

To: John A. Wiens
From: Stanley A. Temple
Subject: Attwater's Prairie-Chickens at TNC's Texas City Preserve
Date: 20 October 2002

At your request, I reviewed a large file of documents describing management of the Attwater's Prairie-Chicken, and I visited the Texas City Preserve on 15 October to meet with TNC and USFWS staff members and inspect the preserve. Based on what I learned, I am able to make a well-informed, professional assessment of the management of the bird and the preserve. I have summarized my main findings below; additional details are provided in the attached notes.

1. The population on the preserve is not and cannot be intrinsically viable.

Much like the closely related and now-extinct Heath Hen in its final days, the small, remnant population at the tiny Texas City Preserve is not and--because of surrounding development--cannot become large enough to persist on its own in the face of the same types of stochastic events¹ that doomed the Heath Hen. Threats of environmental, demographic and genetic stochasticity loom ominously, and in a patch of habitat that is too small, too isolated, too degraded, and too vulnerable to inevitable devastation by a hurricane, even the short-term (10-generation) prospects for the population are not especially encouraging. Already, as might be expected, the population seems to be dependent on genetic and demographic subsidies from the captive population for its short-term survival.² Because of this inherent vulnerability, intensive management that addresses proximate threats³ to the population is appropriate and essential. Such intensive population management is not TNC's forte, which has always been managing viable populations in viable habitat, not making last-ditch, high-risk rescue efforts. Nonetheless, the current management plan for the preserve employs many "best-management practices" for such a critically endangered population. Keeping the remnant population extant using every management tool available, while at the same time seeking to restore viable habitat for reintroductions elsewhere, is the best strategy possible in a less than ideal situation.⁴

2. Current management at the preserve is focusing on the most important issues. The core management themes of improving habitat quality, managing the population intensely, and seeking more extensive habitat elsewhere that can be made suitable for a reintroduced population through ecological restoration and ecosystem management are appropriate. I was impressed by the habitat improvements that have taken place under TNC's stewardship of the preserve. The aggressive removal of invasive exotics⁵, carefully controlled use of fire and cattle grazing to maintain grass cover⁶, and the reduction of human disturbance at critical times and places⁷ address important issues at the Texas City Preserve. In addition, the plan to begin working on a large (possibly 385,000-acre), landscape-scale project in Refugio County--dominated by working grasslands that are under multiple, private ownership--seems to me the only feasible way to achieve a viable future for this endangered subspecies.⁸

3. Risks associated with oil and gas production on the preserve seem acceptably small compared to other known risks. Perceptions of risk are often greater than the actual risk associated with an activity, and I believe the perceived risks to prairie-chickens from an accident associated with the oil and gas production on the

preserve have been exaggerated by critics. They are certainly far less threatening and much more easily mitigated than the vagaries of weather and the almost certain catastrophe associated with a hurricane. My risk assessment is based on several observations: The active wells are concentrated in the areas of the preserve with little-used habitat types that are neither attractive nor necessary for the birds, regardless of the presence of the wells.⁹ Experiences with past accidents at wells such as these suggest that the magnitude, frequency, scale and duration of the incidents would have few consequences for the persistence of the birds.¹⁰ The steps taken to minimize the possible disturbances associated with current oil and gas production seem adequate to protect the birds. On the other hand, the financial benefits for the recovery effort are great. I believe strongly that a large portion of the revenues from these leases should be earmarked for prairie-chicken recovery efforts, which will continue to be expensive, and I was glad to see that is, indeed, the case. The rough figures shared with me suggested that annual revenues from the preserve average about \$1 million, while recent annual expenditures for the prairie-chickens (preserve stewardship, captive breeding, recovery team support, east Texas private-lands initiative) have been about \$420,000. The bill for prairie-chicken projects will rise when work in Refugio County commences in earnest. Finally, any landscape, such as Refugio County, that might be the future site of reintroductions, will certainly include oil and gas production and ranching. Convincing the private landowners, whose cooperation will be essential for such a reintroduction to succeed, may depend on demonstrating that the birds won't necessarily jeopardize their income production. The Texas City Preserve provides just such a convincing demonstration, especially since the birds have persisted there even when the property was managed by previous profit-seeking owners not nearly as sensitive to the needs of the birds as TNC has been.¹¹

4. Although TNC is doing a commendable job managing the preserve and the birds, there is room for improvements. I noted a number of aspects of management that could be changed to benefit the birds and TNC. Sometimes perceptions are important, and the disused ranching and oil/gas equipment scattered around the preserve gives the casual observer an impression that there is a lot more potentially incompatible activity on the preserve than is the case. All unnecessary, leftover equipment should be removed as soon as possible. In contrast, a more obvious effort has been made to enhance the appearance of the visitor's center/ preserve headquarters. Unfortunately that new development does not seem to be as effective as it could be as an educational facility; I was encouraged to meet the newly hired environmental education specialist who should be able to tell the story of the prairie-chickens and the preserve more effectively. A few more points: Preventing the development of the adjacent properties should be a higher priority than it appears now to be. The future development of those lands and the on-going deterioration of the habitat there jeopardize the integrity of the preserve and the birds.¹² Releases of captive-reared prairie-chickens are critical for maintaining and expanding the population. They should involve larger numbers of individuals, and release techniques must become more efficient.¹³ Comments about the quality of the birds provided by some of the cooperating breeders suggest that the techniques for rearing birds prior to release could be improved. From what I could determine, the genetics of the captive

flock is managed well following a plan, but behavioral and physiological characteristics of some captive-reared birds are substandard because of the ways they were handled.

5. Research and monitoring efforts need to be redirected toward answering the most critical questions without compromising the welfare of the birds. I was disappointed in the scope and focus of current research and monitoring efforts at the preserve. Despite the fact that most birds on the preserve wear permanently attached radio transmitters, I found little evidence that radiotelemetry has compensated for its inherent risks by providing answers to key questions about preserve management (e.g., to evaluate responses to habitat management, responses to activities associated with oil and gas leases, responses to grazing activities, responses to visitors, responses to release procedures).¹⁴ Instead, it appears to me that telemetry is used to gather basic information (e.g., to find nests, to find dead birds for post-mortem analysis) that never gets analyzed or interpreted in ways that directly improve adaptive preserve management (or if it is, that was not demonstrated to me). Perhaps TNC should review its research and monitoring goals, refocus on addressing the most important management issues, and try collaborating with new researchers who could bring fresh ideas and analyses.

6. My general impression is that TNC is taking its responsibilities at the Texas City Preserve seriously (but remains a bit uncomfortable there). The challenge of a last-ditch rescue effort for a critically endangered population that will never be intrinsically viable on a preserve is one that TNC has typically chosen to avoid by focusing instead on the goal of preserving viable populations in viable habitats. Nonetheless, TNC has met the challenge well at the Texas City Preserve. But, at the same time, I got the sense that this was an uncomfortable situation for all involved, and perhaps that uneasiness has resulted in TNC not putting in the type of “standard-setting” effort for which it is so well known. The risks associated with this project are high (extinction of the population remains likely, in spite of heroic efforts), and the costs to the conservancy will be high if it stays with this difficult project through to eventual recovery. Those costs include not only a sizeable monetary investment (which should be adequately covered by the revenues generated on site) but also the possibility of failure in a highly visible, and now controversial effort (whether due to decisions by TNC or stochastic events beyond its control). I recommend that TNC’s outreach efforts be tailored to highlight the high risk nature of this program and inform the public that the immediate threats to the continued existence of the wild populations are no longer habitat loss per se but the stochastic risks associated with extremely small population size. I hope that TNC will not only stay with this project, but take its management of the birds and the preserve to higher levels of effectiveness.

ADDITIONAL NOTES AND RECOMMENDATIONS

¹ In spite of the message still conveyed in most conservation publications, the immediate threats to the persistence of birds at the Texas City Preserve are no longer the same ultimate factors that caused the subspecies to become endangered (habitat loss). Instead, the threats are now associated mainly with the population’s small size and stochastic events that can be devastating, even

when preserve managers have done their jobs well. Unpredictable vagaries of rainfall have predictable negative consequences that are difficult to mitigate, and it is just a matter of time until the catastrophic effect of a hurricane is a reality. Year-to-year vagaries of survival and reproduction have a disproportionate impact on this tiny population, and genetic deterioration may be inevitable, even though the captive population is being carefully managed. Because of the small area of habitat at the Texas City site, the population can never reach the size, predicted by population viability analyses, required for long-term persistence. Every PVA I am aware of for prairie grouse species has reached a similar conclusion: populations on the order of 300-500 birds are needed for even short-term (50-generation) survival.

- ² Although I wasn't able to examine the pertinent population data closely (and it doesn't appear that anyone else has actually analyzed them critically), the population seems to now be dependent on annual releases of captive-reared birds to maintain its numbers. Furthermore, the population's gene pool is surely being influenced more by the captive population than by the remnant population itself. If they aren't already, the birds at the preserve will inevitably become just a genetic and demographic subunit of the larger captive population. The inescapable conclusion is that the future of the Attwater's Prairie-Chicken may depend far more on the captive breeding program than on the in situ recovery of the two remnant wild populations.
- ³ When a population reaches such a perilously small size, management tactics usually switch to rescue mode. Like doctors in an emergency room, managers must treat the immediate life-threatening symptoms rather than the underlying disease. For the prairie-chickens at the preserve, this switch has already begun, as witnessed by the reliance on subsidies from the captive population. Additional, intensive management practices that TNC doesn't usually adopt--such as predator control to reduce mortality, supplemental feeding during critical periods of food shortage--may also be appropriate in this case, especially since there are no high priority conservation targets, except the prairie-chicken, to be concerned about at the preserve. The USFWS already uses such approaches on their refuge.
- ⁴ I was impressed that TNC has begun an appropriate short-term rescue effort. But, I was also glad to see that TNC's long-term goal is to eventually translocate birds to viable habitat elsewhere rather than prolong a long-shot attempt to maintain a non-viable population at Texas City. This strategy, of course, transforms the management of the Texas City Preserve into a holding action. The prairie-chickens at the preserve may eventually become a satellite population in a metapopulation that includes a large, viable population elsewhere, but the Texas City Preserve should never be regarded as the primary focus of recovery.
- ⁵ The on-going eradication of invasive exotics on the preserve has clearly improved the quality of the prairie-chicken's habitat. In order to keep up with this on-going management challenge TNC should consider contracting out some of the labor-intensive work because it seems to already be taxing the capacity of the small staff at the preserve.

- ⁶ The use of controlled burning and grazing at the preserve seems to be well planned and is apparently achieving the intended ecological goals. The rotational grazing/burning schedule, the stocking densities, and the size and arrangement of the four management units seem appropriate and similar to the arrangement used by the USFWS on their refuge. The grazing lease-holder (whom I met) seems to be cooperating, and lines of communication with him seem open. Still, I worry that the continuation of grazing during the nesting season, even at relatively low stocking densities, poses a trampling threat to prairie-chicken nests. It would be a worthwhile experiment to temporarily take cattle off the pastures where birds are known to nest for the critical months and see if nesting success improves. I'm willing to bet it does.
- ⁷ It appears that the presence of TNC staff and a locked gate have controlled unauthorized access to the preserve. I was surprised, however, to learn that TNC staff has no idea how many people have keys to the gate. The control of visitors who want to see prairie-chickens seems to be adequate to avoid disturbing the birds at critical times. The policy of restricting the number of people using the booming-ground viewing blind and requiring that a staff person accompany them is a good idea, though I wonder whether a volunteer rather than a staff member could do the accompanying. The regular daily inspections of gas and oil equipment and livestock seem to be well regulated.
- ⁸ I was excited by the proposed landscape-scale project in Refugio County, but I was disappointed that plans for this important ecoregional site were not further along. This project seems to be the key to any future recovery of the subspecies. I did not visit the 385,000-acre area, but I looked at maps and heard encouraging descriptions of the site from TNC and USFWS staff. This project, involving many private landowners who make a living off their property will be expensive. Subsidies and other financial incentives to manage land in ways consistent with the needs of prairie-chickens will probably require the use of much of the income generated on the Texas City Preserve as well as federal and state funding.
- ⁹ I paid close attention to the possible threats that the oil and gas leases might pose for the birds and whether there is evidence birds are impacted negatively by active wells. There is an important point, however, that I didn't see in any of the background material I read. The active wells are clustered mostly in the southern periphery of the preserve, and radiotelemetry data do suggest that this area isn't used very often by birds. A skeptic might say that's because of the wells, but there appears to be an alternate explanation. The radiotelemetry data apparently also show that birds avoid the wetter areas closer to the shoreline of the preserve, which is where most of the wells are located. It seems likely that the birds would avoid the area because of the habitat there, even if the wells were not present.
- ¹⁰ I asked about past accidents at the preserve's oil and gas wells, and although minor incidents have occurred from time to time, none of them has apparently posed any threat to the birds or their habitat. This report was encouraging, so we discussed what might happen in a more serious accident. Under none of the hypothetical scenarios we discussed was there likely to be any major impact on

the birds. Obviously, it makes sense to be extra cautious on this preserve, and although I didn't examine the specific terms of the gas/oil leases, I was told that restrictions on when and where certain activities can take place (not typically part of a lease) are included. I was also told that the current lease-holder has been very cooperative, and seems to be abiding by the restrictions of the lease.

- ¹¹ The Texas City Preserve is a good demonstration of how prairie-chickens can coexist with carefully controlled land uses, such as oil/gas extraction and rotational grazing. Even under previous ownership the population persisted, which is testament to the effectiveness of all the concessions that have been made for the birds over the years. But, private landowners, such as those in Refugio County, may be skeptical that it can work on their lands. After all, TNC heavily subsidizes the preserve, far beyond what seems possible on a larger scale. Early in the process of contacting landowners in Refugio County, a few key land owners in the area should be engaged as demonstration sites. I know from experience with farmers in the Midwest that there is nothing more convincing than seeing something work on a neighbor's property.
- ¹² TNC apparently missed a recent opportunity to acquire an adjacent parcel in a bankruptcy sale, which is unfortunate. At least there is now just a single landowner on the preserve boundary. Controlling invasive exotic shrubs on the preserve will be an on-going challenge, because there are large and expanding populations just across the preserve boundary on adjacent lands to the north and west. TNC should consider helping the neighbor initiate control efforts. These adjacent lands will pose an even greater threat to the integrity of the preserve if they are ever developed in the ways the current owner is considering. TNC should be very vigilant and do whatever is possible to block inappropriate development. It seems this effort is underway.
- ¹³ The annual releases of captive-reared birds have been the most effective management strategy for maintaining the population at the preserve. But, they have not been effective in increasing the size of the population because the numbers of birds released have been relatively small and their survival could be better. Given the population goals for the preserve (100 birds—which seems to me overly optimistic) and the survival of released birds, the releases should probably be in the neighborhood of 150-200 birds annually. We did not explore details of the captive breeding program, but its capacity to produce birds for release should be enhanced, perhaps with more financial support from TNC. The methods for releasing the birds could definitely be improved. I was shocked to find, for example, that one of the release pens is subject to flooding in heavy rains, and that birds have drowned in the pen. The release pens and the description of the release methodology do not seem to me to be state of the art, and I would suggest that better facilities for holding the birds and more efficient release procedures might improve the survival of birds during the transition to the wild. Most reintroduction programs use radiotelemetry during initial experimental releases to help refine release techniques. After the technique has been polished, telemetry gear is not usually necessary. I was surprised to learn that all released prairie-chickens are radioed with permanent “poncho-style” harnesses.

These will remain on the bird long after the transmitter has died (in a few months) and continue to compromise the bird throughout its life. There is no way that I can justify this practice. What has been learned from the use of these permanent telemetry units does not seem to offset the on-going risks to the birds wearing them. If telemetry continues to be used to improve the release methodology, I strongly suggest the use of break-away harnesses that will eventually fall off.

¹⁴ Research at the preserve must be focused on enhancing the effectiveness of management practices. Given the status of this population, every research project must produce practical results that clearly outweigh any risks imposed on the birds. I was surprised and disappointed that this basic precept of research on critically endangered species hasn't been followed. I couldn't detect that results of research at the preserve had been used to improve management practices. Perhaps it would be useful to undertake a general review of the research and monitoring programs with a goal of making them an integral part of the recovery effort.