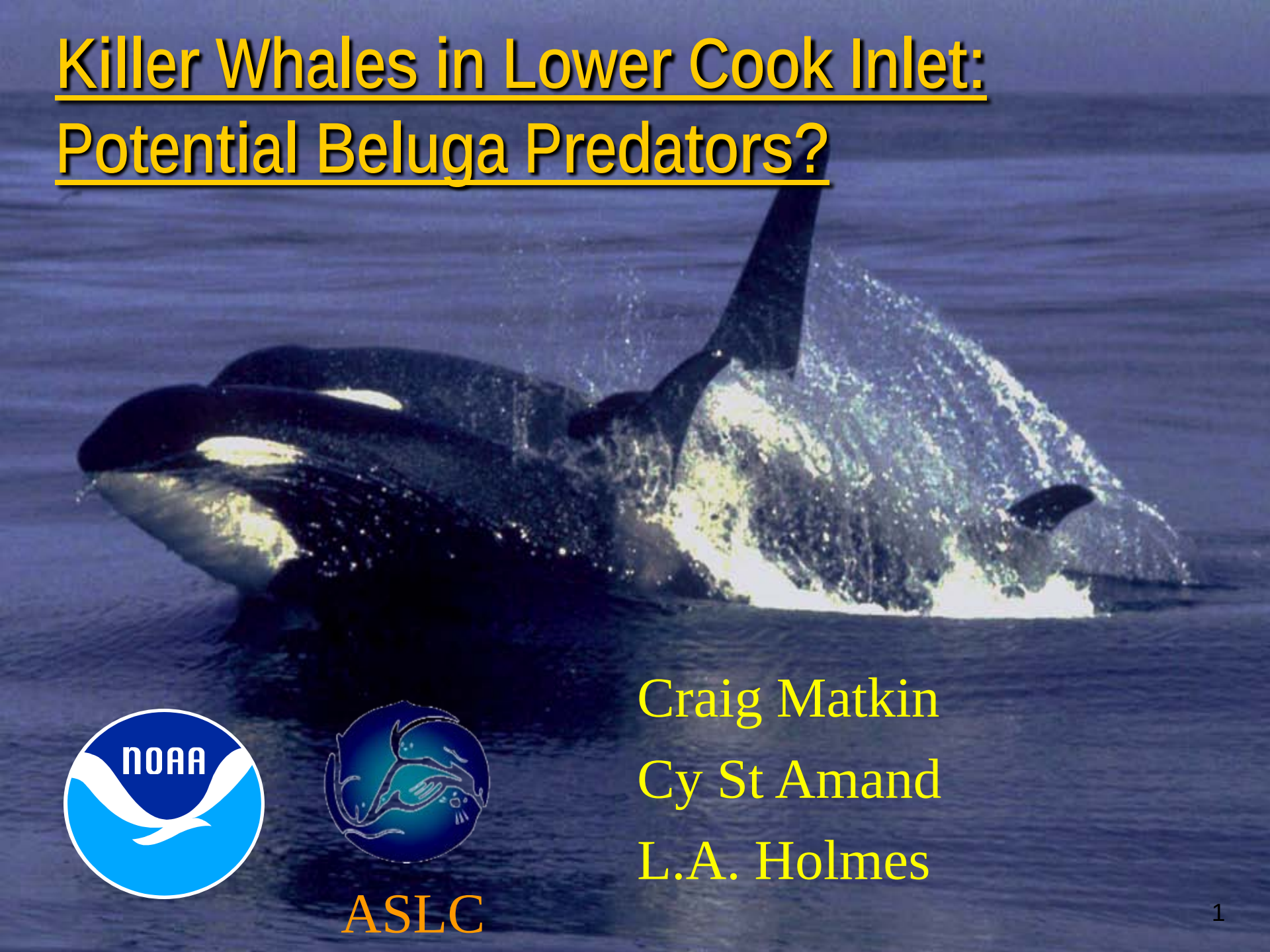
Killer Whales in Lower Cook Inlet: Potential Beluga Predators?



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Purpose of the study

Overiding question: Are Killer Whales a significant factor in beluga decline and/or lack of recovery

Shelden et al 2003 **Killer whales have been relatively common in lower Cook Inlet (at least 100 sightings from 1975 to 2002), but in the upper Inlet, north of Kalgin Island, sightings were infrequent (18 in 27 yr). Predation reported only north of Kalgin I.**

At least 21 CIB killed 1985-2002 - 1 per year

Questions addressed in this pilot study

- **Are marine mammal eating transient killer whales present in lower C.I.**
- **If so, how many are there?**
- **What are they preying upon in lower Cook Inlet ? Are belugas present and preyed upon in this region--historically belugas were relatively common in the lower Inlet --- one recent beluga predation event reported w/photos--**
- **Pilot project: Is work in the lower Inlet feasible and productive**

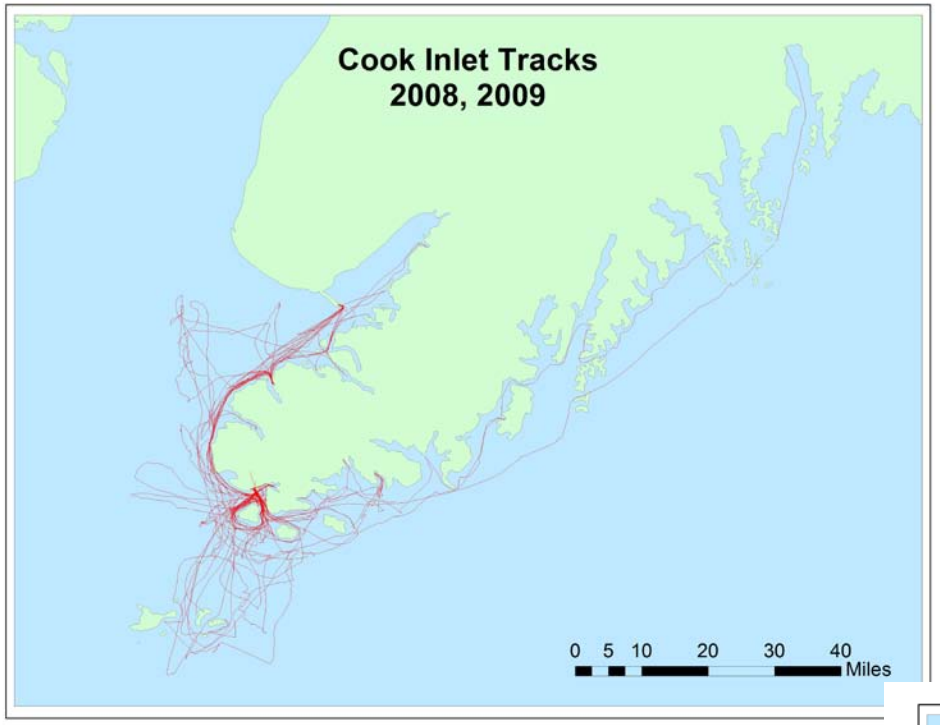
- **Must be coupled with work in Upper Cook Inlet where the remaining CIB population centers its range in spring summer fall >>>**

Methods

- Basis of work is photoidentification of individual killer whales and behavioral observation
- Determine residents and transients by genetics from biopsy, acoustics, association
- Sighting network of charter, fishing, and other vessels essential due to the size of the area. They also directly provided reports and photographs of harassment/predation
- Did not satellite tag in this region during this pilot study, but would be used to examine movements into upper CI if longer term work proved feasible/productive

Results

- Worked two one month periods; July 2008 and July 2009.
- Operated from Seldovia to Elizabeth Island on the east side of the lower Inlet, mouth of Kachemak Bay
- Eleven encounters with resident whales and total of 112 individuals
- Five encounters with transients and total of 21 individuals
- Two attacks observed by transients, one on humpback whale and one on sea otter
- Two predation events photographed with KW id pictures from charter boats, one of minke whale and one on humpback whale
- No beluga sightings reported, no predation events



2008

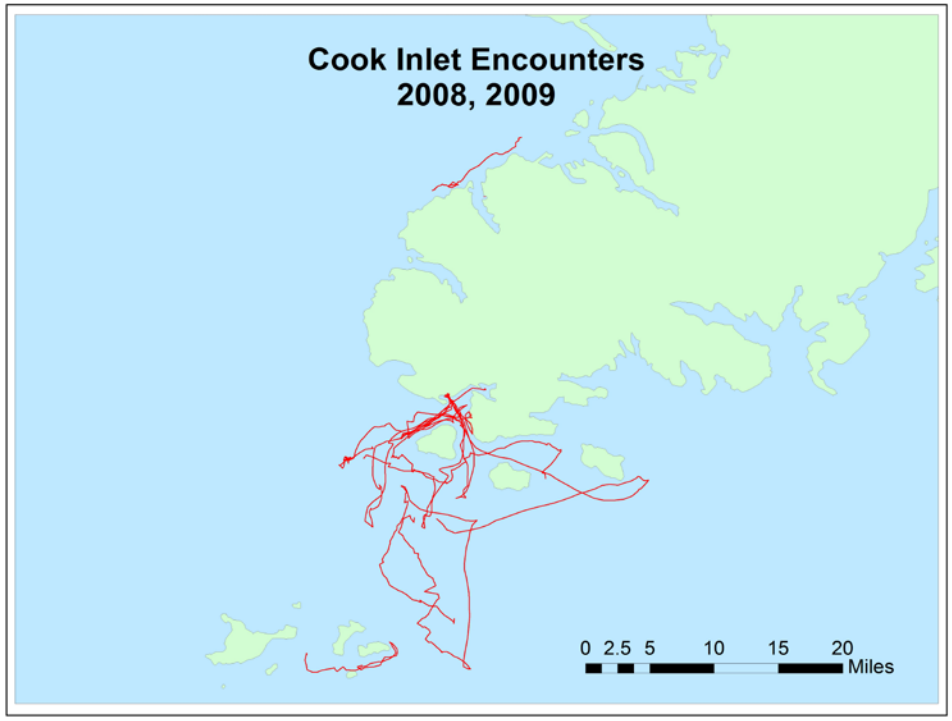
32 field days,
7 inop. due to weather
6 seriously limited by weather

2009

26 field days
7 inop. due to weather
18 seriously limited by weather

11 encounters with Resident killer whales

5 encounters with Transient killer whales



Summary of Lower Cook Inlet Resident Encounters

Fish Eatiing Whales impact belugas only as salmon feeding competitors

Date	# Individuals	Pods present
4-Jul-08	35*	New resident whales
15-Jul-08	34	AA,AX27,AS
25-Jul-08	27	AX1
4-Aug-08	79+*	AX27,AX32,AX40,AG
2-Aug-08	75+*	AX27,AX32,AX40,AG
26-Aug-08	7	AD5
12-Jul-09	7	AK1
14-Jul-09	28	AX27
28-Jul-09	35	AX1
1-Aug-09	23	AX27
3-Aug-09	20	AG

Summary of Lower Cook Inlet Transient Encounters

Date	# Individuals	Individual ID's	Behavior
8Jul08	11	CI1,2,3,4,5,6, 7,8,9,10,11	Attack HW cow/calf unsuccessfully
15Jul08	3	CI12,13,14	Forage, Rest
26Jul08	8	CI1,2,3,4,5,6,7,8	Rest, HWs nearby
30Jul08	4	AT146,147,148, 158	Attack sea otter
25Oct09	4	AT141,143,151	Travel

Three humpback whale carcasses found
all with clear evidence of killer whale
predation, feeding

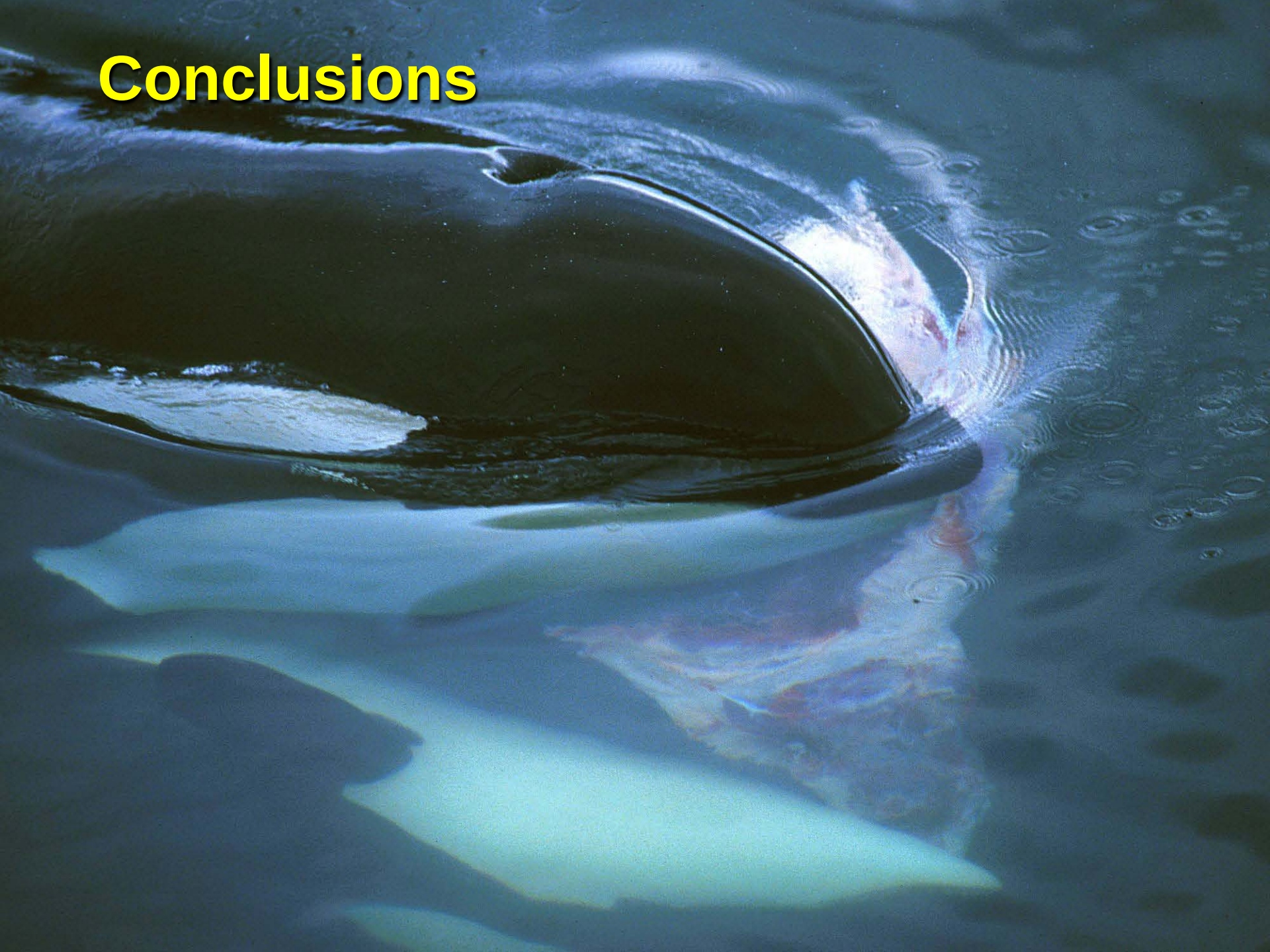
Other Contributed Predation Data with Photographic Backup

Date	# Individuals	Individual IDs	Behavior
14June 07	6	AT141,142, 143?149?,151?	Feed on Minke Whale
17July 08	12	CI01,02,03,04,07, 08,09?,11?,13? AT131,132 w/juv	Feed on Humpback

Predation observed by research team in other years :

Harbor porpoise, minke whale, harbor seal harassment of sea otters

Conclusions



Conclusions

- Most killer whales observed in lower Cook Inlet are resident type (fish eaters)
- Transient killer whales do move into lower Cook Inlet and prey upon minke whales,harbor porpoise, harbor seals, humpback whales, and attack sea otters
- Very large area, very difficult weather and tide conditions (need larger boat!) and actual incidence of belugas and predation very small… possibly different in past

Conclusions

- Due to reduction in numbers of CIB and constriction of range to upper CI (hazardous waters for killer whales) has reduced likelihood of predation by KWs
- In other studies (Aleutians,PWS), killer whales tend to gravitate toward more abundant, available prey (NFS in EA in summer, GW in FP in spring, DP in PWS for AT1s)

Future Work?

- Must couple upper inlet observational/stranding work with Lower Inlet observations. Very low predation rate (if any in lower inlet) and low in upper inlet as well based on recent observations. Upper Inlet priority.
- Need to do more matching with NMFS historical photographs from upper inlet killer whales once they are organized/scanned. No matches thus far
- With apparently very low predation rate yet a very small number of predations needed to affect CIB population, can killer whale impact be monitored effectively? ….Not like gray whales in False Pass!