

## Comments on the SAGES Conclusions

I have been an interested and frequent observer of whooping crane activities at Aransas National Wildlife Refuge (ANWR) since 2001. For most of that period (2002 through 2008), I have led tours 6 days per week from November through March to the refuge on board the tour boat Wharf Cat to observe the birds. The winter of 2009, I led tours 3 days per week. During this entire period I have closely observed activities of the birds, conducted extensive readings of the available literature, and had personal exchanges with such crane experts as Tom Stehn, USFW Whooping Crane Coordinator and George Archibald, PHD, co-founder of the International Crane Foundation and known globally as the world's leading scientific authority on cranes.

I find that the conclusions of the SAGES report are inconsistent with the body of knowledge existing about the whooping cranes and inconsistent with my own personal observations.

During the period of the SAGES study, historical drought extremes did not occur. During this last winter (2008-2009), there was little or no rainfall on either ANWR or in the watershed of the Guadalupe/San Antonio River complex. This lack of fresh water resulted in much higher salinities than were considered in the report. As a result, almost no Carolina wolfberries were available to the cranes upon their arrival. This lack of wolfberry fruit correlates with the wolfberry model of the study. What the study did not do is extend the impact of a wolfberry crop failure to the survivability of the whooping crane. The wolfberry is extremely important in order to replace the fat loss whooping cranes experience on their 2500-mile migration from Canada to the Gulf of Mexico. If that boost in nourishment is not available to them, then the impact of any subsequent reduction in food availability is magnified.

The study conclusion that blue crab availability should increase with higher level salinities is also inconsistent with the literature and my observations. The <30mm crab sizes that were the focus of the study are much smaller than those I observe the whooping cranes eating. I estimate that the crabs I see the cranes eating are 60mm or larger. It is this size crab that the cranes depend on to build up their energy reserves for the journey back to Canada and for the summer nesting season. During the winter of 2008-2009, crabs of this size were almost nonexistent. I seldom saw cranes finding and eating crabs of this size all winter long. My observations are consistent with the observation of others who have witnessed the cranes foraging through this and previous drought years.

Furthermore, the SAGES study did not account for the additional energy the cranes require to forage during seasons of low blue crab availability. If the crabs are not available in the shallow water ponds of the marshes, then they are not available to the cranes even if they are abundant in the deeper water. Whooping cranes are bottom foragers. When they are in the deeper waters of the bay, they are not searching for crabs, which are not on the bottom in that habitat, but for clams and other bottom dwellers. These resources may supply biomass, but they do not supply much energy to the cranes. Consequently, the cranes resort to foraging the uplands for reptiles, small mammals, nuts, acorns, and other vegetative matter. The travel to the uplands from the wetland territories and back uses energy that is barely replenished by the forage provided by the upland terrain.

As important, the SAGES study did not address the cranes requirement for drinking water. The cranes can drink water with salinities usually present in their home territories. They cannot drink water at the much higher salinities seen this last winter. This last winter, the cranes had to travel to fresh water ponds and tanks inland for water. This additional travel not only used energy they

could ill afford, but it also exposed them to predation by the larger predators that live on ANWR around the fresh water ponds.

The winter of 2008-2009 was the worst winter for the whooping cranes since records have been kept. I observed many cranes visibly emaciated and lethargic. Some were crippled or sick. Twenty-three died. This is the largest number and the highest percentage of the flock to die since USFW has been keeping records.

In conclusion, the SAGES study is seriously flawed because it does not consider abnormal climate conditions, focuses on the wrong segment of the crab population, does not consider the importance of the wolfberry crop to the cranes on their arrival at ANWR, does not account for the additional energy required by the cranes to find and consume alternative forage, and disregards the impact of the availability of drinkable water on the cranes. The conclusions drawn by the study are neither consistent with prior studies nor with observations made by competent observers in the field.