

**CITY OF TUCSON  
HABITAT CONSERVATION PLAN  
Technical Advisory Committee Meeting  
May 3, 2005 1pm – 4pm  
Arizona Game and Fish Department Conference Room  
555 N. Greasewood Road**

**MEETING SUMMARY**

Attendees: Rich Glinski, Guy McPherson, Ann Phillips, Linwood Smith, Michael Wyneken (City of Tucson – Planning), Cathy Blasch (Arizona Game and Fish Department), Leslie Liberti (SWCA), Ken Kingsley (SWCA), Jessica Lee (SWCA), Trevor, Marit Alanen (USFWS), Eileen Finnerty Rae (SAHBA)

Catherine Balzano (Arizona State Lands Department) was not present. She was scheduled to give a 90 presentation on “State Trust Lands/Suitability Analysis for Southlands.” Michael mentioned that the Arizona State Lands Department is currently moving offices.

**1. Update on Recent SAC Meetings/Upcoming Meetings**

Leslie presented an update of upcoming scheduled meetings.

SAC Meetings

- **May 4**, 3-5pm at AGFD. Tentative Topics: (1) Final habitat models; (2) Detailed information on Southlands; (3) Tucson Water 50-year water plan.
- **May 26**, 3-5pm at AGFD. Tentative Topics: Detailed information on Avra Valley and Santa Cruz River planning areas.
- **June 22**, 1-4pm at AGFD. Joint meeting with TAC. Tentative Topics: (1) Introductions; (2) Biological stressors and threats; (3) Initial conservation strategy thoughts; (4) Presentation on Pima County’s species-specific mitigation strategies.

TAC Meetings

- **May 24**, 1-4pm at AGFD. Tentative Topics: Biological stressors and threats for remaining Southlands species.
- **Tentative Meeting – May 27**, 8-11am at AGFD. Tentative Topics: Biological stressors/threats for Southlands species not covered May 3 or May 24
- **June 22**, 1-4pm at AGFD. Joint meeting with SAC. Tentative Topics: (1) Introductions; (2) Biological stressors and threats; (3) Initial conservation strategy thoughts; (4) Presentation on Pima County’s species-specific mitigation strategies.

Leslie said that previous SAC meetings covered specific plans and ordinances, higher level planning mechanisms and constraints to developing implementation strategies for HCP. After the last SAC meeting, there was an interest in shifting to a discussion of more detailed planning area information, starting with the Southlands. The May 4 SAC meeting will focus on specific details relating to potential habitat, land ownership, zoning, and ordinances. This will be the first time the SAC has seen the final habitat models.

Leslie noted that Ralph Marra wanted to present the Tucson Water 50-year Plan to SAC, like he had done for the TAC, and this has now been added to the May 4 SAC meeting. Leslie said the May 26 meeting would continue the discussion of detail planning area information, focusing on Avra Valley and the Santa Cruz River corridor.

Leslie anticipates that TAC will need meet on both May 24 and May 27 since only one of the six subcommittee meetings has been held to date. It will take two TAC meetings to cover the remaining species. On June 22, will be a joint meeting with the SAC. This will be a good opportunity for the committees to get to know each other. Pima County will be invited to present details of their species-specific mitigation measures. The County determined that the Conservation Land System (CLS) was not sufficient to address the needs of all proposed covered species. For species that are not adequately addressed by the CLS, additional species-specific mitigation measures will be developed. Of particular interest are the additional measures for the 2 snakes, the 2 owls, and both of the cacti. Pima County will probably not have final mitigation recommendations by June, but they can provide an overview on what has been developed to date. This meeting will also be a good opportunity to check with SAC to see how they feel the about the approach the TAC is taking in developing conservation strategies.

Rich asked about burrowing owl and pygmy-owl subcommittee meetings. Leslie said that these two meetings have been scheduled for May 9. The CPFO meeting will be at 10am at USFWS, and burrowing owl will be at 1pm at AGFD.

Leslie added that the ground snake and Tucson shovel-nosed snake subcommittee meeting is scheduled for May 16 at 1pm at SWCA office. Leslie requested that, if member of the TAC want to come, they let her know so the meeting can be moved if necessary. It is possible that the meeting could be held at AGFD or USFWS offices.

Trevor asked about the petition for the Tucson shovel-nosed snake. Ken replied that the petition was submitted more than 90 days ago. Leslie added that she understood, from a conversation with Sherry Barrett, that the USFWS was waiting to be sued over the failure to act on the petition within 90 days in order to get money designated to allow them to consider the petition. Marit said that she would check into the status of the petition.

Leslie noted that the subcommittee meeting for the yellow-billed cuckoo hasn't been set, but likely it will be on the 11, 12,13, 17 or 18 of May.

Leslie said that nearly everyone requested for the subcommittee meetings was able to attend. One exception is Courtney Conway, who will be unavailable for the burrowing owl subcommittee meeting. Mark Ogonowski, Courtney's graduate student, will attend however. Leslie noted that Mark helped with the Marana HCP, and is very knowledgeable about burrowing owls.

Rich asked who would be at owl subcommittee meetings. Leslie responded that at the pygmy-owl meeting there involve Dennis Abbate, Scott Richardson, Mike Ingraldi, and Aaron Flesch. For the burrowing owl meeting there will be Mark Ogonowski, Mike Ingraldi, and perhaps other AGFD staff such as Shaun Lowry and Lirain Urreiztieta. Rich asked if it is okay to attend those subcommittee meetings. The subcommittee meetings are open to any of the SAC and TAC members.

## **2. Old Business**

### **a. Meeting Minutes – Discussion and Approval of March 22, 2005 Minutes**

There was some confusion regarding the status of previous meeting minutes. The agenda has the March 22, 2005 meeting minutes slated for discussion and approval. Michael thought that the April 11, 2005 minutes should have been included. None of the TAC members recalled receiving the March minutes; the April minutes had gone out to the TAC. Ken noted that Dennis had provided comments on the April minutes. Ken had reviewed Dennis comments and, with the exception of grammatical corrections, had accepted all of Dennis' changes. Leslie asked if anyone else had comments to the edits made by Dennis. Linwood said that Dennis' comments provided good clarifications. Leslie said that the revised April minutes and the March minutes would be sent out shortly and will be revisited at the next TAC meeting.

Leslie introduced Jessica Lee (SWCA) and said that Jessica would be taking over preparation of the meeting minutes. Jessica will be taping the meetings, but the meeting minutes will still be a detailed summary, rather than a transcript format. Leslie does not anticipate any changes in meeting minute format.

Marit asked that she be added to the TAC list with her new USFWS email address. Trevor said that he would take care of it if Marit sent him her new email.

Rich asked if any comments on the meeting minutes had been sent to Leslie or Michael, but had not made it out to the rest of the TAC. Leslie said she thought that Dennis' comments on the April 2005 minutes were the only emailed comments she had received on any of the meeting minutes. Rich felt that the lack of comments probably meant that the summaries captured the meetings well.

### **b. Action Items from Previous Meetings – Mexican Spadefoot Toad (Trevor)**

Trevor said he had not looked into the suggestion to add the Mexican spadefoot toad to the list of species considered for the HCP. He did recall that the scientific name for the species is *Spea multiplicata*. Trevor said the Tucson area is at the northern end of range. Trevor noted that the Mexican spadefoot toad is one of the rarer species in the toad assemblages of the Tucson Basin, and it is easily disturbed. According to Phil Rosen, the population can easily be wiped out by grading. Trevor said that he would ask Cecil Schwalbe and Phil about the species when they meet to discuss stressors and threats from the ground snake and Tucson shovel-nosed snake.

### **c. Topics Held Over from Previous Meeting**

There were no items that had been held over from the previous meeting.

## **3. New Business**

### **a. Pygmy-owl Update – Dennis Abbate**

Dennis was not present. Leslie said she could try to summarize what Dennis told her when she spoke to him two weeks ago, but she did not have any newer information. The female CFPO that AGFD had been tracking through northern Altar Valley and southern

Avra Valley has stopped on or very near a Tucson Water property. This property is the one just south of Ajo Highway near Three Points. Whether the female actually stopped on the Tucson Water property has not yet been confirmed.

Trevor asked which owl Leslie was referring to. Leslie said it was the female that hatched last year, went south towards Arivaca, and then came back north to within a mile of the hatch site. Rich asked about the current status of owl this year and whether there have been any successful nests. Trevor said that he wasn't aware of any young so far this year. Ken said it is too early to tell. Rich wanted to know about the location of known owls. Trevor said there are three males no females in northwest Tucson, and some in Altar Valley. Leslie said that one male in northwest Tucson has supposedly died. She heard that the deceased owl was the youngest of the 3 northwest Tucson birds, the three year old. Trevor asked if it is missing from its territory or dead. Leslie believes it is deceased. Trevor mentioned the threat of predation by cats in area. Leslie said new information on the owls will be brought into the upcoming CFPO stressors/threats subcommittee. Leslie asked if more questions on CFPO. There were no additional questions.

**b. Habitat Overlay**

Leslie passed out a one-page color graphic showing the number of species potentially impacted by activities within the HCP planning area based on final habitat models. Leslie said that the map is not the best scale, but it gives a sense where priority areas are for planning area. One thing to note is that the overlay map treats all Tucson shovel-nosed snake habitat categories, including those identified as restoration potential, as if they are suitable habitat. The overlay maps includes all categories of suitable habitat for all 8 of the HCP target species. Leslie said that TAC will look at this map in more detail as they get into the specifics of the conservation strategies for each planning area. Michael asked if maps should be made into boards for people to look at. Leslie thought this would be a good idea. Marit pointed that there only seemed to be one small spot where four or more species have overlapping habitat. Marit wanted to know which 4 or 5 species were in these areas. Leslie replied that you can't tell from the map, but this information would be available to the TAC.

**c. Report on Status of Scheduling Species Subcommittees**

Leslie said that this was addressed earlier in the meeting. She has received preliminary information from Marc Baker regarding the location of individual Pima pineapple cactus found during transect surveys he did in the Southlands. Marc identified 36 individual PPC on these transects. Clint put together map which shows the transects and PPC locations over top of the suitable habitat modeled for this species. Leslie did not have any other information about the survey and asked that, if anyone has any comments or questions about this map, they wait until the PPC subcommittee or a later meeting when Mima is present. Marit noted that some PPC were found outside of modeled suitable habitat. Leslie said this might result in an adjustment to the habitat model, but it would depend on what Mima thought about the results. Trevor also pointed out that, just because Marc didn't find a cactus on some transects, doesn't mean there were not cactus there. He also wondered why some of the PPC locations were not along transects. Leslie thought that the PPC located outside of transects could have been found when Marc moved from one transect to the next. Trevor noted that locations could also be a little off due to GPS error. Trevor said it looked like Marc got great coverage of

the Southlands. Leslie said Marc stayed within the Southlands to get best information for the City.

Leslie also pointed out that the PPC subcommittee meeting was tentatively scheduled for Thursday mid-day. Mima has two other meetings that day regarding the Pima County MSCP, one at 9am and the other at 1pm. She said many of the people we would want to include in the subcommittee meeting would be in town already for the Pima County meetings. She suggested that we grab some time between the 9am and 1pm meeting to discuss stressors and threats for the City HCP. Mima was planning on calling Leslie if there was sufficient time between the two meetings, so there would not be much notice about the meeting time. Leslie also thought that, given the limited time that people had on Thursday, the meeting might need to be rescheduled for a later date.

**d. Report from Species Subcommittee Meetings**

- **Pale Townsend's big-eared bat (PTBB)**

Leslie said the subcommittee meeting was productive. Since Linwood was a participant in that meeting, he will be providing the summary of the discussion.

Linwood said that the number one concern for the bat is roosting habitat. The second most important issue is foraging habitat. The subcommittee spent a significant amount of time talking about these two issues. Ronnie had pointed out there is an ongoing study to radio-tag these bats. At least one individual has been found to forage 93 miles away from roost. Linwood said that this information may change how the TAC thinks about the planning area, because it is all within 93 miles of mountains with potential roost sites. Ken said this is amazing because they fly this distance in about two hours.

Linwood also noted that the loss of winter roosts is a critical factor, unfortunately abandoned mines are being shut down and removed as suitable roost sites. ASARCO is closing many Duval Mine shafts. Although no one knows if they are being used by the bat, it is still a concern. Linwood stressed that there are a lot of unknowns about the bat.

Principle roosts are primarily caves and mines. The bats will also use a number of other features, including old buildings and soil piping (e.g., Cienega Creek and Santa Cruz River). Night roosts are important. The bats use a variety of structures as resting locations while foraging, including bridges, buildings and drainage culverts. Ken looked at culverts during the day along the Santa Cruz and didn't find the bat. In terms of nest sites, maternity roosts very important. This species also has only one young per year.

Linwood noted that Ronnie and Snell found that the bats tend to forage on the edge of a vegetated area. Thus, habitat fragmentation may not hurt the bat, but may actually increase the amount of available foraging habitat. The bats forage mainly on moths. Vegetation composition and density is also important. Riparian areas, in particular the habitat edges, are important habitat for insects, and thus moths that feed on them. The effect of invasive species on insect levels and foraging opportunities for the bat are unknown. Linwood said that, for instance, no one knows what impacts stem from buffleggrass invasion in creosote flats. Fire may also affect the prey base. Linwood said there is likely little rehabilitation potential because the bats are very sensitive to disturbances. Gating around a roost may be an option.

The effects of environmental contaminants are unknown. Insecticides may affect bats by reducing the prey base, but herbicides may not have a significant impact on the bat. In terms of water accessibility, the bats do forage over water, but not large bodies of water. A graduate student did a study at the Barry Goldwater Range, and netted bats over small areas of water, about the size of a soda can. This student netted Cave myotis, California leaf myotis, and brown bats. PTBB are tolerant of various water qualities. Surface water/ponding may be beneficial in that it could increase edge habitat for foraging. Habitat rehabilitation may be beneficial if the right kinds of plants are used, in particular native xeroscaping.

Ronnie had pointed out that moving bats from one location to another has virtually no success, because the bats tend to go back to where they came from. Thus the translocation of this bat will likely be a failure. The genetic variability is very low in this species, suggesting inbreeding in small gene pool.

There is no information on migration, nor does anyone know anything about off site mortality. The bats have very little behavioral plasticity because they are very sensitive to disturbances, thus are not very adaptable. The impact of predation, e.g., by domestic cats, is unknown and there have been few records of predation mortality, none in Arizona. Not much is known about competition with other bats, but the Pale Townsend's big-nose bat will roost with other species.

Off-road vehicles can be a problem because they allow humans to get into back-country caves where bats may be roosting. Linwood said that it is hard to say if vegetation impacts resulting from grazing affect the bat. It could cause a reduction in prey base. Collection and hunting is not a problem of any kind. Undocumented immigrants are using caves and have the potential to disturb roosts. Ronnie had been adamant about bats not being urban, because they don't like lights. A row of streetlights may be a barrier to bats crossing. A new subdivision in a previously undisturbed area may cause bats to avoid the area and forage elsewhere. It is unlikely that bats in Tucson Mountains would fly across city to forage in Saguaro National Park East because the city light creates an effective barrier.

Road densities can negatively affect the PTBB, because the bats do get hit by cars. There is a potential increase in bat mortality as cars increase. Linwood said that leaving buffers along washes would be nice, but no one knows how wide of a corridor is needed. Habitat patchiness is likely a good thing because it can increase insect diversity. Vegetation along smaller roads may create foraging opportunities (edge habitat), but on big roads the vegetation would more likely create a hazard for bats (potential to be hit by cars).

Bridges could be improved or constructed so that they provide more suitable night roosts. Linwood said that this bat does not use bridges much, and if they do it is only for night roosts. Trevor asked, if the bridge was lit, would it decrease night roost potential. Ken said usually lighting above doesn't spill down under bridge, so it may not be much of an issue. Linwood reiterated that the important issues are roosting habitat and foraging habitat.

Rich asked if the bat exclusively feeds on moths, and how broad is the PTBB's diet. Ken replied that few studies have done, and none have been done in this geographical area. Ken said the studies show that the bats eat Noctuid moths, but the Noctuidae family has

thousands of species. Ken said we don't have the level of information needed to adequately answer that question. The studies done say the bats primarily eat moths, but sometimes beetles, flies and ants. Rich asked what time of year is more essential for food diversity. Ken said the bats have babies in spring. He noted that the best moth production occurs during summer rainy season. Ken also pointed out that he has never gone black-lighting and not found any moths, and believes there are always moths even after a low rainy winter rain season. From location to location, day to day, there are orders of magnitude difference in numbers of moths that can be found. Ken feels that there is no shortage of bugs in Tucson. Some bats forage around urban streetlights, but the PTBB does not.

Leslie asked about a minimum forage habitat size. Linwood said it is a function of prey availability around the roost site. Leslie asked if suitable foraging habitat would be protected in the Southlands if the large washes were protected, including good-sized buffers, and lighting impacts from neighborhoods were managed. Linwood thought that this would probably be suitable, but Ken reminded the group that little hard data is available on what constitutes suitable foraging habitat. Leslie mentioned that public education may be very important, both in terms of educating hikers, cavers, and other recreationists about their potential impacts to bats and bat roosts, but also in improving the public opinion of bat in general (e.g., bats eat insects).

Leslie mentioned that the county is reinforcing the Cienega Creek soil pipes to maintain roosting habitat and asked if be possible to do the same along the Santa Cruz. Ken said current plan for river restoration is to lay down the steep banks, but that the US Army Corps of Engineers says there is room for creative design and community input. Ken noted that the TAC would need to make this input at the appropriate time.

Trevor pointed out that no one knows how bats react to light gradients. He also asked if there are mine shafts in planning area. Ken replied that none exist in the planning area. Ken said that there are some mine shafts fairly close to the planning area, as well as natural caves in the Santa Rita and Rincon Mountains where this bat has been documented. Deep alluvial soils, which comprise most of the planning area, do not contain adits and caves. There may be some known adits in Tucson Mountains and further west in the Silverbell Mountains. Ken also noted that, along the Santa Cruz River, there may be some potential for night roost habitat in soil pipes. Three years ago, Ken looked into any of the soil pipes that were big enough to stick his head into, but did not find any indication that the bat was present.

Leslie pointed out that Stanton's Cave in the Grand Canyon had the largest state population until it was gated with a chain link fence in the 1970s. There was some discussion about how the Glen Canyon Dam may have affected the bat population due to changes in flooding, water flow, bank erosion and vegetation changes. During this discussion, Rich referenced a study by David Hardwick, an entomologist from Canada. Hardwick found that insects are very host plant specific, that the absent of specific host plants could affect the moth population. Rich added that this suggests that invasive species may have negative implications for the bat. Rich thought that prey base is the most controlling factor, because with range of 93 miles, he didn't think roosting sites are as limiting. Ken added that most people who have studied this bat think roots are the most important resource. Leslie noted that, in 1994, there were only 13 known maternity roots in Arizona, comprised of 10 separate colonies with about 1000 adult females total.

Only 4 of those roosts contained more than 200 individuals. Leslie pointed out that this bat is not found in large numbers.

Trevor said that foraging habitat and habitat buffers are very important. Pima County is currently updating their wash protection ordinance. Trevor noted that, according to the literature, to protect riparian areas from sedimentation, nutrients, and heavy metals, a four-kilometer buffer is needed for reptiles and amphibians. He suggested that the TAC consider a buffer size such as this to protect foraging habitat for the bat in the Southlands. Trevor pointed out that, although vegetation along Southlands washes may not that thick right now, decreases in grazing and ATV use may result in more and denser riparian habitat.

**d. Presentation on State Trust Lands and Southlands Planning Area**

Leslie emphasized the importance of working with the Arizona State Lands Department regarding the amount of open space that can be protected in the Southlands. Since Catherine was not present at the meeting, Leslie suggested that Michael speak about his experiences working with the Department.

Michael said that he was not sure if ASLD is completely on board with the HCP process at this point. Michael explained how ASLD is organized and that the Department's state-mandated goal is, primarily, to manage state lands to gain the highest value. This usually happens through the lease of areas for mining and grazing, then their sale for urban development.

Rich asked if ASLD is selling leases for conservation purposes. Trevor said that some conservation groups have leases, but since the leases have to be sold at market value, few conservation groups have the money to do this. Conservation groups that have successfully gotten grazing leases could try to retire the grazing rights to the land. Trevor said that, after ten years with no grazing, the conservation organizations could try and argue for another ten years, but this is a gamble. Trevor is surprised that no other organizations, except the Game Bird Alliance and the Forest Trust, have gone after these land leases. A grazing lease is \$1.87 acre, and non-grazing uses are more expensive. For some reason, it costs more to not use the land than use it, Trevor added.

Rich talked about the potential of BLM selling their allotments due to drought. The Arizona Cattleman Association is looking at allotments on an individual basis when considering selling their leases and are sensitive because they believe there is a movement to eliminate the cattle industry.

Michael mentioned that the ASLD operates under 1912 laws and mandates and has a grazing/agricultural/rural focus. There are people in the office who are changing the culture to a more urban mindset. Trevor pointed out that ASLD has sold more land off in the last two years than it did from 1912 until two years ago. Rich said that developments like Anthem are fragmenting state land, and thus reduces their grazing value because no one wants to bother with fencing. Rich also noted that, as Phoenix creeps out and surrounds state lands, the value of the state lands for development goes up and the value of grazing decreases.

Michael talked about the ASLD land development model and business model, and how they are slow to change. ASLD currently has a model for urban development, but it

cannot account for open space valuation. ASLD channelizes washes to eliminate flooding issues because it produces more developable land, which can earn more money on a sale to developers. Michael said people have been arguing for years to develop a model for open space valuation where the state land beneficiaries are not hurt when land designated for their benefit is set aside for conservation. Trevor asked Michael if it would be possible to present a model to ASLD that included a conservation valuation component. Michael thought that this could be a productive approach, if ASLD ever gets to the point that they can do that type of planning.

Michael also noted that the City has had talks with Sahuarita and PAG about planning for development along I-19. He feels that it is also important to figure out how to address in the HCP, annexation of unincorporated land into the City. Pima County took a more rural approach to conservation. This is not appropriate for the City growth areas, but the City and County can find a way to integrate their conservation efforts in a way that makes sense. Michael suggested that a productive avenue would be to develop guidelines for urban areas that allow development, but with conservation considered. Michael noted that this approach would require that ASLD was on board, however in his experience, ASLD prefers not to have land regulations specified in such detail for state land, so that the use of the land is not constrained when it actually sells. Michael stressed that it is the ASLD business model that needs to change.

Trevor thought that the Southlands could be an urban conservation area. He referenced Phil Rosen's work on urban conservation of reptiles and amphibians by controlling feral animals and invasive species, and protecting washes. Trevor is concerned that it will take lots of work to protect the washes in the Southlands, and the ASLD needs to be on board for this to happen. Michael said that, due to small number of staff, the ASLD Tucson office is very busy, and it has been hard to get them focus on specific projects. He added that ASLD still has the mind-set that HCPs only offers constraints to land use; the Department does not recognize that open space and conservation actually increases value of adjacent urban lands. Michael said that it is important that ASLD understand that the Southlands is going to be set aside in a giant preserve, but rather there is room for both conservation and development. Unfortunately, ASLD currently can't put a dollar value on conservation.

Leslie mentioned the potential for development density transfers as a way to protect some state lands. The City could increase densities in some portions of the Southlands in exchange for leaving other areas as open space. The City could also look at transferring development from state lands outside of the planning area into the Southlands, thus increasing densities throughout all of the Southlands. Sherry Barrett had asked Catherine Balzano at a previous SAC meeting about these densities transfers and how large of an area could be considered in a single transfer proposal. Sherry specifically asked about whether development densities could be transferred from the Tortolita Fan to the Southlands. Catherine's response was that it this type of large-scale transfer is conceivable. Leslie noted that it would require that the City work with PAG, Sahuarita, and Pima County to define areas for urban development and areas for conservation. Trevor thought that counties could not do density transfers. Leslie replied that she remembered Catherine saying something about counties just now getting the ability to do density transfers, as long as the landowners were willing.

Michael also pointed out another consideration in doing a large-scale density transfer is whether USFWS and the jurisdictions involved can sort out how it relates to all of the different plans.

Michael said the City could get Economic Research Associates from California, consultants who have been working on HAMP, involved in conceptual planning and density transfers for the Southlands. The Lincoln Institute for Land Policy is also interested in large-scale urban planning in the West. They are interested in what has been going on in the Tucson area, and have put money into the HAMP planning process. Michael noted, however, that until ASLD gets a new business model for valuing land, none of these ideas will get very far. Michael doesn't see how conservation of state land can be achieved without these changes. He thought that Mark Winkleman, ASLD Commissioner, lends the best opportunity for these types of changes because he understands how value is created by not developing some areas. Trevor noted that he the Commissioner realizes that open spaces are important and have value.

Michael said that staff at the Lincoln Institute think that, with proper planning, ASLD could get maximum value in the HAMP area with development on only 40 percent of the land. He also noted that, with low land prices, people are seeing the value of high-density development. Rich suggested looking at areas in Maricopa County with similar size and proximity to the existing urban area. Trevor thought that there is a lack of city/county planning in Phoenix, and the politicians just let developers do master planning. Michael said that because Tucson area land values are so low, it is hard to plan amenities into development, which is one way to connect open spaces. He agreed with Trevor that Phoenix has a different mindset about development than Tucson.

Ann suggested that the City do a presentation to developers to educate them on the value of open space. She thought that a creative developer could plan for open space and still provide greater financial returns to ASLD. Ann asked if it is possible for the City to develop a relationship with developers and encourage them to value open space more in their planning. Michael explained that Diamond Ventures is the only local development firm with experience in developing large sections of land through master planning. It is the big companies from California and Phoenix who have done most of the large-scale and comprehensive plans in this area. These companies know how to have a wide variety of densities and housing types across a piece of land. Michael noted that it is hard to have a relationship with a group when they are not local. Michael mentioned that it may be worthwhile to have an educational approach ASLD. He said Winkelman is talking about this types of issues, but his staff is not.

Marit asked what information goes into the state land model. Michael said that the number of acre for development is the main input. When selling the land, ASLD believes that anything that will add cost to the developer will reduce the value, and thus the developer will bid less. This model takes into account the costs of roads and water mains, but does not consider the long-term benefits of this investment. ASLD has not figured out how to incorporate the value of added infrastructure into the valuation process, and they have not even tried to do this for open space.

Trevor said that, what is really needed right now, is ASLD reform. Rich asked how Lincoln Institute assists with local land use planning. Michael replied that the Lincoln Institute funds local groups and university professors/students. They just gave a grant to the Sonoran Institute to hire consultants to work on HAMP. Trevor asked if City has any

person that monitors state land reform efforts. Michael said that there is not enough coordination between city departments for one person to be responsible for tracking the reform. Leslie said that she had heard from Andy Laurenzi that there will be a citizens' initiative this year on state land reform. This initiative will be using the original maps, with some modifications, to identify priority and options areas.

Ann said that city codes and requirements may be a way to get conservation measures in place, and asked if the ASLD can ignore city codes. Michael responded that ASLD can give a different zoning for state lands than what the City proposes, but he doesn't know whether environmental codes can be ignored or not. One problem with the City getting involved in the state land auction process is that the City cannot bid, by law, any more than the appraised value. Leslie added that the regulatory authority of a municipality versus ASLD is a very gray area, largely because this relationship has not been decided through the courts. Michael summarized by saying that the problem is with the valuation model that ASLD uses, not necessarily in the people that work for the Department.

At this point the discussion moved back to the topic of stressors and threats, and biological goals and objectives, for the pale Townsend's big-eared bat. Leslie asked the TAC for more specific feedback regarding what the City can do to protect the bat. She noted that the most significant threat is to bat roosts, but there are none within the City and the City does not have control over any known or potential roost sites. The City will can protect foraging habitat, and they can work to reduce potential mortality of bats through factors such as road kill or insecticides application. She also suggested that the City could make recommendation to other groups or jurisdictions regarding ways that they can minimize impacts to PTBB. Leslie asked if, aside from these three objectives (protecting foraging habitat, reduce potential for mortality, and recommendations to others), whether there was anything else that should be considered as an objective of the bat conservation strategy.

Ann wondered if was possible to create artificial bat roosting structures. Leslie pointed out that, usually, only 1-2 PTBB are found in a roost so the return on investment is very limited. Ken suggested that if one were to create a suitable maternity roost, which might provide nesting habitat for 200 or so individuals, the benefits of this investment would be significant. Marit noted that Pima County received a grant to stabilize some of the soil piping along Cienega Creek. Rich was concerned that, since there are very specific conditions that the bats are selecting for in maternity roots, we are not likely to be able to duplicate what the species is looking for in an artificial structure. Rich also noted that the Southlands may provide a corridor for movement for foraging between the Santa Rita Experimental Range and the Rincon Mountains. Also suggested were that lighting be managed to prevent excessive light from deterring foraging bats and encouraging the use of a diversity of native vegetation in the planning area.

Leslie noted that a significant threat to the species is the conversion of potential roosts as mining companies shift to strip mining, resulting in the destruction of old adits and shafts, or blocking off adits with non-bat friendly gates because the company is worried about the liability associated with not completely blocking off old mine shafts. Leslie wondered if there was any way the City could help these companies figure out how to avoid liability issues, while using bat suitable gates. Trevor said that USFWS has this information, but Phelps Dodge or Asarco probably won't care unless we offered to do the gating work for them.

Trevor also wanted to add domestic and feral animals to the list of mortality sources that the City should consider. He felt that this might be a more significant impact than pesticide application. Ken noted there are some places where it would be easy for cats to get the bats, especially when they have to go through big openings to get to a roost site. He added that there is little evidence of predation by cats. Marit thought that Cecil had found bats in bullfrog stomachs. There was at least one instance of this, but it seems likely that the bullfrog grabbed a bat that had been caught by a research net.

Leslie noted that Bison-M includes references to predation by domestic cats, black rats, snakes, ringtails, and other species. Trevor asked if there was a citation to this, Leslie did not recall the specific citation. Trevor wanted to know how much pesticide that the City sprays along roadways. He thought that if the City could quantify pesticide or other toxic chemical use, that it could possibly count towards the mitigation program.

Leslie asked if there was any specific research that could be done to improve our understanding of the bat's foraging requirements so we can improve the effectiveness of the conservation program. Trevor suggested baseline studies. Leslie mentioned that it is hard to survey for PTBB because it is a very quiet bat. Ken added that PTBB don't make as much noise as other bats, and the equipment we have today is limited to detect and follow them.

Leslie asked Michael if there were any city ordinances, besides the "dim skies for astronomy" regulations, that relate to lighting. For example, are there any public safety requirements that specify that there has to be some minimum level of lighting? Michael was not sure whether any other ordinances exist; he did know that lighting has to be shining down and shielded. Michael noted that, in his neighborhood, house lights serve as streetlights and they are controlled with a light timer. Trevor felt that this is better than having tall streetlights. He did note that many developers complain about the lack of lighting. Trevor said that there is lots of research on the affect of lighting on animal behavior. He suggested that we contact Susan Shobe, as she has done research on the subject. Marit thought that she had a paper on the subject and said that she would email it to Leslie. Trevor noted that lighting restrictions good for many other species. Ken added that some animals do forage at lights, such as lesser nighthawks, common nighthawks, peregrine falcons, and great horned owl.

Ann asked if there isn't a specific answer for appropriate light levels, is it something that should be considered as part of the conservation program and does that make it an important consideration for the City and County to research. Leslie said that, ultimately, the USFWS determines whether the proposed conservation program adequately mitigates for impacts to species. She also noted that there is room for research in the adaptive management plan, which can be used to modify implementation of the plan to improve the outcome of the conservation program. Ken noted that this species is hard to do research on because it is difficult to find and track; the benefit is small relative to the cost. Ann wondered if the benefits of research on PTBB could be extended to other bats. Leslie said that good examples would be the use of bat gates that are friendly to all bat species and creating roosting opportunities under bridges that will benefit species other than the PTBB.

Trevor suggested that the best way to implement development guidelines, for example lighting restrictions, is through CC&Rs. He also noted that he would like to see the City and County strengthen their lighting codes and native plant preservation ordinances.

Michael explained that the City is not involved in developing CC&Rs for developments; that is between the homeowners and developers. Ann asked if the City can put conditions on re-zonings. Michael was not sure. Leslie pointed out that implementing development guidelines on an project-by-project basis through re-zoning conditions would not satisfy USFWS's requirement for assurances. Trevor suggested that the City could develop another environmental overlay zone. Michael said that is specific areas are identified as part of the conservation strategy, then the City may have to come up with development standards for these areas that could be applied through an overlay zone.

Leslie concluded by saying that meeting summary notes for the bat subcommittee meeting are in review, and will be sent out soon, along with a completed stressors/threats matrix. Leslie will also summarize the ideas generated today, and send out a draft set of goals and objectives for the PTBB. Leslie asked about additional information that might be needed to consider implementation of some of these concepts. She noted that lighting ordinances, the native plant ordinance (for vegetation diversity), and information on the City's use of herbicides and pesticides would be important to consider.

Leslie want to have the opportunity for the TAC to consider initial conservation strategies for the PTBB prior to the June 22 joint meeting with the SAC. She asked if people were willing to have another June meeting, prior to the 22<sup>nd</sup>, to discuss strategies. Another meeting was scheduled for June 7, 1-4pm, at USFWS.

Ann suggested scheduling meetings for July and August also. She asked if the TAC would need to meet more than once a month. Leslie said that it was hard to say at this point. Ann thought it would be better to schedule two meetings per month, and then cancel one if it was not needed. Ann suggested setting meetings every two weeks on Tuesday afternoon through August. The dates selected were: July 12, 1-4pm, at AGFD; July 26, 1-4pm, at AGFD; August 9, 1-4pm, at USFWS; August 23, 1-4pm, at AGFD.