

Annual Progress Report

EVOS Project Number: 10100742

Project Title: Monitoring, Tagging, Feeding Studies, and Restoration of Killer Whales in Prince William Sound/Kenai Fjords

PI Name: Craig O. Matkin

Time Period Covered by Report: May 1, 2010- September 1, 2010

Date of Report: 10 Sept 2010

Report prepared by: Craig Matkin

Project Website: www.whalesalaska.org

Work Performed:

The current project was initiated in 2010 to continue to address the lingering effects of the *Exxon Valdez* oil spill in Prince William Sound. It includes a continuation of the monitoring of AB pod, the other major resident pods that regularly use Prince William Sound/Kenai Fjords, and the depleted AT1 population of transient killer whales. It includes a continuation of an innovative satellite tagging program that is being used to examine habitat preference and to aid in a more extensive examination of killer whale home range, movements and habitat preference. We are using observational and chemical techniques to continue diet assessments. Results will allow us to more closely examine the potential for restoration for the non-recovered AB pod and the depleted AT1 population and assess potential for future perturbations of the killer whale population.

As of September 1 2010 we have completed 44 dedicated field days in Prince William Sound and Kenai Fjords. An additional 20 days of opportunistic survey days were contributed by other dedicated vessels. From the total field effort we have logged a total of 53 encounters with killer whales. All were with resident type whales except three encounters with AT1 transients and 3 encounters with Gulf of Alaska transients. An additional 10 field days are scheduled for completion of the field season in late September 2010

So far in 2010 we have attached seven satellite tags to killer whales and expect to attach at least two more this fall. (see Objective 2 below). We have conducted biopsy sampling in order to examine temporal and pod specific differences in feeding habits and to genetically assign new groups of whales to populations. We have collected 14 samples at this point in the season and expect to collect approximately six more during our late season cruise (see Objective 3 below).

AB The AB10 and AB17 subpods have been completely photographed in 2010. There were two new calves recruited to first time mothers AB53 and AB54. There was one mortality, the post-

reproductive matriarch, AB10. The AB25 subpod was photographed in large mixed aggregations, but analysis of those photos is not yet complete (See Objective 1 below) .

AD5 Completely photographed in 2010, there have been no new mortalities since last encountered in 2008. Two and two new calves were, one to first time mother AD25 (in 2010) and one to AD21, her third calf (in 2010).

AD16 All members accounted for in 2010, no mortalities and no new calves.

AE Only two subgroups encountered thus far in 2010, no new calves and no mortalities thus far.

AF22 Incomplete coverage so far in 2010

AG Only partial coverage of this large pod so far for 2010.

AI All present and accounted for in 2010, no new calves.

AJ We have had repeated encounters with AJ pod in mixed aggregations and likely have complete coverage of this very large pod, however the photoanalysis has not been completed .

AK No new calves and the post reproductive matriarch, AK6. was missing and presumed dead

The seven surviving AT1 whales all have been accounted for in 2010, and none of the missing/dead AT1 whales have re-appeared (Table 2). We were able to tag a whale from the AT1 population (AT9) for the first time. The movements recorded were more extensive than we expected, however, the whales did not leave the region we have previously determined from photographic data to be their home range. It is noteworthy that the two youngest males, AT 10 (born about 1980) and AT3 (born in 1984) still have not developed the larger dorsal fins associated with adult males, although both should be physically mature by this time. We suspect this inhibited development results from high contaminant load or nutritional stress or both.

Summary of Progress in Completion of Objectives

1. To provide photographic population monitoring of resident killer whale pods, including the non-recovered AB pod in order to determine status. Also monitor the depleted AT1 transient group which has lost over half its members since the spill. **Thus far in 2010 (with one 10 field period remaining) the AB17 and AB10 subpods, which travel independently of AJ pod have been completely photodocumented. Two new calves, both born to first time mothers (AB53 and AB54) were observed and AB10, the oldest matriarch in the pod born about 1948, was missing and presumed dead. Members of the AB25 subpod was recently photographed in mixed aggregations of over 100 whales and we have not yet finished analysis of these photographs. It is encouraging that we have had 3 first time mothers in the AB17 subpod in 2009-2010. If we determine there are not losses from the AB25 subpod, then there will be a net increase of 2 individuals in AB pod over the past two seasons. All 7 members of the AT1 group have been accounted for in 2009, with no new calves (Table 2). Interestingly, AT2 has been travelling with AT9,10, and 18 this year, occasionally joined by AT6, the largest male of the remaining AT1 whales. AT6 also has been observed travelling alone as in past years. AT3 and AT4 have travelled as a pair, separately from AT2, mother of AT4. A summary of other resident pods appears later in this report**

2. To advance the design and attachment of satellite tags and use these tags to aid in detailing habitat use and to allow relocations of pods for food sampling studies. **So far in 2010 we have attached seven satellite tags to killer whales and expect to attach at least two more this fall. Three tags have been placed on resident killer whales in the AJ/AB pod assemblage covering different time periods (both pods have been travelling as mixed groups this year). One tag was placed on an AX48 pod whale to determine the westward extent of their range. One Gulf of Alaska transient was tagged and, for the first time an AT1 transient (AT9) was tagged. Unfortunately, three of these tags were mis-programmed by the manufacturer and only transmitted once a week, the other tags operated as expected. The three malfunctioning tags will be replaced by Wildlife Computers and deployed next season.**

3. Examine seasonal feeding habits, particularly of AB pod and other resident type pods, using molecular and observational methods. To determine specifics and timing and predation we will use observational methods based on collection of fish scales from kill sites and using stable isotope and lipid/fatty acid analysis to corroborate and/or extend field observations. **We have collected 14 biopsy samples from specific groups at specific times to further are molecular examination of feeding habits and have collected 7 scale samples from kill sites as part of our observational work. Feeding locations and durations have also been recorded as part of our field work.**

4. Extend our tracking data and feeding habits examination into the non-summer season (spring and fall) to develop a broader picture of killer whale feeding ecology. **Although logistical issues prevented an early spring trip, we attached 3 tags in later spring and expect to attach three tags during our fall trip.**

5. Suggest restoration alternatives from feeding habit and habitat use data. Also provide understanding of what pods/groups would be most susceptible to future spills or other perturbations within Prince William Sound and Kenai Fjords. **Thus far we have only completed part of the first years field work for this project and are not ready to approach these questions**

6. To provide data for assessment of the role of transient and resident killer whales in the near-shore ecosystem; to monitor any changes in feeding habits in this area based on previously published dietary information (Saulitis et al 2000). **This data is being collected as part of our field program to be detailed in later reports**

7. To continue to work with local groups and other EVOS projects. This includes specifically the studies of humpback whale impact on herring, tour boat operators/industry, and our volunteer sighting network and providing community involvement with our work and promote restoration through education and reduction in harassment. **In spring 2010 we worked individually and in the field with tourboat operators, particularly in Kenai Fjords, to exchange sighting information as well as observe and document tourboat interactions with whales. We have developed a new website www.alaskawhalesightings.com specifically to collect identification photos and sighting information from other vessels and to share this information with near daily updates. Part of our program includes education and interaction with operators to reduce harassment and continue enjoyment of whale watching. We annually provide updated identification catalogues (in electronic form) to tourboat operators and other interested parties. We collected humpback whale identification/population data as possible for other EVOS projects (eg herring assessments).**

Table 2. Sighting histories for all AT1 transient whales for years with effort greater than 40 days.

YEAR	<u>AT1</u>	<u>AT2</u>	<u>AT3</u>	<u>AT4</u>	<u>AT5</u>	<u>AT6</u>	<u>AT7</u>	<u>AT8</u>	<u>AT9</u>	<u>AT10</u>	<u>AT11</u>	<u>AT12</u>	<u>AT13</u>	<u>AT14</u>	<u>AT15</u>	<u>AT16</u>	<u>AT17</u>	<u>AT18</u>	<u>AT19</u>	<u>AT20</u>	<u>AT21</u>	<u>AT22</u>
84	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
85	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
86	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
88	X	X	X	X				X	X	X	X	X	X	X	X		X	X		X	X	X
89	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
90	X	X	X	X	-	X	-	-	X	X	X	X	X	X	-	-	X	X	O	-	-	-
91	X	X	X	X	-	X	-	-	X	X	-	X		X	-	-		X		-	-	-
92	X	X	X	X	-	X	-	-	X	X	-	-	X	X	-	-	X	X		-	-	-
93		X	X	X	-	X	-	-	X	X	-	-		X	-	-	X	X		-	-	-
94	X				-		-	-	X	X	-	-		X	-	-		X		-	-	-
95	X	X	X	X	-	X	-	-	X	X	-	-	X	X	-	-	X	X		-	-	-
96	X	X	X	X	-	X	-	-	X	X	-	-		X	-	-		X		-	-	-
97	X	X	X	X	-		-	-			-	-	X		-	-	X		-	-	-	-
98	X				-	X	-	-	X	X	-	-	X	X	-	-	X	X		-	-	-
99		X	X	X	-	X	-	-	X	X	-	-			-	-		X		-	-	-
2000	O				-		-	-			-	-	X	X	-	-	X		-	-	-	-
2001		X	X	X	-	X	-	-	X		-	-	X		-	-	X	X		-	-	-
2002		X	X	X	-		-	-	-		-	-	O?	X	-	-	-		-	-	-	-
2003		X	X	X	-	X	-	-	X	X	-	-	-	O?	-	-	-	X		-	-	-
2004		X	X	X	-	X	-	-	X	X	-	-	-	-	-	-	-	X		-	-	-
2005		X	X	X	-	X	-	-	X	X	-	-	-	-	-	-	-	X		-	-	-
2006		X	X	X	-	X	-	-	X	X	-	-	-	-	-	-	-	X		-	-	-
2007		X	X	X	-	X	-	-	X	X	-	-	-	-	-	-	-	X		-	-	-
2008		X	X	X	-	X	-	-	X	X	-	-	-	-	-	-	-	X		-	-	-
2009		X	X	X	-	X	-	-	X	X	-	-	-	-	-	-	-	X		-	-	-
2010		X	X	X	-	X	-	-	X	X								X				

X whale present

O whale dead (stranded) (probable identify of AT1 carcass denoted by: **O?**)

- whale missing presumed dead

Future Work: This is the first year of a three year project. Our field season will be completed after a ten day cruise in late September and data will be processed toward stated objectives in proposal during the winter. There are no significant changes in our approach or analysis/field schedule during the coming year

Coordination/Collaboration: These efforts are described in under our summary of work completed (see objective #7)

Community Involvement/TEK & Resource Management Applications: These efforts are described in under our summary of work completed (see objective #7)

Information Transfer: The final report for our previous **Restoration Project 090742** was submitted in April 2010. Our most recent scientific publication was: from this project was: Yurk, H, O Filatova, C.O. Matkin, L.G. Barrett-Lennard, and M. Brittain. 2010. Sequential habitat use by two resident killer whale (*Orcinus orca*) clans in Resurrection Bay, Alaska as determined by remote acoustic monitoring. Aquatic Mammals 36(1), 67-78.

We continually update our website www.whalesalaska.net with recent information and observations

Budget: Current spending in 2010 is following projected expenditures and there is expected to be little or no deviation from the budget.

Submitted to catherine.boerner@alaska.gov.