HABITAT CONSERVATION PLAN
Technical Advisory Committee
February 7, 2006. 9:00 am – 11:00 am
Arizona Game and Fish Department Conference Room
555 North Greasewood Road
Tucson, Arizona 85745-3612

MEETING SUMMARY

Attendees: Rich Glinski, Trevor Hare, Ann Phillips, Guy McPherson, Dennis Abbate, Mima Falk, Marit Alanen (USFWS), Eileen Finnerty-Ray (SAHBA), Harold Maxwell and Ralph Marra (Tucson Water Department), Ben Wilder and Travis Bean (University of Arizona Desert Lab), Phil Rosen (University of Arizona School of Natural Resources), Marty Jakle (USFWS Partners for Fish and Wildlife Program), Aaryn Olsson (University of Arizona School of Natural Resources, Arid Lands), Todd Esque (USGS), Michael Wyneken (City of Tucson – Urban Planning and Design), Leslie Liberti (City of Tucson – Manager's Office), Jessica Lee and Geoff Soroka (SWCA)

1) Update on Recent SAC Meetings/Upcoming Meetings

a. *Scheduled SAC Meetings:*
- **February 2,** 3-5 pm, @ AGFD.
- **March 22**, 3-5 pm, @ AGFD.

b. *Scheduled TAC Meetings:*
- **February 21,** 9-11 am, @ AGFD.
- **March 7,** 9-11 am, @ AGFD.
- **March 21,** 9-11 am, @ AGFD.
- **April 4,** 9-11 am, @ AGFD.
- **April 18,** 9-11 am, @ AGFD.
- **May 2,** 9-11 am, @ AGFD.
- **May 16,** 9-11 am, @ AGFD.
- **May 30,** 9-11 am, @ AGFD.

Leslie noted that the Stakeholder Advisory Committee (SAC) met last week on February 2. She said that the SAC was given an update on the buffelgrass effort, but that the committee spent most of the meeting discussing the proposed formation of a new "natural resource advisory committee". Leslie mentioned that she is proposing that the SAC be transformed into a formal Mayor and Council Advisory Committee; as a result, the SAC will be broadening its focus from just the HCP to broader natural resource issues. She said that the ordinance to enact the committee would go to Mayor and Council the first week in March, and that once the ordinance is adopted, the City Manager would nominate individuals to be on the committee. A Mayor and Council vote would formalize the nominations. Leslie said that City staff cannot be on a formal Advisory Committee, but that there are other mechanisms for them to provide input to the committee. Leslie explained that there would be 11 official voting seats on the natural resource Advisory Committee and several ex-officio positions to create liaisons with other Advisory Committees within the City. Leslie mentioned that every voting member currently on the SAC would be invited to be members of the natural resource Advisory Committee. Trevor asked if the committee would be dealing generally with

natural resource issues. Leslie said yes. Trevor expressed concern about having a lack of natural resource expertise on the committee because many of the current SAC members lack scientific backgrounds. Leslie said that the committee would be focused on implementation issues, and that because it is a broader oversight committee, it is important to have a broad representation, because the decisions will have impacts to all groups in the community. Leslie mentioned that due to the way the Advisory Committee would be drafted, there are specific disciplines that will be sought to cover knowledge gaps. She noted that there are certain disciplines that the SAC members are hoping to add, e.g. a civil/transportation engineer. She also mentioned that the structure and role of the TAC would stay the same. It will be written into the language for the new natural resource Advisory Committee charter that the TAC will continue to make the technical and biological recommendations. Leslie said that the TAC could also recommend individuals to the new natural resource Advisory Committee. Trevor advocated Phil Rosen.

The TAC agreed to continue to meet the first and third Tuesdays of the month from 9:00am to 11:00 am at the Arizona Game and Fish Department.

2) Old Business

a. *Meeting Minutes – Outstanding Minutes: October 25, November 15, and November 29*

Leslie noted that, in order to avoid getting behind on approving meeting minutes, the minutes would now be made available within a month of the meeting. Trevor suggested comments to the November 29, 2005 minutes. He noted that there are no Safe Harbor Agreements (SHAs) for plants because there are no take on listed plants. He also noted that, with regard to transplanting impacted cacti into residential areas, Pima pineapple cactus (PPC) has low transplanting success. Leslie explained that transplanting impacted PPC in the urban area is not emphasized as a mitigation strategy in the HCP. Leslie said that there is a professor at the University of Arizona (Michael Rosenzweig, Ecology and Evolutionary Biology) who is interested in implementing this strategy as an adaptive management experiment. Leslie stressed that it is just an idea that could help address some of the connectivity issues and would be an added benefit. However, she stressed there would be many hurdles to overcome in order to accomplish this. Trevor said that he believes it is an important strategy to attempt to preserve as many PPC in place as possible. Leslie agreed, but noted that they would explore the option of transplanting PPC.

Pending Trevor's and Ralph's comments, the TAC approved the meeting minutes from October 5, November 15, and November 29, 2005.

3) New Business

a. *Buffelgrass Eradication Impact Study Protocol and Mapping*

Leslie explained that there is a need to address the buffelgrass invasion in Avra Valley because the City is concerned about liability issues. There are approximately 2,000 acres of City-owned land that is almost completely covered with buffelgrass, and two homes exist within this land. Leslie said that last year, the City and the TAC began discussing a buffelgrass eradication strategy in Avra Valley and that concerns were raised regarding the effects of the eradication on areas covered under the HCP. One of these concerns was the effect of herbicide on prey base and restoration potential. Travis Bean had recommended inviting Todd Esque into the discussion. The other topic for discussion at the meeting is how to develop a protocol to map buffelgrass throughout the HCP planning area. She mentioned that the Natural Resource Conservation Service (NRCS) has a request out for grant applications dealing with the impact of invasive species on grazing lands. Leslie said that the value of the grant is as much as $500,000. Leslie said that the City's effort would be part of a regional buffelgrass control effort in a new Cooperative Weed Management Area. Travis noted that the first meeting regarding this new regional committee is at 9:00 am, February 8, 2006, at the Pima County Cooperative Extension Office. Trevor asked if this committee would just be dealing with invasive plant issues. Travis responded that it does not necessarily have to be just a plant group.

Aaryn provided a short presentation of the geospatial toolkit developed for buffelgrass mapping. He brought in a handheld GPS unit to show to the group. He said that this unit, equipped with computer software, has been proven to be the most effective tool kit for mapping plants in the field. He passed out maps illustrating the locations of buffelgrass populations that have been mapped at several sites around Tucson including Saguaro National Park and the Tucson Mountains. Ann stressed that this technique requires having people on the ground with the right equipment. Aaryn mentioned that Ben has also been mapping sumac and buffelgrass on Tumamoc Hill with this system. Trevor noted that the Arizona Department of Transportation (ADOT) is using a similar mapping system to document animal mortality on roads, and could also be recording information on roadside plants. Trevor asked how many of these GPS/computer units are available right now in Pima County. Aaron said that there are few. He said the entire unit set-up would be around $1,000, and that individual prices are approximately: GPS $240, computer $400, HGIS, software $250. He said that more information on the technology is available at the website: www.geospatialextension.org. He noted that this system could run for approximately 28 hours in the field. Ben stressed that the equipment is fast and simple in the field. Aaryn added that the system has no problem importing data into ARC GIS. Todd mentioned that he led a fall survey with 12 units out in the field for 5 weeks, and that the technology held up very well. Aaryn stated that his wish is that the separate agencies and jurisdictions will invest in and create a technology library. He noted that HGIS does not sell site licenses. Geoff asked if there have been any attempts to correlate aerial photography/remote sensing with this system to create a starting point. Travis said that both the University of Arizona Arid Lands and Geosciences Departments are working on matching spectral imagery with plant phenotypes, as well as evaluating the strengths and weaknesses of various systems and technologies.

Leslie said that for Avra Valley, mapping directly from on-the-ground field surveying would be the best approach. Leslie stated that the satellite imagery conversation would be better to have with the regional Cooperative Weed Management Committee, especially if the Pima Association of Governments (PAG) is involved because they are the agency responsible for obtaining and archiving local aerial photography. Aaryn

suggested having a core geospatial group involved. Additional questions on the technology can be sent to Aaryn directly at: aaryn@ag.arizona.edu. Trevor suggested doing a preliminary roadside survey for buffelgrass in the Southlands. Travis said that Tom Van Devender and Mark Dimmitt from the Arizona-Sonora Desert Museum have already mapped most of those roads. He noted that they received a grant from the National Fish and Wildlife Foundation to map plants along major roads in southern Arizona and northern Sonora, Mexico. Ann requested that the technical side of the buffelgrass conversation continue on the TAC listserv.

Todd passed out copies of a non-reviewed draft document titled, "Effectiveness Monitoring for the Rehabilitation of Selected Tucson Water Department Properties in the Avra Valley, Pima County, Arizona." He said that he has been looking at buffelgrass since 1994 when it was found in Saguaro National Park East. He stated that in this particular case, buffelgrass quickly spread from the roadsides into the interior of the Park. He said that he evaluated fires from brome grasses in the area, and looked at the effect of fire on saguaros and desert tortoises (Cecil Schwalbe helped study the desert tortoises). He said that within four years, buffelgrass was moving faster than volunteers could pull it. Park staff asked if a study could be initiated to evaluate the environmental impacts of using Roundup on buffelgrass, and to see if applying herbicides could be done in a cost-effective manner. Todd said that he is currently working on writing up those results. He said that he has evaluated the biodiversity of sites in Mexico that are heavily infested with buffelgrass. He noted that it is very difficult to find funding for those types of studies. He said that he initially met with Tucson people on January 13 to learn about buffelgrass in Avra Valley. He said that the conclusion of the meeting was to evaluate rehabilitation potential with buffelgrass eradication in the area, eventually creating suitable habitat for western burrowing owl (BUOW). He noted that his suggestion is to setup test plots to try different strategies that can be tested against each other. He said that they focused their attention on three parcels in Avra Valley. One parcel, approximately one-square mile in area, is basically a large buffelgrass pasture. The other two are old agricultural fields that also contain amaranth, Russian thistle, and other noxious plants, but mainly have buffelgrass just around the edges of the parcels. Todd asked the TAC what they think the goals of the monitoring program should be.

Ann stressed that, especially with regards to the HCP, the biodiversity of the parcels need to be monitored, and asked the TAC what the monitoring goals and protocol should be. Todd suggested that the TAC would want to evaluate how plants and animals in the area interact with buffelgrass. He stressed that the problem statement documents that the parcels are old agricultural fields that have been cultivated for many years, and have lost most of their surface soil structure. The topography has also been altered. To increase the likelihood of long-term success of the rehabilitation, it is important to work with the current constraints of the land and to enact activities that restore the natural processes on the land. He said that, for example, the TAC could not ignore the fact that surface flow has been altered and that there would still be roads around the parcels that would continually impact the land. He stressed that the liabilities due to buffelgrass are real, including the seed bank (buffelgrass and Russian thistle) and fire danger. He noted that there have been at least four fires at Kino Boulevard and 36th Street in January alone. Mima noted that the biodiversity on those parcels is low due to years of agricultural impacts. Todd agreed, noting that the TAC needs to take biodiversity into account when making a specific monitoring and management goal. However, he noted that there might be more diverse populations of rodents in buffelgrass pastures.

Ann clarified to the TAC that these three parcels are located outside areas in Avra Valley where the TAC identified high quality habitat and/or wildlife corridors. Ann noted that it would be important to evaluate how Roundup would accumulate and breakdown in the soil in case future recharge basins are planned in this area. Travis noted that the parcels are all former cotton farms, which is the most chemically intense crop in Arizona, thus the level of pesticides in the soil is already very high. Ann said, however, it is important to evaluate the baseline conditions of the soil. Trevor asked if Tucson Water Department has baseline data of the soil. Ralph said that Tucson Water always does a soil screen in areas where recharge basins are planned. He stressed that the soil is full of pesticides already, and that Tucson Water usually removes the first few feet of soil before constructing a recharge basin. Guy asked Ralph where Tucson Water disposes of the removed soil from Avra Valley. Harold said they burned it. Trevor mentioned current research about the negative impact of Roundup on amphibians. Phil said that the diversity could be affected by when and how long the product is used. Phil said that he is not necessarily convinced by the research. He said that with careful management, it would be possible to get through those issues in Avra Valley. Todd stressed that different chemicals could be used, not just Roundup.

Todd discussed possible approaches to rehabilitation, which included seven points: (1) establish goals; (2) establish restoration methods to meet goals; (3) discuss what managers need to know; (4) design monitoring/research questions to provide answers to management questions; (5) review design; (6) implement design; and (7) report and publish results.

Rich asked the TAC what they think the original native species were on the parcels before agriculture changed the landscape. Phil said that likely the vegetation included a mix of desert scrub and mesquite, with saltbush and *Tobosa* grasses. Travis added that the land would be similar to a typical Lower Colorado River Subdivision of Sonoran Desertscrub biotic community. Rich noted that the constraint on the land is not necessarily restoration, but rather what Tucson Water wants to do on the land. Ann said that perhaps this program could be a test area for future restoration/eradication activities.

Travis said that, due to the current weather pattern, he does not think buffelgrass will green up until July when the summer rains arrive. Ann noted that, because the TAC members were all together, she stressed the group switch to talk about the biological aspects to the monitoring program. Dennis noted that the Arizona Game and Fish Department (AGFD) has been doing western burrowing owl (BUOW) surveys on City-owned lands in Avra Valley, in particular the parcels in question. He said that BUOW individuals have been found on those lands, and that in fact, AGFD is surprised that they have found so many individuals out there. He stressed that the subject parcels are not sterile pieces of land; rather there are lots of living creatures out there. He noted that, regardless of the specifics of buffelgrass eradication program, there could be impacts to the BUOW population and other species on the lands.

Leslie said that the TAC seemed to be discussing two separate issues. One involves the long-term management and conversion of buffelgrass-dominated areas to native vegetation. The second is the short-term impact of the herbicide application. Ann stressed that Tucson Water must act quickly to protect those two houses in Avra Valley from fire, and needs direction. Harold noted that Tucson Water is not sure how to proceed to protect those houses, and expressed concern that mowing the buffelgrass

could create sparks and start a fire. Travis noted that buffelgrass has extremely long fire lengths, which can extend out to 20 feet, and that during windy days this could be even worse. Harold said that once the grass greens up herbicide could be sprayed. Travis noted that spraying herbicide does not alleviate the fire danger. Harold asked how much land should be cleared around the houses. Travis said that he recommends approximately 100 feet. Guy agreed that 100 feet was a reasonable distance. Rich suggested that perhaps a water truck could wet the area first, and then the grass could be cut. Todd suggested using a bulldozer to just push the soil and clear an area around the houses. Trevor noted that one person could weed whack the area by hand in a day.

Rich stated that buffelgrass is more problematic in the upland areas than in the valleys such as the Avra Valley lands. He stressed that any buffelgrass eradication experiments in Avra Valley would provide unique results, and expressed concern about translating the results to the upland areas. Mima noted that buffelgrass is occurring on disturbed lands all throughout the City, thus the results would need to be applied across a wide variety of habitats. Ann said that this information could be applicable on other retired farmlands.

Ann asked the TAC to brainstorm a step-by-step action list for developing a biological monitoring strategy for the buffelgrass eradication program. She suggested that, as a first step, AGFD surveyors should go out and survey for BUOW in that 100-foot boundary around the houses. Ann said that if BUOW individuals are found there, a decision will need to be made whether to move the owls or to let them finish nesting, then plug up the holes. Trevor asked Dennis if AGFD is noting other species that they observe in the field. Dennis said that they are taking observation notes, but are not doing formal surveys. Leslie asked Harold what level of precision is possible when clearing the firebreaks. He said that the tractors can be precise, and that if burrows are flagged they could likely move around them. Aaryn suggested that biological methods could be used to clear the buffelgrass, such as fencing off and bringing in cows to graze the area. Ann said that once AGFD has completed BUOW surveys around the houses then Tucson Water could take action.

Ann suggested the next step could be to do soil profiling on the parcels. Ralph said that rather than spending additional time and money to test the soil results from soil removed from current recharge basins could be used. Ann said that the list of chemical concentrations from those tested soil profiles could be used as the baseline soil data. She said that next, a baseline biological monitoring program needs to be designed, and asked the TAC what biological testing should be considered. Trevor said that Phil spent time in Avra Valley looking at rodent and invertebrate diversity and existing plant communities last year. Phil said that he thinks the monitoring program should be focused on endpoints the TAC wants to see in 10, 50 or 100 years. He said that he does not expect to see results in only 2 or 5 years. He said that then the TAC would need to design experiments to evaluate identified criteria over time. He also said that it is important to choose lands for the experiment that will be around in the future. He stressed the importance that understanding the landscape plays into a research design. For example, he suggested that in the past, the native landscape in Avra Valley was likely controlled by natural fire cycles and soil type.

Leslie stressed that a distinction needs to be made between long- and short-term goals. Ann suggested the TAC consider what would die as a result of herbicide application. Todd noted that this is not the biggest problem, but that changes to the landscape

structure, in particular maintaining a healthy native seed bank, is a more important concern. He said that the loss of the native seed bank would impact all the animals on the land. Todd said that degradation factors for herbicide includes rain, sunshine, and clay content in the soil. He noted that well-defined management goals needed to be developed first. Todd said that, after the herbicide is applied, it is important to get native vegetation back on the landscape to mediate the barrenness.

Leslie said that one of the goals is to make sure that the buffelgrass eradication efforts are defensible to the public. She said that there has already been concern expressed about the application of herbicides. She stressed that we need to demonstrate to the public that this strategy is in the long-term best interest for the area. Phil noted that buffelgrass is more invasive if the vegetation is cleared, thus if we could introduce vegetation that is successful, it is likely that we could learn something new about how buffelgrass moves in transformed landscapes. He said that we do not want to get into a situation where every 10 years we have to wipe out the land with herbicides. Rather, we need to get into a situation where we can spray only a few times, but then find an equilibrium that may or may not have small populations of buffelgrass. Phil said that, in the short term, we could test some replacement types, such as maybe a scrubby desert shrub, native grass, or weedy plant that is mowed.

Trevor asked Ann if the Simpson Farm site has a biological baseline, and then asked her if she thought the data set could be extrapolated further south into Avra Valley. Ann said no because the Simpson Farm site is effluent-dominant, thus can support different plants and animals. Ann said that, however, the monitoring strategy on the Simpson Farm could be applicable. She said that they do a variety of monitoring, including photograph, avian, and plant diversity and density. She suggests for the Avra Valley parcels, in addition conducting mammal, invertebrates, herpetological and rodent monitoring. She said that citizen scientists could be trained to do quarterly monitoring and reporting. She asked the TAC if any other biological monitoring would be needed, and if this strategy would be defensible to the public. Ann noted that there has been a great change in bird and plant diversity at the Simpson Farm in just the last five years. She stressed that it is possible to get valuable data in just 5, 10, or 15 years.

Mima stressed that the TAC needs to develop a strong hypothesis first, or the data gathered could not be evaluated. Mima asked Todd what the experimental question was that he tested in the Saguaro National Park East study. Todd said that first they wanted to know if herbicide could be used in getting rid of buffelgrass, and what was the most cost-effective and safest way to apply it. He said that they mapped plots 10 meters on a side in order to evaluate the effects on nearby vegetation. They also wanted to look at characteristics of the buffelgrass seed bank, and effects to ants and rodents in those plots.

Travis said that he has an experimental idea that could only be done on extremely degraded, buffelgrass infested land. He said that the seed bank becomes a management issue because buffelgrass cannot just be wiped out in one episode of herbicide spraying. He said that research from Australia has found that buffelgrass seeds stay in the soil for at least three years. He wants to figure out a way to get rid of the seed bank. He stated that one strategy to get rid of buffelgrass could be to sterilize the seed bank with herbicide, then burn the buffelgrass. He said that fire spreads buffelgrass not by seeds, but from the root base. He said that this experiment could only be done on land that is essentially a monoculture of buffelgrass.

Rich asked if this conversation could continue by email, because time was running out at the meeting. Leslie reviewed the steps that the TAC has suggested. First, Harold is going to map out the immediate area to push soil around the houses. That map will then be given to AGFD so surveyors can go out as soon as possible and look for BUOW individuals and burrows in that specific area. Leslie said that soil information from the current recharge basins would be obtained from Tucson Water. She said that herbicide would be sprayed when buffelgrass greens up, but until then, a baseline biological monitoring program can be established. Leslie asked that, in addition to baseline biological monitoring, are there any limits or parameters to herbicide application that we should be aware of. Ann suggested that perhaps a buffelgrass subcommittee could be formed so people who are more interested could get together and work on developing the experiment design.

Leslie said that an email list would be created in order to continue the conversation based on Todd's draft monitoring protocol. Mima recommended that the email conversation be in addition to the subcommittee meeting and not instead of it. Leslie said that the subcommittee meeting notes would be emailed to those who cannot participate in the subcommittee meeting. She said that the next TAC meeting would begin with continuing the buffelgrass efforts. Ralph corrected Todd's document, mentioning that "Tucson Water District" should be changed to "Tucson Water Department."

4) Call to the public

A call to the public was made. No members of the public spoke.

5) Next Steps/Future Meetings

Leslie stated that the results of the buffelgrass subcommittee meeting would be a topic at the next meeting. She passed out the draft language on buffelgrass in the preliminary draft HCP. Leslie said that at the next meeting, the TAC will also need to discuss a recent re-zoning and proposed development in the Santa Cruz River planning area and Paseo de las Iglesias project area. She said that there are questions as to how this development might impact the HCP planning area and U.S. Army Corps of Engineers' restoration plans. She said that Pima County has stated that the proposed development is consistent with the goals of the restoration plans. She suggested that the TAC discuss whether there might be potential impacts to covered species in the HCP, and what could be suggested to improve the design to support environmental goals. She said that BUOW issues are the most crucial, because the area currently supports good habitat and owl populations.

She said that the preliminary draft of the City HCP would go to Mayor and Council on March 7. She said that the draft would be completed by the end of February and that all of the TAC members will get a copy of it then. She said that because the second IGA grant will not be in place until March, the TAC would need to focus exclusively on Avra Valley and other Phase I topics through the end of March. In April, the plan is to begin the discussion of the new expanded Southlands planning area.