

## EVOS ANNUAL PROJECT REPORT 2006

**Project Number:** 04012

**Project Title:** Monitoring of Killer Whales in Prince William Sound and Kenai Fjords, Alaska

**PI Name:** Craig O. Matkin

**Time Period Covered by Report:** October 2005-August 2006

**Date of Report:** 9 Sept 2006

### 1. Work Performed:

All work was oriented toward the primary goal to monitor AB pod, the AT1 population and other killer whales in the southern Alaska resident population as stated in the original proposal. In the months from November 2005 to March 2006 data from all 2005 vessel logs and killer whale encounter forms were placed in the long-term ACCESS database maintained at the Alaska Sea Life Center, Seward, Alaska. All vessel track lines and observed tracks of movements of killer whales during encounters were input and stored in an ongoing GIS project database that can be linked to the ACCESS vessel/encounter data. Identifications of each individual killer whale appearing in each frame of film were recorded in a separate database and births, missing whales and confirmed deaths of individuals determined for all the major resident pods and the AT1 transient population. Skin samples were analyzed at the University of British Columbia for mtDNA haplotype and blubber samples analyzed by the Northwest Fishery Science Center for contaminants, stable isotope levels, and fatty acid signature as part of a developing program examining feeding habits of particular pods. These data will be incorporated in proposed work examining pod specific differences in feeding habits.

During May to early September 2006, we completed a total of 50 survey days in the Prince William Sound/Kenai Fjords region, of which 8 days were funded under the EVOS sponsored project and the remainder funded by the Alaska Sea Life Center. An additional week of field time will be completed by late September.

Our coverage of the AB pod in 2006 is not yet complete. The AB17 and AB10 sub-pods have not been completely photographed yet this season; however, the loss of the reproductive female AB26 in 2005 has been confirmed. The AB25 sub pod has been documented travelling with AJ pod again in 2006 which has been the case since the oil spill. This migration of a subgroup from one pod to another is completely unprecedented in studies of resident type killer whales in the North Pacific. All members of the AB25 sub pod have been photographed except for AB55 which is now confirmed as mortality in 2005. Acoustic recordings indicate AB25 sub pod whales still maintain and use calls unique to AB pod, despite their association with AJ pod for the past 17 years.

Figure 1 diagrams the number of whales documented annually in AB pod since the beginning of the study as well as the number of whales documented in other major resident pods of the Southern Alaska Resident population that have been monitored during the same period. This chart is updated only through 2005 and reflects the incomplete field work and analysis in 2006. AB25 sub-pod has not been split from AB pod in this representation for the purposes of consistency with previous years. Overall number of killer whales in most Prince William Sound and southeastern Alaska resident pods continue to increase and only AB pod has declined since our 1988 pre spill counts. AB pod lost two whales in 2005 including a reproductive female, and

has declined to 26 whales in 2005, the lowest number of individuals since 2001. The inability of AB pod to recover more rapidly from the losses incurred at the time of the oil spill was unexpected

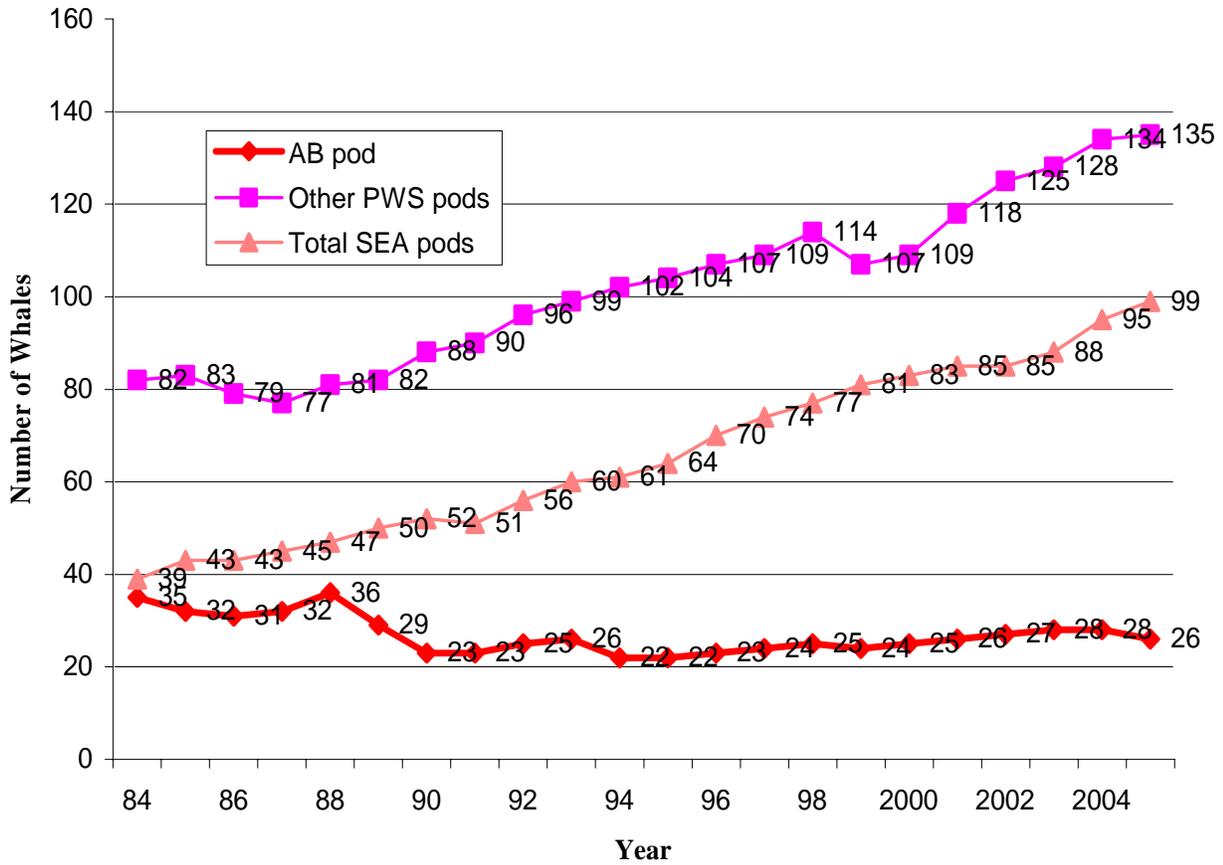
We have had 4 encounters with members of the AT1 population thus far in 2005. A total of 7 AT1 individuals were encountered in various groupings. On one occasion all seven whales travelled together. The male AT6 also was photographed alone and observed killing and consumed a harbor seal. Harbor seals have been the primary prey of the AT1 population and are apparently increasing in the Sound in recent years (Bob Small, pers. comm.). Again, there was no evidence of predation or attempted predation on Steller sea lions by AT1 whales. It is notable that AT1 whales have never been observed (by boat or camera) to forage near the Chiswell sea lion rookery in Kenai Fjords or around the Needle, a sea lion haulout in Prince William Sound. Both of these areas have been used repeatedly in the past by Gulf of Alaska transients.

Two males that were last sighted in 2001 (AT 13 and AT17) and one last sighted in 2002 (AT14) were not observed in 2006 and are presumed dead (Table 1, Figure 2). From mtDNA analysis it was determined that one AT1 whale died and stranded on Latouche Island in spring 2003 and another died and stranded on Hinchinbrook Island in 2002. Nuclear DNA analysis indicated the Latouche Island whale was either AT14 or AT17, unfortunately the Hinchinbrook whale has been difficult to sequence genetically due to age of tissues. It appears that all three of these males are dead leaving a total of 7 remaining individuals. All of the encounters we logged with AT1 whales were in Prince William Sound, although there was one sighting of the AT1s in Kenai Fjords reported by two tour boats. For several years there was an increased presence of the AT1 whales in Kenai Fjords, however, a side effect was the whales repeated exposure to tourboat traffic and close approach. Their status of "depleted" caused a greater desire to view these rare whales. Extended viewing times and boat traffic may impact the ability of these whales to hunt. Observations suggest these whales have become increasingly boat shy and may avoid areas during hours of peak boat operation. Although historically there have typically been more AT1 encounters in Prince William Sound than in Kenai Fjords, the recent lack of encounters may be a result of the interactions of the AT1 whales with tour boats.

In August and early September 2005 we field tested and applied satellite tags on 3 resident type killer whales in 2 different pods (AJ pod and AK pod). Based on applications in other areas earlier in the season, we expect the tags to have a transmission life of 1-2 months. Tags of similar or improved design will be used in our proposed tagging studies.

Figure 1.

The number of resident killer whales in AB pod, in seven other Prince William Sound pods, and in three Southeastern Alaska pods (all pods of the Southern Alaska Resident population).  
1984-2005



**Table 1.** Sighting histories for all AT1 transient whales for years with effort greater than 40 days.

<u>YEAR</u>	<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
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		-	-	-
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	-		-	-	-		-	-	-	X	-	-	-			-	-	-
2003		X	X	X	-	X	-	-	X	X	-	-	-	-	-	-	-	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		-	-	-

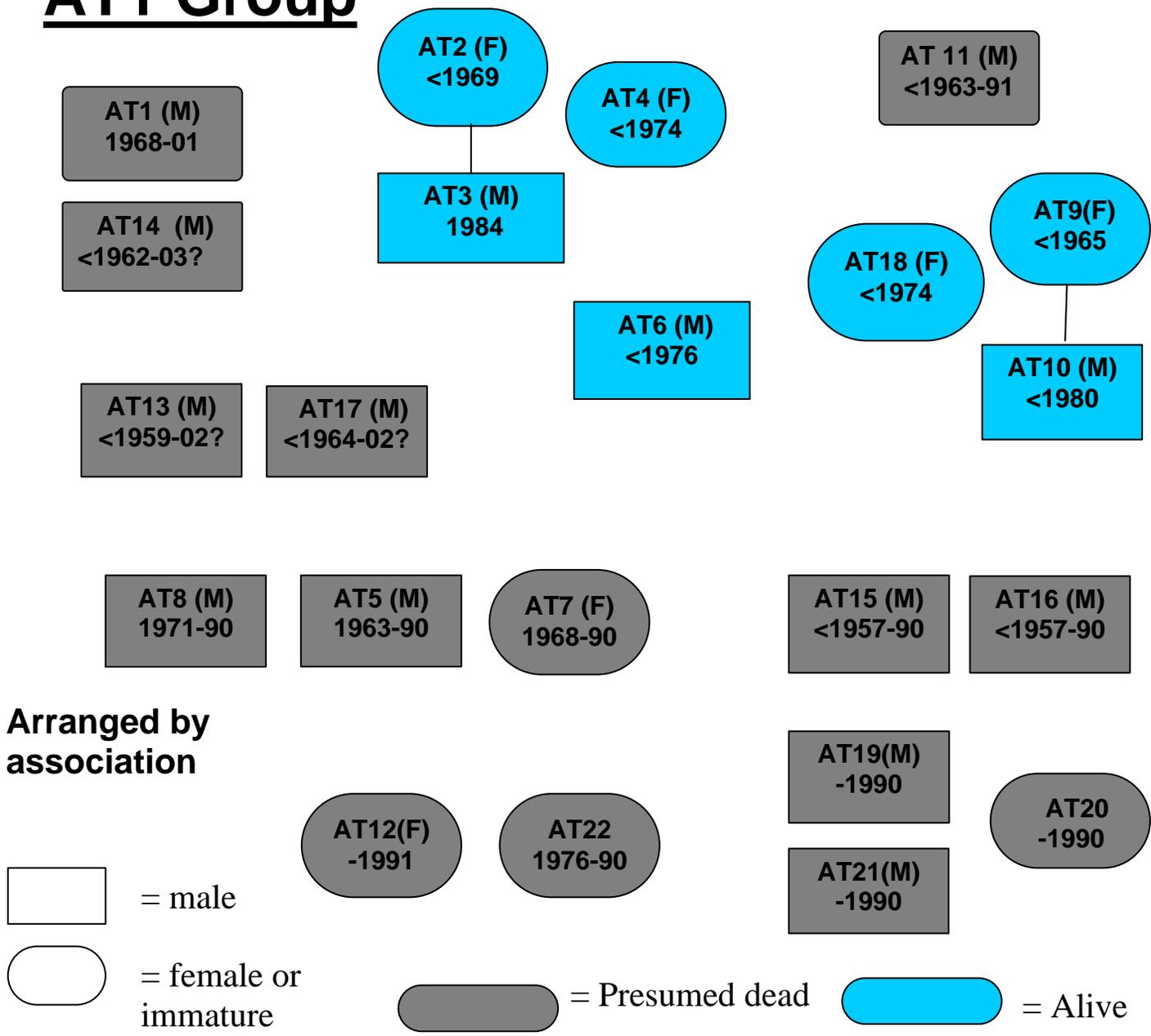
X whale present

O whale dead (stranded)

- whale missing presumed dead

Figure 2. Structure of the depleted AT1 population of transient killer whales September 2006.

# AT1 Group



## **2. Future Work:**

Fieldwork through 2006 is nearing completion and results will be incorporated into a report to the Alaska Sea Life Center due in the winter 2007. The PI will attend the annual Marine Science Symposium in January 2007. Limited monitoring will continue through 2007 as part of a currently funded EVOS program and within the scope of that proposal. We have submitted an additional proposal to the EVOS Trustee Council to initiate a killer whale satellite tagging program and expanded examination of killer whale predation and ecosystem relationships using chemical and observational techniques.

## **3. Coordination/Collaboration:**

We are collaborating with Steller sea lion research projects (examining predation by killer whales) as well as with killer whale projects extending into Kodiak and the Aleutian Islands to assess the killer whale populations and feeding habits using observations and chemical analysis. We are also collaborating with Jim Bodkin (sea otter program) to assess any potential changes in predatory behaviour of killer whales toward sea otters and with Anne Hoover Miller and Gail Blundell to examine changes in numbers and behaviors of killer whales in regard harbor seal numbers and distribution.

## **4. Community Involvement/TEK & Resource Management Applications:**

We participated in Youth Area Watch Program in May 2006 taking high school students to participate in field work. We held workshops in Seward in May 2006 for tour boat operators and others detailing the latest research findings and providing guidelines for behavior when observing marine mammals. A talk was given at the Anchorage Science Symposium in January 2006. Popular presentations were made in Anchorage, Seward, and Homer during winter and spring 2006. We participated in meetings convened by Integral Consulting regarding potential lingering oil damage in December 2005 and January 2006.

## **5. Information Transfer:**

### *a. Publications produced*

Saulitis, E., C. O. Matkin and F.H. Fay. 2005. Vocal repertoire and acoustic behavior of the isolated AT1 killer whale subpopulation in Southern Alaska Canadian Journal of Zoology 83: 1015-1029.

### *b. Conferences attended*

Biennial Conference on the Biology of Marine Mammals (Poster Presentation)  
December 2005, San Diego, California

Annual Alaska Marine Science Symposium (Oral Presentation). January 2006, Anchorage, Alaska

*c. Data/information products*

Updates to our website [www.whalesalaska.org](http://www.whalesalaska.org) are made on a regular basis. Popular public presentations are given at regular intervals in various towns in Alaska.

**6. Budget:**

Budget is on schedule and project total costs will fall within budget

**Report Prepared By: Craig O. Matkin**

**Project Web Site Address: <http://www.whalesalaska.org>**