LAGUNA SAN IGNACIO
ECOSYSTEM SCIENCE PROGRAM (LSIESP)
2010 GRAY WHALE RESEARCH REPORT

The 2010 winter research at Laguna San Ignacio began in mid-January and continued until early-April 2010. This year's projects and researchers contributed significantly to our goals and objectives for the Laguna San Ignacio Ecosystem Science Program (LSIESP). We want to express our thanks to our sponsors, the residents of Laguna San Ignacio, and the eco-tourism operators for their support of LSIESP researchers and students.

Gray Whale Monitoring and Assessment: The 2010 gray whale Team was led by Steven Swartz (CRA), Jorge Urbán (UABCS), and Alejandro Gómez Guallardo U. (UABCS), and included six researchers and graduate students from universities in Mexico and the United States: Sergio Martínez (UABCS), Hiram Nanduca (UNAM), Anaid Lopez Urbán (UNAM), Jessica Isadora R. (UABCS), Tabata Olavarrieta (UABCS), and John Symons (Lewis & Clark University). The Acoustic Research Team included Aaron Thode and Melania Guerra (SCRIPPS Institution of Oceanography) with several UCSD undergraduate and graduate students contributing additional help with the acoustic research.

Gray whale abundance monitoring involved 15 weekly census counts of gray whales in the lagoon to monitor the number of whales in the lagoon each week and lagoon habitat use. Weekly census counts began on January 19th 2009 and continued until April 1, 2010, with the greatest number of adult whales counted on 27 February 2010 (256 adults and 17 mother-calf pairs). Overall, fewer mother-calf pairs were seen than in the previous three winters, suggesting that they may be utilizing other calving areas in Baja California. In contrast, counts of single whales were the highest seen in the previous three years, reaching a maximum count of 239 whales on 27 February. The low counts of mother-calf pairs may be related to the increase in single breeding animals that are known to harass and disturb females with calves.

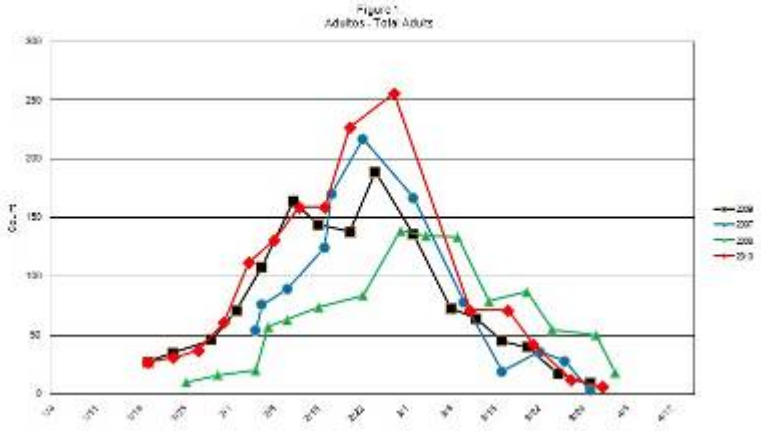

Figure 2.
Solas - Single Whales

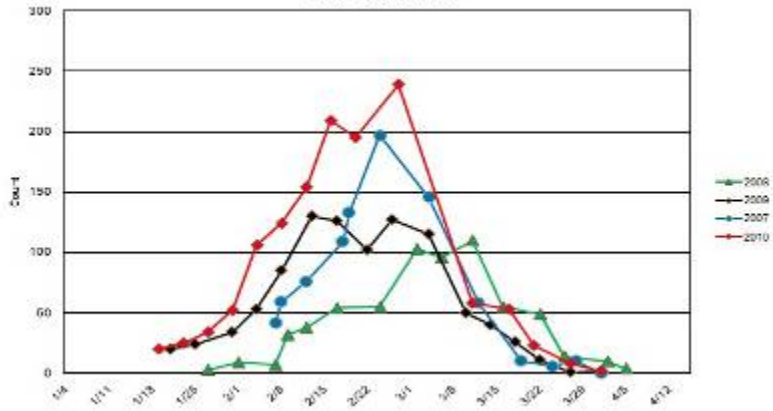

Figure 3.
Madres con Cria - Mother-Calf Pairs

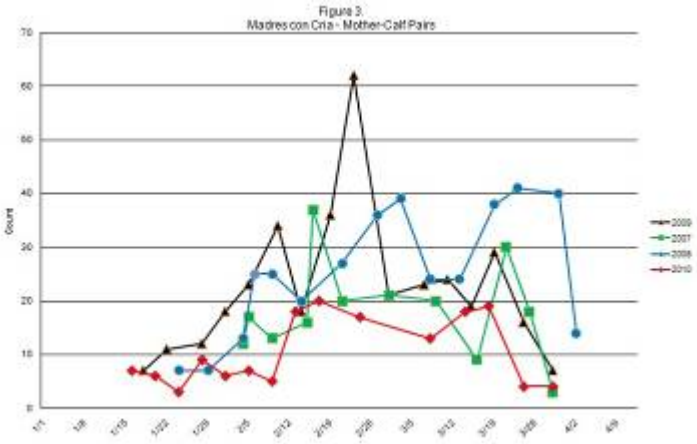

Photo-Identification and the Archiving and Management: The collection of photographic identification information (Photo-ID) of individual whales, especially females with calves will help to determine: if these female-calf pairs reside in Laguna San Ignacio all season, or if they are coming from other areas; will provide an indication of female breeding capacity for comparison with historical data; and will support the estimation of the % of "skinny whales" to evaluate possible climate change effects on the population. UABCS Master's student Jessica Isadora is researching female whale calving intervals for her thesis research. There are now over 10,000 digital images of gray whales in the archive taken in Laguna San Ignacio from 2006-2010.


Separate catalogues for single whales and females and their calves will be posted on the new LSIESP internet web-site for access by researchers working in other portions of the whales' range beginning in 2010-2011. These photo catalogues tell us which individual whales are returning to Laguna San Ignacio each winter. They also allow the calculation of calving interval for female whales and how many calves are born each winter, and the estimation of duration of stay within the lagoon each winter by determining the number of days between the first time a whale is photographed and the last day it was photographed.

The Acoustic Research included placing digital recording arrays at two stations: one within the lower lagoon whale-watching zone, and the second in a deep channel in the interior "closed" zone (no whale-watching) for comparison of these areas. Whale-watching panga drivers were provided with GPS units to accurately record their locations for analysis of outboard motor signal source strength and transmission underwater. Recordings also documented gray whale calls and naturally occurring biological and non-biological noise (e.g., tides, snapping shrimp, & fish). Acoustic recording tags were placed on individual whales using suction-cups to record underwater sounds heard by the whales (natural and man-made), the whale's depth, and their movements and behavior underwater, which allowed documentation of sounds heard by the whales, and the whale's movements and vocal behavior in response to underwater noise.


UNAM student Anaid Lopez U. is analyzing the gray whale sounds obtained from the "suction cup" recording tags for her Master's thesis at UABCS to see if there are any differences between calls from single whales and those produced by mother and calf pairs. Her preliminary results suggest that: (1) the mother and singles have different call types, (2) mothers vocalize more while at the surface of the water and the single whales vocalize more while


diving near the bottom of the lagoon, and (3) some gray whale calls has a relationship with the strata, for example the “conga” call is more common at the surface, the “purr” and “quejido” calls are more common in the middle area of the lagoon, and the “ronrroneo” call is very common in the recordings of whales on the lagoon bottom. The “ronrroneo” call might be a new gray whale call recorded for the first time during this project.

Whale-Watching Analysis: UABCS researcher Ana Liria Del Monte M. continued her studies for her Master’s Degree focusing the trends of whale-watching activity in Laguna San Ignacio during the past decade in comparison with the number of gray whales that visited the lagoon each winter during the whale-watching operations. In 2010 Ms. Del Monte began working as a natural history educator for a whale-watching company in Cabo San Lucas, BCS while she continues with her Master’s studies at UABCS.