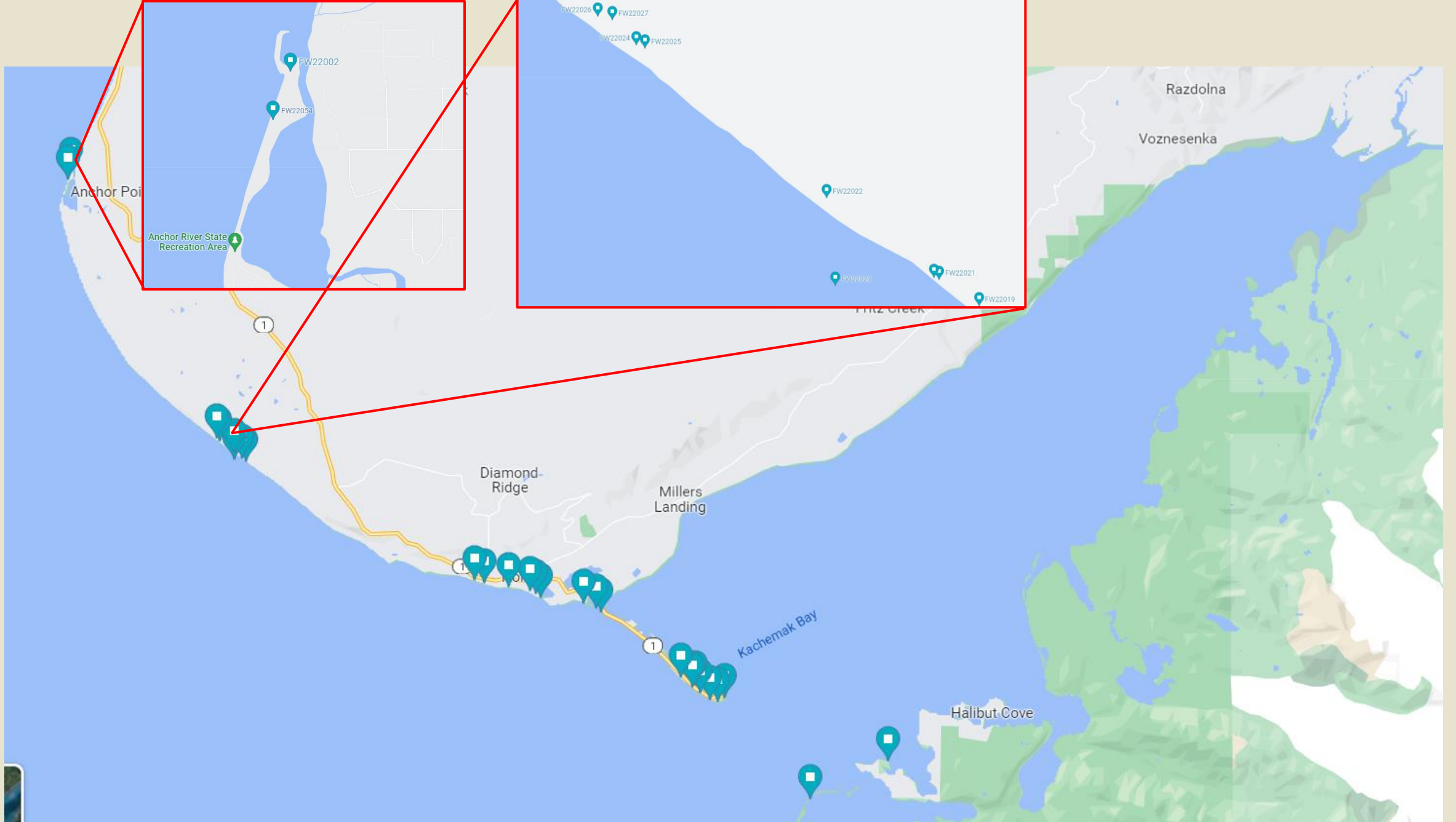
PAPERWORK REDUCTION ACT INFORMATION

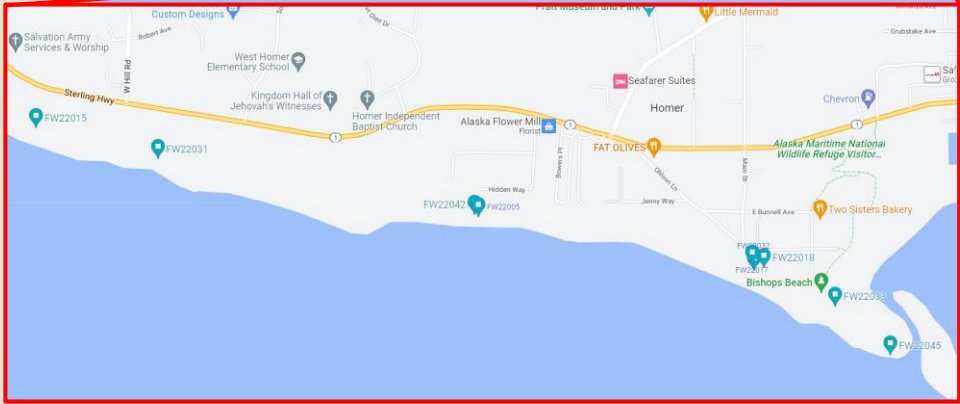
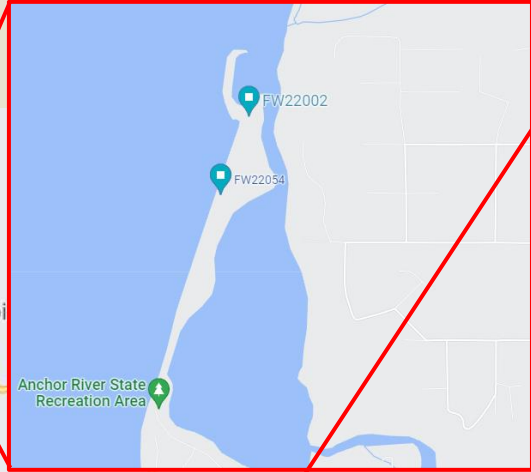
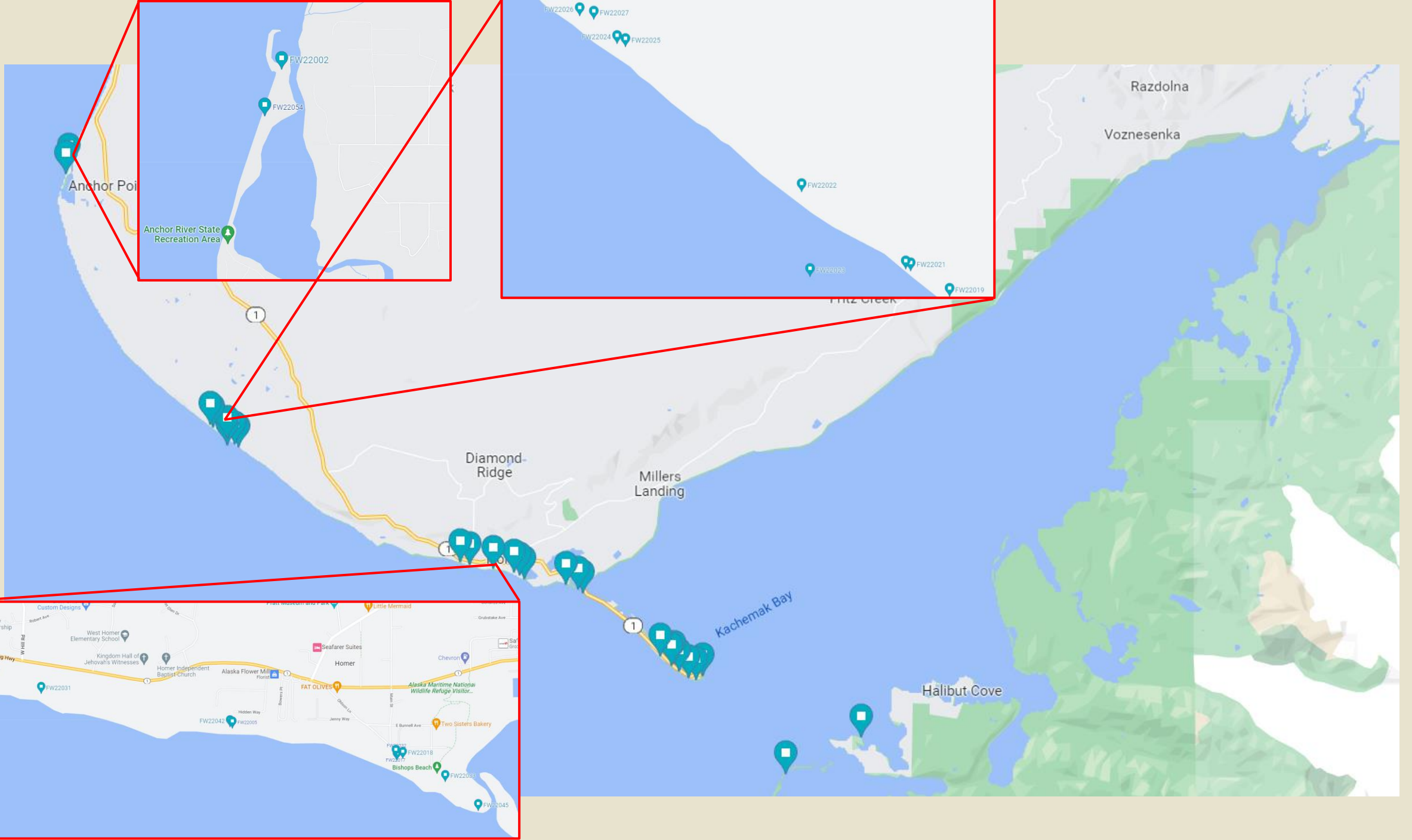
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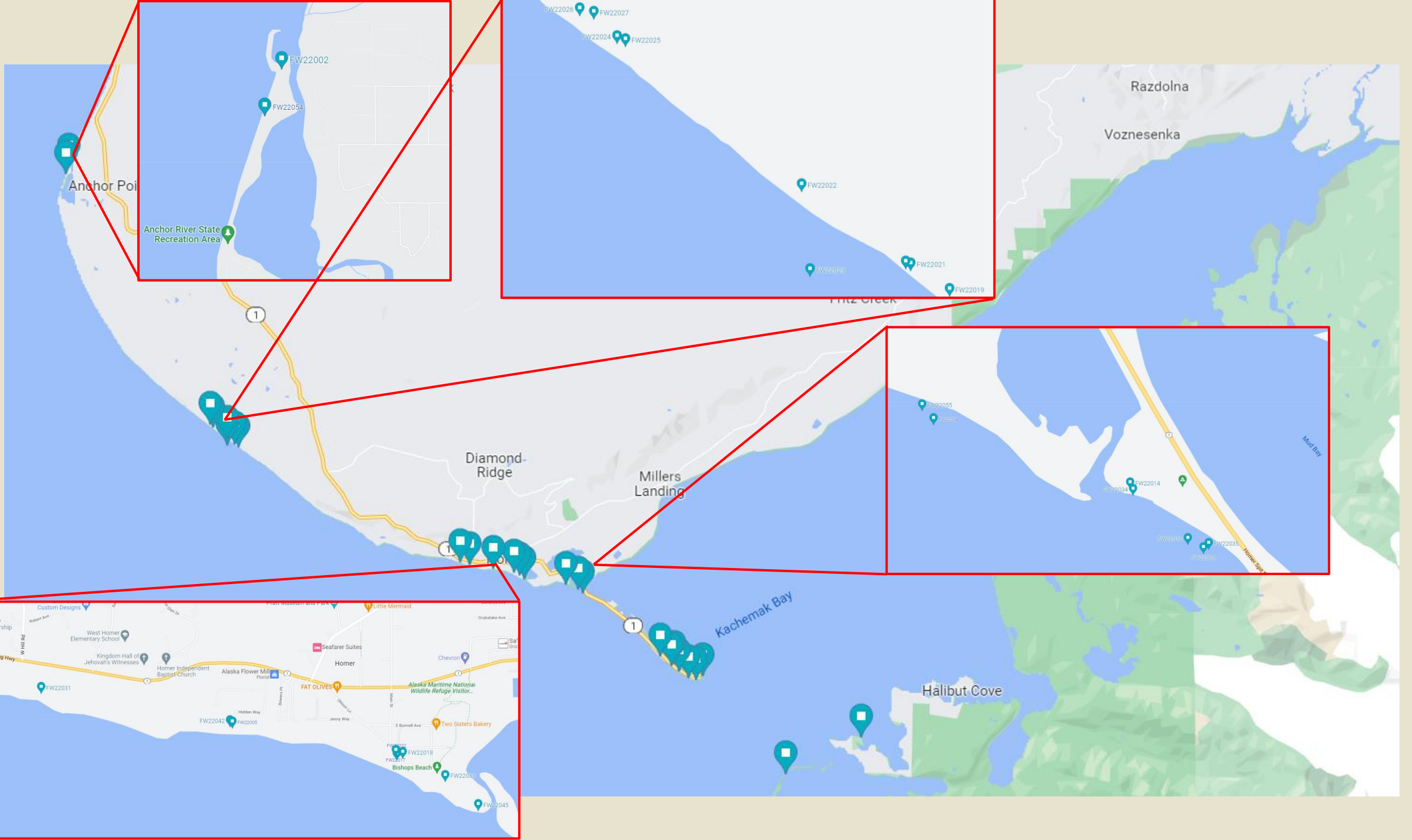






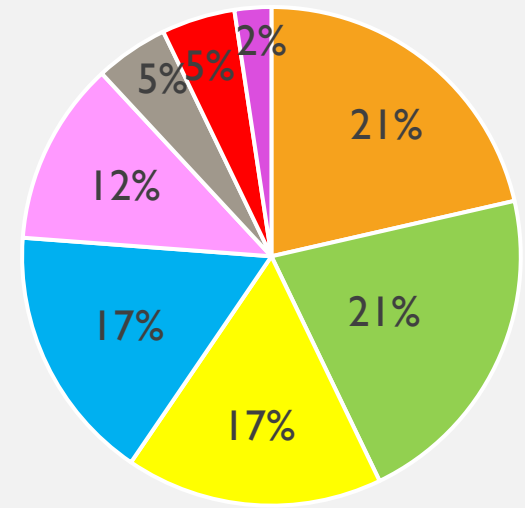






LOCATION DATA

62 total otters

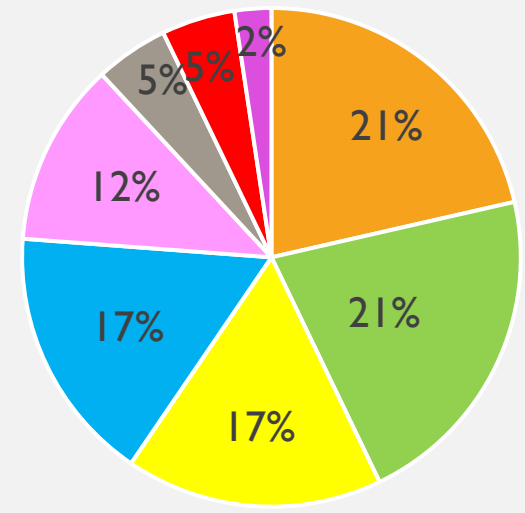


- Bishops Beach
- Diamond Creek
- Land's End
- Mariner Park
- Spit
- Anchor Point
- Across the bay
- Harbor

	Bishops Beach	Diamond Creek	Lands End	Mariner Park	Spit	Anchor Point	Across the bay	Harbor
Fresh dead	4	1	6	0	1	0	0	0
Moderate decomposition	4	1	1	5	3	1	0	0
Advanced decomposition	0	4	0	2	1	1	0	1
Skeletal	1	3	0	0	0	0	2	0

LOCATION DATA

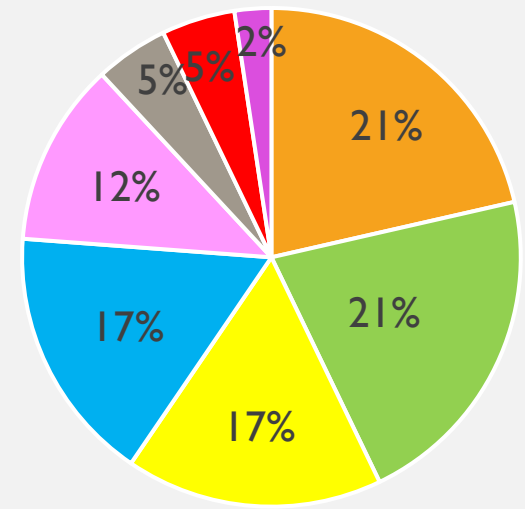
62 total otters → 43 responded to



- Bishops Beach
- Diamond Creek
- Land's End
- Mariner Park
- Spit
- Anchor Point
- Across the bay
- Harbor

	Bishops Beach	Diamond Creek	Lands End	Mariner Park	Spit	Anchor Point	Across the bay	Harbor
Fresh dead	4	1	6	0	1	0	0	0
Moderate decomposition	4	1	1	5	3	1	0	0
Advanced decomposition	0	4	0	2	1	1	0	1
Skeletal	1	3	0	0	0	0	2	0

LOCATION DATA



62 total otters → 43 responded to = 69%

- Bishops Beach
- Diamond Creek
- Land's End
- Mariner Park
- Spit
- Anchor Point
- Across the bay
- Harbor

	Bishops Beach	Diamond Creek	Lands End	Mariner Park	Spit	Anchor Point	Across the bay	Harbor
Fresh dead	4	1	6	0	1	0	0	0
Moderate decomposition	4	1	1	5	3	1	0	0
Advanced decomposition	0	4	0	2	1	1	0	1
Skeletal	1	3	0	0	0	0	2	0

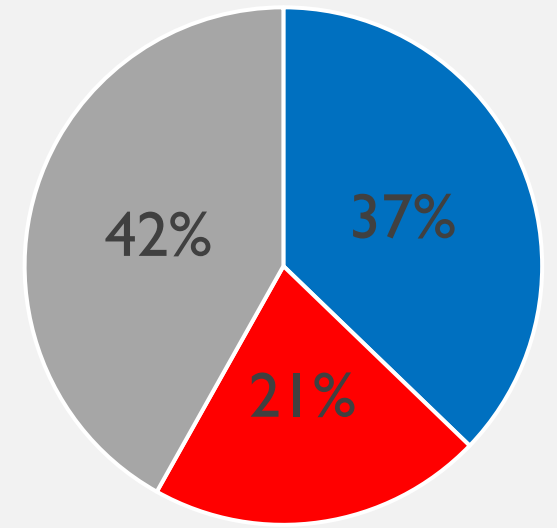
DIAMOND CREEK



MALE VERSUS FEMALE



SEX DATA



■ Male ■ Female ■ Unknown

- Other studies found 2x males than females
- Behavioral ecology
 - Mother-pup pairs
 - Male rafts
 - Resting areas
- Male-male competition
- Females live longer



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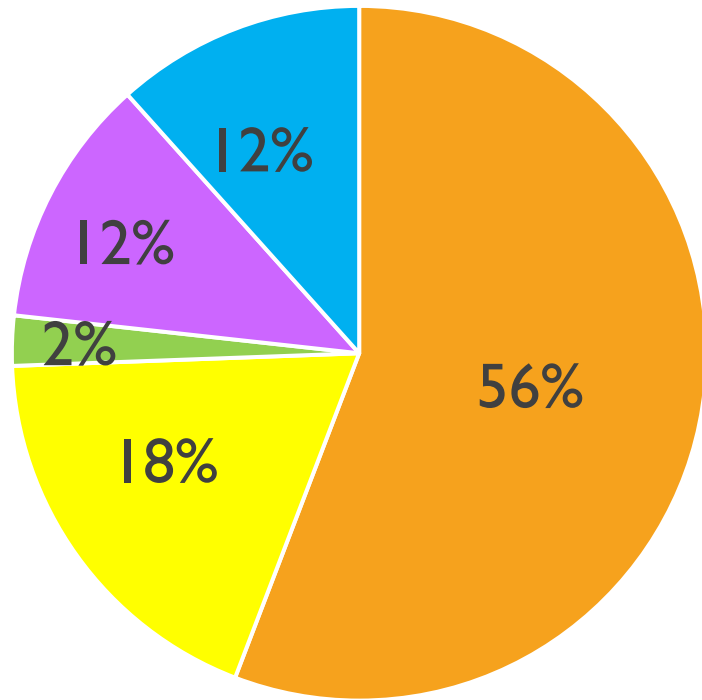
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AGE

AGE DATA



■ Adult ■ Subadult ■ Juvenile ■ Pup ■ Unknown

- Carrying capacity
- Pups small, hard to see
- Juveniles less reliant on mother
- Male-male competition
- Disease



MMPA Permit MA-041309-5



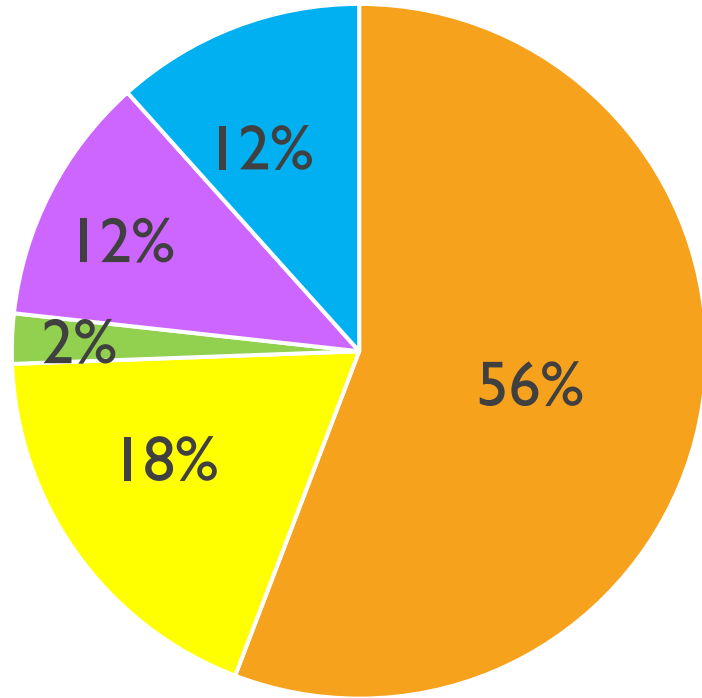
MMPA Permit MA-041309-5



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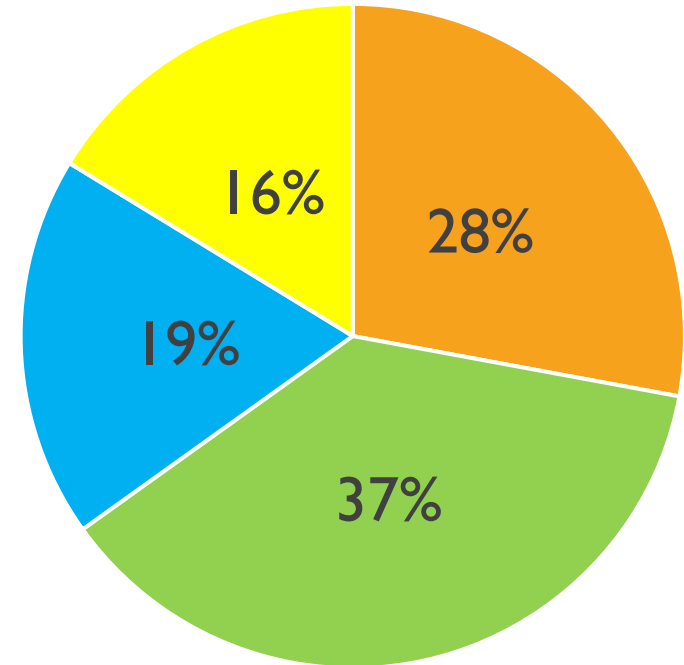
CONDITION

AGE DATA



■ Adult ■ Subadult ■ Juvenile ■ Pup ■ Unknown

CONDITION DATA



■ Fresh dead ■ Moderate decomposition
■ Advanced decomposition ■ Mummified/skeletal



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A harbor otter is swimming in greenish water near a concrete pier. The otter's head and back are visible above the water, and its reflection is seen below. The water has a textured, rippled appearance. A black circle with a white border is overlaid on the left side of the image, containing the text 'THE HARBOR OTTER PART I'.

THE
HARBOR
OTTER
PART I



THE
HARBOR
OTTER
PART I

THE HARBOR



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THE HARBOR



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MY EXPERIENCE

- Real-world experience
- Part of a bigger picture
- Inspiration for rehab work
- Working with the public
- Fun!



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HOMER'S BEST BETS



Photo by Michael Armstrong / Homer News

Science in action

Kachemak Bay Campus Semester By the Bay students Diondre Ryan, left, and Ana Noel, right, collect a dead sea otter pup on Tuesday, March 15, at Mariner Park on the Homer Spit in Homer. Ryan and Noel also are interns with the U.S. Fish and Wildlife Service and members of the Alaska Marine Mammal Stranding Network.

Ryan, of Denver, attends the University of North Carolina, Wilmington, and Noel, of Madison, Wisconsin, graduated from the University of Wisconsin LaCrosse. Since January they have collected about 35 stranded or dead sea otters on Kachemak Bay beaches.

Stranded marine mammals can be reported to the Alaska SeaLife Center's marine-mammal stranding network hotline at 888-774-7325.

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THANK YOU!

Caroline Cummings
USFWS
Alaska SeaLife Center
Debbie Boege-Tobin
Diondre Ryan
Islands and Ocean
SBB class
Public
Family and friends

REFERENCES

- Burek Huntington, K.A., Gill, V.A., Berrian, A. M., Goldstein, T., Tuomi, P., Byrne, B.A., Worman, K., & Mazet, J. (2021). Causes of mortality of northern sea otters (*Enhydra lutris kenyoni*) in Alaska from 2002 to 2012. *Frontiers in Marine Science*, 8, 105.
- Counihan-Edgar, K. L., Gill, V.A., Doroff, A. M., Burek, K.A., Miller, W.A., Shewmaker, P. L., Jang, S. Goertz, C.E., Tuomi, P.A., Miller, M.A., Jessup, D.A., and Byrne, B.A. (2012). Genotypic characterization of *Streptococcus infantarius* subsp. *coli* isolates from sea otters with infective endocarditis and/or septicemia and from environmental mussel samples. *Journal of clinical microbiology*, 50(12), 4131-4133.
- Garlich-Miller, J., Esslinger, G. G., & Weitzman, B. (2018). Aerial Surveys of Sea Otters (*Enhydra lutris*) in Lower Cook Inlet, Alaska, May, 2017. US Fish and Wildlife Service.