



Wild Basin Wilderness Preserve

2011 Annual Report

(October 1, 2010 – September 30, 2011)

Submitted by

Wild Basin Wilderness Preserve and St. Edward's University

to

Travis County Commissioners Court
And Transportation and Natural Resources

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PRESERVE MANAGEMENT

The Wild Basin Wilderness Preserve staff implements the policies and priorities set forth by both the previous Committee for Wild Basin Wilderness, Inc., and the current owner St. Edwards University (SEU), while maintaining accordance with regulations established by the Balcones Canyonlands Preserve Plan and Travis County. In 2009 Wild Basin was incorporated into St. Edward's University School of Natural Sciences. Wild Basin now serves as an interdisciplinary laboratory for SEU that supports environmental education, research, and conservation. Through this fortunate and welcomed merger, the Basin continues to support environmental education, research, conservation and preservation. This fortunate merger and growing collaboration has enhanced past programs and created novel research opportunities for Wild Basin, SEU, and the Balcones Canyonlands Preserve (BCP).

Throughout FY11, Wild Basin staff devoted their time to daily management and enhancement activities, including scheduling and supervising educational programs, practicing land management, coordinating and training volunteers and trail guides, as well as promoting Wild Basin through various events in Austin's environmental community. Additionally, staff spoke to numerous SEU classes on conservation issues and current land management practices taking place at Wild Basin and in the BCP.

Wild Basin's education and land management programs are designed to promote conservation and environmental awareness, while encouraging and demonstrating land stewardship practices. Situated at the periphery of the Texas Hill Country and surrounded by commercial and residential growth in west Austin, Wild Basin is a singular and significant conservation property for Travis County and the larger BCP. Its urban proximity supports the incursion of invasive species and is a source for pollution into the watershed. Additional forms of pollution, such as air, noise and light, also impact Wild Basin's more sensitive components. Yet through the promising merger with SEU and by continuing past efforts to promote conservation, research, and environmental awareness, Wild Basin aspires to become an exemplary model for urban preserves and a gateway to the BCP.

Building Infrastructure

- 1) Environmental Education Center (EEC)
 - a) General Maintenance – Under the direction of the staff, volunteers and Travis County community service restitution (CSR) clients regularly cleaned and maintained the EEC's interior, as well as performed exterior maintenance work on an as-needed basis. In September, The Travis County CSR program was suspended indefinitely due to constraints on Wild Basin staff.
 - b) Building Improvements
 - i) In addition to repairing highly eroded areas on the handicap/delivery driveway, a substantial drainage channel was added to the driveway to divert excess water from eroding the slope.

- ii) The handicap entrance to the EEC from the handicap/delivery driveway had become a hazard due to tree roots buckling the paving bricks from underneath. The bricks were removed and a small concrete pad was installed in its place.
- c) Outdoor Classroom- This spring, Environmental Art students from SEU designed and constructed three bat houses for Wild Basin. Diane Odegard from Bat Conservation International and art professor Amy Gerhauser provided guidance during design and construction. The houses were installed at the end of three existing trusses on the outdoor classroom.
- d) Driveway Shed – With assistance from volunteers and SEU Facilities (formerly Physical Plant), staff disposed of all dated, spent, and unusable material in and around the driveway shed. A 30 yard dumpster (22x8x6 ft) was delivered to the bus parking lot and subsequently filled with unusable lumber, wall boards, siding, and an assortment of materials that had accumulated over decades.
- e) Well – In February the well at Wild Basin went dry and the well-pump subsequently burned out. Central Texas Drilling was consulted and they determined that a new well needed to be drilled. The project qualified as an emergency under BCCP infrastructure procedures and all appropriate notifications and documentation were completed. Due to the excessive size of the equipment necessary to: drill a new well, install a new pump, remove the old pump and cap the old well; several small trees and shrubs were removed or trimmed to create access. Land Manager, Mitch Robinson was on site for the duration of the work to ensure minimal disturbance and an expedient project. The following trees were completely removed on March 12th:
 - Juniperus ashei* 4.13" dbh
 - Juniperus ashei* 2.82" dbh
 - Juniperus ashei* 2.80" dbh
 - Juniperus ashei* 4.77" dbh
 - Juniperus ashei* 4.45" dbh
 - Quercus virginiana* 3.18" dbh
 - Quercus virginiana* 2.25" dbh

In addition, eight limbs were cut from two *J. ashei*; six limbs were cut from a total of five *Q. buckleyi*; and two limbs were cut from one *Q. virginiana*. Paint-sealant was immediately applied to all *Quercus* cuts and stumps to prevent the spread of oak wilt. Four thin and small *Rhus virens* were removed as well. The SEU professional arborist did all vegetation work.

During the drilling process, a large (12'x12') silt bag was emplaced on site to deter erosion from excess water and sediment excavated. Once water passed through the bag, it was mitigated by an additional 65' of silt fencing, before being evenly dispersed from the drill site. The well being dug to 600', lined with 5" PVC casing and the bottom was sealed with concrete. After the concrete cured, the pump was set at 580', and a ~15' trench was dug 2' deep with a rock saw from the well head to the existing pump house. No additional vegetation was disturbed due to the trench. The old well was completely capped with concrete from the bottom (500') to the surface.

Excess vegetative debris from cuttings were broken down, mulched, and redistributed on site. Piles were evenly distributed so that they did not promote fire hazard or potential Rat snake habitat. Excess sediment and limestone were used to back-fill piping trench, as well as stockpiled on-site for future trail work and erosion control.

2) Information Technology (IT)

- a) Record Keeping – Volunteer Jim Letchworth updated and maintained our membership, visitor and volunteer databases. Mr. Letchworth donated over 55 hours of his time in 2011.
- b) GIS – SEU’s first Geographic Information System (GIS) capable computer was installed and has provided ArcGIS training and research opportunities SEU students, BCP staff, and Wild Basin staff and volunteers.

Security

1) Emergency Procedures – Wild Basin staff continued to follow the emergency policies and procedures manual throughout all emergencies during FY11.

a) Signage

- i) During the record-setting heat-wave of last summer, temporary signage was installed at the trailhead to remind users to carry water and stay hydrated, as Wild Basin provides no potable water when the EEC is closed.
- ii) “Balcones Canyonlands Preserve: No Trespassing” and “No Dumping” signs were erected along the preserve’s old access road off Highway 360 where Wild Basin Ledge road terminates.

2) Preserve Perimeter – Staff performed annual perimeter walks to check the integrity of fencing and boundary markers. Brush was cleared to provide easier patrolling on line-of-sight pathways along all boundaries.

3) Rear Entrance – Through collaborative efforts between Wild Basin and Travis County staff and contractors, a fence was erected at the preserve’s rear entrance on Wild Basin Ledge Road. The fence has both a pedestrian and vehicular gate with combination locks maintained by Wild Basin staff. The installation coincided with the City of Austin’s concurrent project to install 8’ deer fencing along the adjoining Vireo Research Area tract.

4) Fire Safety- Under guidance from Facilities Management at SEU, Wild Basin passed its first fire inspection in close to a decade. All fire-sprinklers within the EEC were checked and updated. The emergency water storage tank beneath the EEC was similarly checked and all components deemed up-to-date and working. KNOX locks were installed on both the Hwy #360 entrance gate and the rear vehicular. A KNOX box installed at the EEC’s main entrance. SEU Facilities committed to purchase a new fire/security panel at the suggestion of local fire authorities and plan to have it installed by early 2012.

5) General – Since 2009, Securitas has been contracted to unlock and lock the gate at sunrise and sunset, respectively. Stanley Security has continued their contract to provide alarm services and staff notification in the event of an attempted burglary, vandalism or fire. No serious emergencies were reported in FY 2011.

6) Visitors – Signage and interpretive media were maintained to warn visitors of

- a) Fire danger

- b) Personal safety in extreme heat
- c) Potential threats to automobile security in the parking lot
- d) Potential encounters with wildlife and related precautions.

LAND MANAGEMENT

Our vision is to preserve endangered species habitat and to educate students and the general public about the role Wild Basin and the BCP in maintaining habitat integrity and ecosystem services. Together with our partners, we are:

- Managing and restoring a mosaic of habitats indigenous to Wild Basin, including oak-juniper woodlands, riparian corridors, semi-open grasslands and cedar breaks
- Protecting native biodiversity
- Protecting habitat for the federally endangered Golden-cheeked warbler and Black-capped vireo
- Protecting habitats to support threatened and rare plant and animal species
- Controlling non-native and invasive species
- Protecting soil profiles and unique geologic features
- Monitoring water quality relative to watershed inputs, runoff and erosion
- Protecting prehistoric and historic cultural sites
- Managing a trail system that presents the regional flora and fauna, while minimizing impacts to the preserve's biotic community and inherent beauty.

Land Management Committee

Until the merger with St. Edward's University in October 2009, the Committee for Wild Basin Wilderness, Inc. was a registered, non-profit organization dedicated to promoting responsible environmental stewardship through education. At that time, SEU obtained ownership of Wild Basin and assumed its duty to protect and maintain the Basin's urban wilderness, while promoting the importance of environmental education, research, conservation and preservation. The merger with SEU has only further enabled and developed the opportunity for creating such programs and initiatives that will continue serving the fulfillment of this mission.

The Board of Directors of the Committee for Wild Basin Wilderness, Inc. dissolved in October 2009.

Staff

Dr. Monica Swartz – Executive Director

Mitch Robinson – Land Manager, Caretaker, Education Coordinator

Kim Johnson – Administrative Coordinator

Sally Scott – Ranger (part-time)

The Land Management Committee, chaired by Wild Basin Land Manager Mitch Robinson, is comprised of former Board members, Travis County staff, and senior volunteers. The Committee advises the land management program by reviewing plans and recommending actions to proposed changes and new practices that may alter or adversely affect the preserve. The Committee ensures that the future health of Wild Basin is fully considered in all planning decisions and implementations, so that 'we do no damage.'

Land Management Committee

Sally Davenport

Celeste Brancel

Garry Child

Yates Barreda

Robert Hanson

Sue Anderson

Dick Ward

Rose Farmer

Renee Fields

Monica Swartz

Mitch Robinson

Programs and Activities

Biological Surveys

1. Golden-cheeked Warbler (*Setophaga chrysoparia*)

The first seasonal observation for Golden-cheeked warbler (GCWA) in the Austin area occurred by the 'pond' at Wild Basin on March 4, 2011. From March 15 – June 14, approximately 50 independent surveys were conducted at Wild Basin by Darrell Hutchinson, Kelly Nesvacil, Jim and Lisa O'Donnell, and Mitch Robinson. The surveys were executed in partnership and according to the protocols of the City of Austin's Balcones Canyonlands Preserve GCWA Demographic Project. Five GCWA males were banded at Wild Basin between March 23 and April 16. Additionally, two unbanded males established territories, for a total of 7 territorial males (observed a minimum 3 times).

For a complete report and a summary of results by volunteer biologist Darrell Hutchinson, see Appendix B.

2. Arthropods in GCWA Habitat

Between late March and early April of 2011, Mike Quinn continued his arthropod diversity survey at Wild Basin that followed up on his 2000 study of abundance and distribution of potential arthropod prey species in a typical GCWA habitat. The 2011 survey yielded 93 species of arthropods, representing four orders and 58 families. All specimens were collected using a one-meter square beat sheet and a canvas sweep net. Specimens were photographed and sent to the Texas A&M University Insect Collection (TAMUIC), which holds Quinn's collection. All photographs are available online at:

<http://picasaweb.google.com/entomike/BasinBugs2011>

<http://bugguide.net>

http://www.texasento.net/Wild_Basin.html

For volunteer biologist Mike Quinn's full report, see Appendix C.

3. White-tailed Deer (*Odocoileus virginianus*)

The fourth year of census data for White-tailed deer utilizing Wild Basin was collected over five October evenings during 2011. The survey was conducted by land manager Mitch Robinson, and local wildlife biologist Kris Thorne. The estimated population density has gone from 1 deer for every 1.44 acres in 2007 to a high of 1 deer for every 3.63 acres in 2010. Density dropped slightly in 2011 to 1 deer for every 3.30 acres. These results support the conclusion that the Wild Basin area contains more deer than can be supported without degradation to the habitat and will negatively impact the health of the Wild Basin deer population. For the full White-tailed deer report, see Appendix D.

4. Texas Madrone (*Arbutus xalapensis*)

With the assistance of volunteers, we have continued to document Wild Basin's population of eighteen (18) individual trees. As the only Madrone species in Texas, it represents the easternmost population of this species within the U.S.

5. Shooting Star (*Dodecatheon meadia*)

In April 2007, Brad Oberle, a graduate student from Washington University in St. Louis, MO performed research on our Shooting Star population. He collected data and tissue samples under a BCP permit and Wild Basin staff supervision. In January 2008, his research report

to Rose Farmer at Travis County Natural Resources indicated that our population may represent a new subspecies or distinct population. A final determination will be forthcoming as the staff looks for future researchers.

St. Edward's University Research Projects

In its partnership with Travis County, Wild Basin, as part of SEU, is preparing a blanket permit for annual research by SEU professors and students on BCP properties. To date, all SEU classes, projects and research have been conducted under in accordance with the same access provided to the general public, restricting off trail use. An annual blanket permit will expand research opportunities for students and faculty, while ensuring all activities are in accordance Wild Basin's Tier III Land Management Plan and BCP guidelines.

1. Oak/Juniper Dispersion Study – This fall, two students assisted in a research project documenting the dispersion, density and size of mature *Ashe juniper* and *Quercus sp.* within GCWA habitat. The study hopes to identify a spatial relationship between preferred male GCWA territories and female nest locations, and the dispersion of mature *Ashe juniper* and *Quercus sp.* Students measured the dbh (diameter at base height) of each tree and recorded their location using GPS. All research in FY2011 was limited to trees accessible from established trails. Documentation is expected to expand in transects beyond the trail system, following submission and approval of a blanket research permit from Travis County.

2. Records/Archiving – This Fall, two students assisted in an effort to archive and digitize all of Wild Basin's historical records, including land acquisition documents, historical photos and surveys, noteworthy newspaper and magazine articles, and an assortment of extensive materials detailing the long history of Wild Basin and conservation efforts in Austin. Though a long work in progress, we look forward to eventually hosting these records online and hope their contents will help provide a historical perspective for future land management decisions.

3. White-tailed Deer Management – To date, Wild Basin has never performed population management for White-tailed deer. Though no culling was performed in FY 2011, Texas Parks and Wildlife Department authorized a permit for removal of deer at Wild Basin through Travis County's contract with Orion Biological Services. City of Austin has again given permission to discharge firearms within city limits at Wild Basin. As of this report, Orion reported little activity near the feeders they set up this Fall, but will pursue their efforts through February 2012.

4. Black-capped Vireo Habitat Modification Experiment – The Black-capped Vireo Habitat Modification adaptive management experiment seeks to improve methods of habitat manipulation to support endangered Black-capped vireos and other organisms. Contractors funded by City of Austin, with in-kind support from Travis County, City of Austin, and Wild Basin staff and volunteers, have cleared vegetation on City land and laid mulch socks to prep the landscape for treatments to be monitored by SEU students and professional staff. SEU biology students have already begun sampling terrestrial invertebrates. The bioinformatics class will be sampling the soil microbial fauna. Terrestrial herpetofauna, and plant assemblage and structure are proposed for future sampling.

Habitat Maintenance and Restoration

Land management activities use only native *Ashe juniper* for trail/erosion bars and native limestone for boulders, steps and gravel where needed on or off the preserve's trails. In necessary situations, crushed limestone is purchased and brought in from a rock yard. No old-growth junipers or other native hardwoods are cut down in the preserve for such uses. All trail maintenance and other land management activities avoid impact or disturbance to cultural and archaeological resources.

1. Trail Maintenance

- a. General – Nearly all 3.2 miles of trails in the preserve received maintenance. (No trail maintenance was performed during the GCWA breeding season along trail sections where the warblers were sighted). Pruning was completed on all of the trails for accessibility, as well as around the building for fire prevention.
- b. Signage – All trail signs and interpretive markers were improved or replaced as needed. New signs were installed on Woodland and Creek trail to accommodate for the Creek Trail re-routes (see below).
- c. Pond Trail remained closed to the general public for the sixth year due to silting problems at the retention pond. Though it will continue to be closed, the Land Management Committee voted to keep it pruned so neighbors at the rear entrance and visitors on guided hikes may still access the area safely.
- d. Trail Re-Routes – The Creek and Yaupon trail re-routes were both completed in FY 2011. In September 2010, work began on the long proposed re-route of Creek Trail from the upper creek crossing to Woodland Trail, due to erosive problems along Bee Creek. Furthermore, a re-route was proposed for the western end of Yaupon Trail to avoid a dangerously steep stair-step gradient. At the suggestion of Travis County staff, Wild Basin consulted with Environmental Survey Consulting and the Central Texas Trail Tamers who approved both re-routes. Each re-route includes an educational overlook with new benches (see below) to enhance stopovers during guided hikes. Preserve staff and volunteers closed both of the old trails, and anticipate re-vegetating with native seed, preferably gathered on-site.
- e. Benches – Max McClendon built and installed 6 Aldo Leopold benches for his Eagle Scout Project in May, which were distributed along the current trails, including the new Creek and Yaupon trail re-routes.
- f. Creek Trail Bridge – Taking advantage of the record drought and lack of water in Bee Creek, staff and volunteers disassembled and rebuilt the bridge at the upper creek crossing. Large boulders, found on-site, were emplaced and secured with mortar, allowing for water movement and creek passage following floods or large rain events.

2. Habitat Restoration

- a. General – Preserve staff and volunteers continued to aggressively remove invasive, non-native species, such as Japanese honeysuckle, bastard cabbage, Chinese tallow, Chinaberry, *Pyracantha coccinea*, *Ligustrum sp.*, *Nandina domestica*, King Ranch bluestem, Johnson grass, *Vitex agnus-castur*, and Georgia cane, among others. Land manager Mitch Robinson, a certified pesticide applicator, oversaw volunteers and

staff during pesticide application as they continued to suppress the few persistent invasive species. Members of the Native Plant Society of Texas Austin chapter also assisted in these efforts.

- b. Deer Exclosures – In consultation with Texas Parks & Wildlife and Travis County biologists, Wild Basin staff continued installing “deer exclosures” of hog wire cages around stands of native trees and shrubs (e.g. Shin oak, Texas red oak, Escarpment black cherry, Texas persimmon, Coralroot orchids and Twisted-leaf yucca) to prohibit excessive browse by deer and other animals.

Staff Training

1. Black-capped Vireo Symposium – In October 2010, director Monica Swartz and land manager Mitch Robinson attended the Black-capped Vireo Symposium hosted by Texas Parks and Wildlife.
2. Pesticide Applicator Licensing Renewal – In January, land manager Mitch Robinson took continuing education courses with the City of Austin BCP to obtain a pesticide applicator license renewal. (TDA Client No. 00447770, TDA License No. 0583001)
3. Urban Wildlife Management and Planning Conference – In May, director Monica Swartz and land manager Mitch Robinson attended the Urban Wildlife: Management and Planning Conference in Austin, TX.

Volunteers

Volunteers donated over 835 hours of their time to Wild Basin’s land management efforts in FY11, They contributed to various programs and activities, including biological surveys, building maintenance and habitat restoration.

Visitation

In FY 2011, Wild Basin staff attempted to track the number of self-guided visitors, using two trailhead sign-in boxes located near the EEC. Although an incomplete tally, this baseline data recorded 3,106 recorded during the fiscal year (2,218 adults and 888 children).

Affiliations and Publications

Wild Basin Wilderness Preserve in FY11 continued to develop relationships and partnerships with like-minded groups and driven individuals. These relationships and partnerships are pursued to strengthen the preserve’s land management and education programs into perpetuity. They include, but are not limited to, the following:

Austin Astronomical Society
Austin Butterfly Forum
Austin Gem & Mineral Society
Austin Geological Society
Balcones Canyonlands Conservation Plan
Balcones Canyonlands Preserve Land Managers
Balcones Canyonlands National Wildlife Refuge

Capital Area Council, Boy Scouts of America
Capital Area Master Naturalists
City of Austin Water Utility Wildland Conservation Division
Girl Scouts of America, Lone Star Council
Native Plant Society of Texas, Austin Chapter
REI
Rob Roy Homeowners Association
Rob Roy on the Canyon Homeowners Association
Texas Commission for Environmental Quality
Texas Forest Service
Texas Ornithological Society
Texas Parks & Wildlife
Travis Audubon Society
Travis County Transportation & Natural Resources
Tuktawa Foundation
University of Texas Archaeological Research Laboratory
University of Texas Bureau of Economic Geology
University of Texas Nonvertebrate Paleontology Laboratory
Westlake Chamber of Commerce
Westlake Hills City Inspector
Westlake Hills Fire Department
Westlake Picayune newspaper
Whole Earth Provision Company

EDUCATIONAL & OUTREACH PROGRAMS

Wild Basin has historically served as a readily accessible wilderness excursion for local adolescent and school groups, as well as family and group hikes. Since the St. Edward's University merger, trail fees for volunteer-led guided hikes are no longer necessary. All use and services of Wild Basin are solely donation based. Though all previous education programs are active and ongoing, staff efforts during FY2011 were re-oriented toward furthering education and research opportunities for SEU faculty and students, and our BCP partners.

Volunteers donated approximately 200 hours of their time to the preserve's Education and Outreach Programs. The following summarizes these programs:

1) *Environmental Education & Interpretation*

- a) School & Group Tours – Approximately 1,000 adolescents, including students from local schools and community groups, attended education programs at Wild Basin. Group size limits are restricted and capped at a maximum of 40 students per visit. Over 180 volunteer hours were donated in assisting with these education programs.
- b) Family & Public Programs – Local children and families attended several public programs hosted by Wild Basin in 2011 including Moonlighting, Stargazing, Flintknapping, Indian Lore and Weekend Hikes. The Moonlighting and Stargazing tours were made possible through the volunteer efforts of the Austin Astronomical Society. Jewel Pollard, local Austin natural historian, led the Flintknapping and Indian Lore.
- c) Sierra Club Night Hikes – During several full moons this year, Wild Basin hosted free night hikes that were open to the public and organized by the Austin chapter of the Sierra Club.
- d) Wildlife Management – Twice this year, Wild Basin hosted information sessions for private land owners on wildlife management and conservation easements, presented by local consulting group Plateau Land Wildlife and Management.

2) *Public Outreach*

- a) Balcones Canyonlands Preserve (BCP) – Again in FY11, Wild Basin staff attended and participated in quarterly meetings of the BCP Land Managers group. We are scheduled to host the first meeting for 2012.
- b) Bat Conservation International (BCI) – BCI is committed to informing the public about bat conservation, similarly offering its employees and resources to various education events, such as Austin Museum Day. Wild Basin furthered its relationship with BCI by hosting their week long annual staff retreat during August and have since offered and allowed meeting space for additional BCI.
- c) Capital Area Master Naturalists (CAMN) – CAMN held their certification ceremony in January at Wild Basin, as well as part of their 2011 class's geology and soils section this February.
- d) Native Plant Society of Texas, Austin chapter – Again in FY11, Wild Basin hosted the regular monthly meetings of the Austin chapter of this statewide organization.

3) *Special Programs/Events*

- a) Wild Basin Family Reunion – Wild Basin hosted a Family Reunion in February, inviting all past volunteers, members, staff, affiliates and friends. A slideshow presentation of early environmental education and land management at Wild Basin was presented by Judy Walther, the first Education Director. Further talks were given by staff, updating on the St. Edward's merger and current land management and research opportunities.
- b) Neighborhood Mixer – In April, Wild Basin invited all contiguous neighbors of the Preserve for a small gathering. Staff updated them on on-going land management issues, particularly the installation of a rear-gate on Wild Basin Ledge and invasive species management. A Habitat Guardian program was instituted, whereby neighbors will be issued a combination to the rear gate. By protecting Wild Basin, all parties agree:
 - No pets or any vehicles will be allowed into the preserve
 - Guests are permissible when under the responsibility and accompaniment of the certificate holder
 - Will use good judgment and all reasonable precautions to protect Wild Basin and its surroundings from fire, vandalism, dumping and other negative impacts
 - The combination will be changed annually, and it's the certificate holder's responsibility to maintain contact information to continue the privilege.
- c) Lion's Club International Students – Wild Basin hosted twenty-nine international students who were traveling as part of the Lion's Club exchange program. Wild Basin volunteer, Lion's club member, and retired geologist Wayne Orłowski gave a lecture on how geology connects the world, with an overview of TX geological history in a world context. Land Manager, Mitch Robinson, gave a lecture on urban-wildland interfaces and the history and role of the BCP in Austin. Volunteer trail guides then led the students on a guided hike.
<http://think.stedwards.edu/marketing/blog/post/lions-spotted-wild-basin>
- d) Dodecatheon Lecture - In August, Wild Basin hosted a presentation by Brad Oberle, who was in town for the Ecological Society of the Americas (ESA) conference. Oberle, an expert on *Dodecatheon* (Shooting-stars), a rare TX endemic, presented his research on populations in TX and those at Wild Basin, one of only three existing populations in Travis County.

4) *St. Edward's University Events*

- a) Noyce Scholarship Program – For the second year in a row, Wild Basin provided a lecture and guided hike for students in the Robert Noyce Teacher Scholarship Program from St. Edward's and Austin Community College. The National Science Foundation's Robert Noyce Teacher Scholarship Program responds to the critical need for K-12 teachers of science, technology, engineering, and mathematics (STEM) by encouraging talented STEM students and professionals to pursue teaching careers in elementary and secondary schools. Students were taught about the

history of the BCP and Wild Basin, in the context of explaining issues along urban-wildland interfaces.

- b) Yoga Retreats - Monica Frazer, from St. Edward's, held her semester Yoga retreat at Wild Basin again this October. She plans to continue this tradition each semester.
- c) Natural History Course - Judy Walther, former Wild Basin Education Director, taught a Natural History course for St. Edward's New College program. The course, Advanced Topics in Biology, will fulfill the science requirement for non-science majors, and will take place every other Saturday at the Basin. Paul Walter, physics and freshman science professor at St. Edward's, attended the course and will be teaching a similar one next year for Freshman.
- d) Texas Academy of Sciences - St. Edward's hosted the Texas Academy of Sciences on campus this March. Several field trips were offered including a BCP guided tour of Travis County's Nootsi Tract and Wild Basin.
- e) Kozmetsky Center for Global Finance - In September, the Kozmetsky Center for Excellence in Global Finance hosted global climate change expert, Dr. Diana Liverman from the University of Arizona. Wild Basin hosted an introductory breakfast for Dr. Liverman's arrival, including Wild Basin and Kozmetsky Center staff, as well as individuals from NSCI and Behavioral/Social Sciences.

5) *Affiliations & Publications*

Wild Basin and SEU's Marketing staff continued writing Wild Basin's column in our local newspaper, the *Westlake Picayune's* "Distinct" section once a month, as well as our quarterly *Wild Ways* newsletter.

Association of Nature Centers of America (ANCA)

Austin Astronomical Society

Austin Cactus & Succulent Society

Austin Independent School District

Austin Museum Partnership

Bat Conservation International

Bastrop Independent School District

Big Brothers Big Sisters

Boy Scouts

Camp Fire USA Balcones Council

Capital Area Council, Boy Scouts of America

Communities in Schools

Eanes Independent School District

Kids Are Kids

Lake Travis Independent School District

Lifetime Learning

Girl Scouts of Central Texas

Moody Foundation

St. Edward's University

Tuktawa Foundation

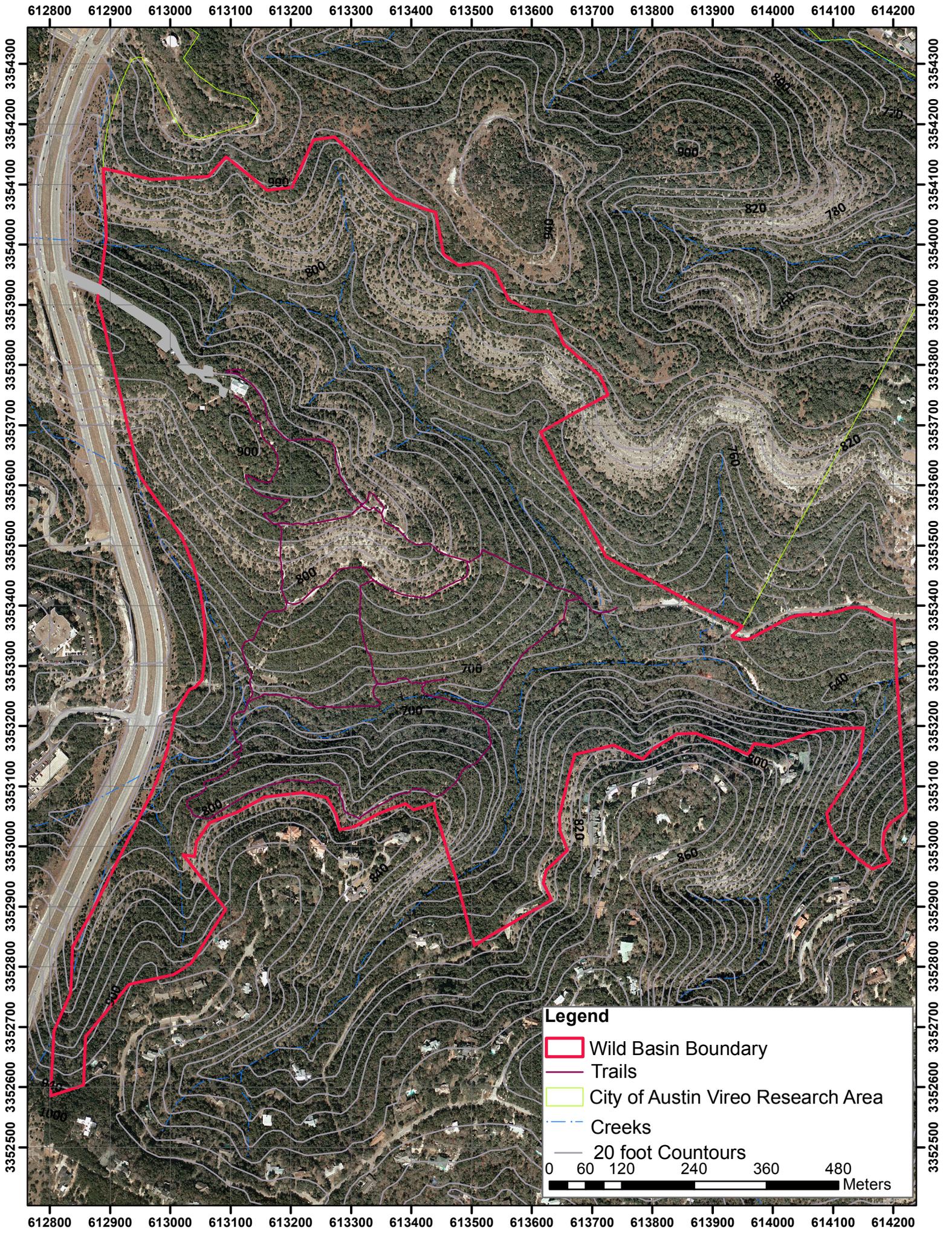
APPENDIX

Map of Wild Basin Wilderness Preserve

Summary of Spring 2011 Golden-cheeked Warbler surveys at Wild Basin Wilderness Preserve

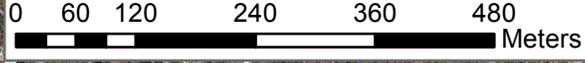
Survey of beetles (Coleoptera) and other insects in typical Golden-cheeked Warbler breeding habitat at the Wild Basin Wilderness Preserve

White-tailed Deer Census of Wild Basin Wilderness Area Using Modified Hahn Line Technique



Legend

-  Wild Basin Boundary
-  Trails
-  City of Austin Vireo Research Area
-  Creeks
-  20 foot Countours



Summary of Spring 2011 Golden-cheeked Warbler surveys
at Wild Basin Wilderness Preserve
by Darrell Hutchinson

Approximately 50 independent surveys were conducted between March 15 – June 14, 2011, by Darrell Hutchinson, Mitch Robinson, Kelly Nevascil, Lisa and Jim O'Donnell. The surveys were conducted in cooperation with and according to protocols established by City of Austin's Balcones Canyonlands Preserve GCWA Demographic Study (see GCWA 100 acre plot protocol and GCWA Survey Documentation 2011). Metadata are kept in ArcGIS file at Wild Basin Preserve. Raw data sheets are on file.

The first seasonal observation for GCWA in the Austin area occurred by the 'pond' at Wild Basin Preserve on March 4. Five GCWA males were banded at Wild Basin Preserve and two were banded on adjacent lands belonging to Vireo Preserve between March 23 and April 16 (see Table 1). In addition, 2 unbanded males established territories for a total of 7 territorial males (observed minimum 3 times) on Wild Basin Preserve (see Figure 1).

The Spring of 2011 was the most severe regional drought on record. Some water persisted in Bee Creek throughout the nesting season. Of seven established territories, two were deemed unsuccessful, the fate of three was unknown, and two fledged successfully one brood each. One adjoining pair on Vireo Preserve also bred successfully (see Table 2 and Figure 2).

Impacts on nesting success by predators is unknown. However, Fox Squirrels, Western Scrub Jays and Blue Jays were observed throughout the Wild Basin Preserve daily. Four breeding pairs of Greater Roadrunner are estimated. Also, an influx of migrating Yellow-billed Cuckoos occurring mid-May may have affected fledgling mortality.

Table 1. GCWA WildBasin 2011 – Birds banded

PLOT	COLOR	DATE BANDED
WILD BASIN	NB/OR:BK/SI	3/22/11
WILD BASIN	BK/RD:RD/SI	4/1/11
WILD BASIN	PI/SI:OR/GR	4/1/11
WILD BASIN	GR/DB:WH/SI	4/5/11
WILD BASIN	NB/SI:RD/PI	4/15/11
VIREO PRESERVE	DB/BK:OR/SI	3/18/11
VIREO PRESERVE	NB/WH:MV/SI	3/25/11
VIREO PRESERVE	BK/DB:BL/SI	4/17/11
VIREO PRESERVE	BK/BL:YE/SI	4/17/11

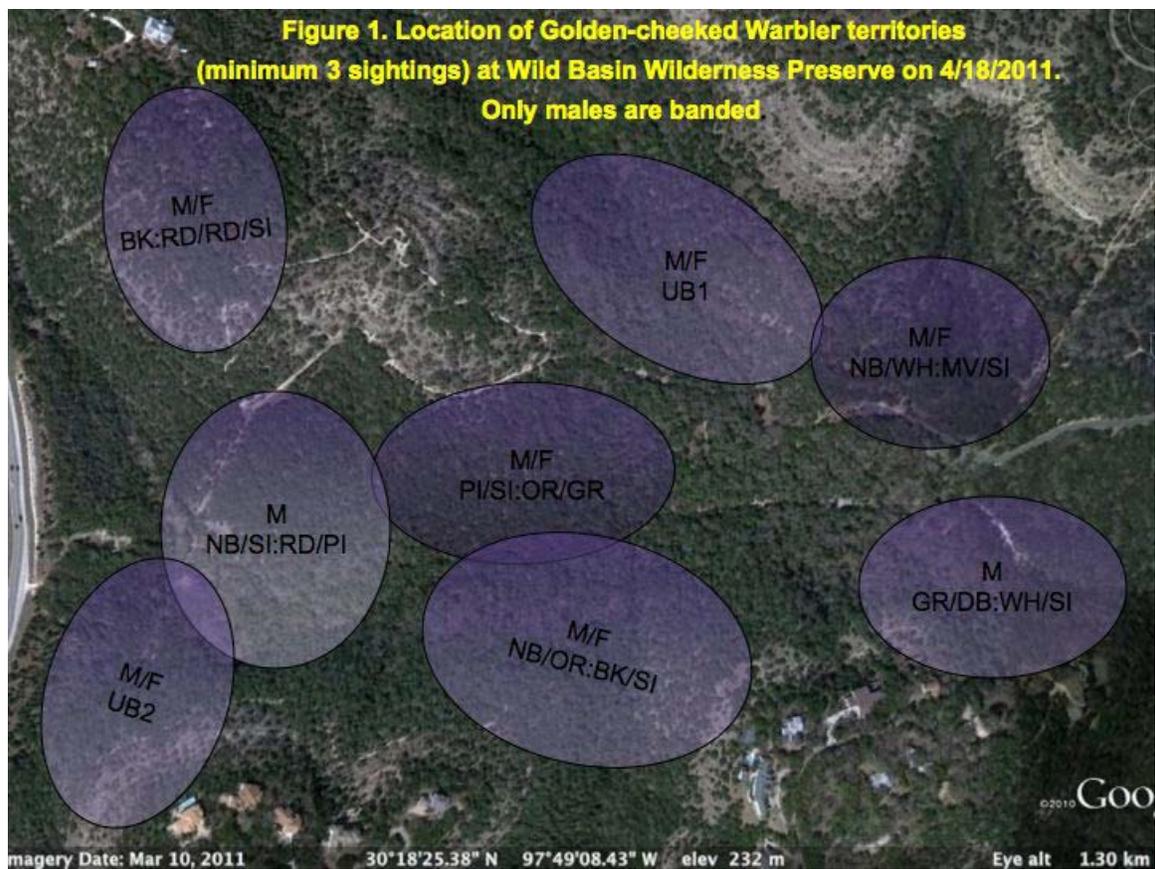
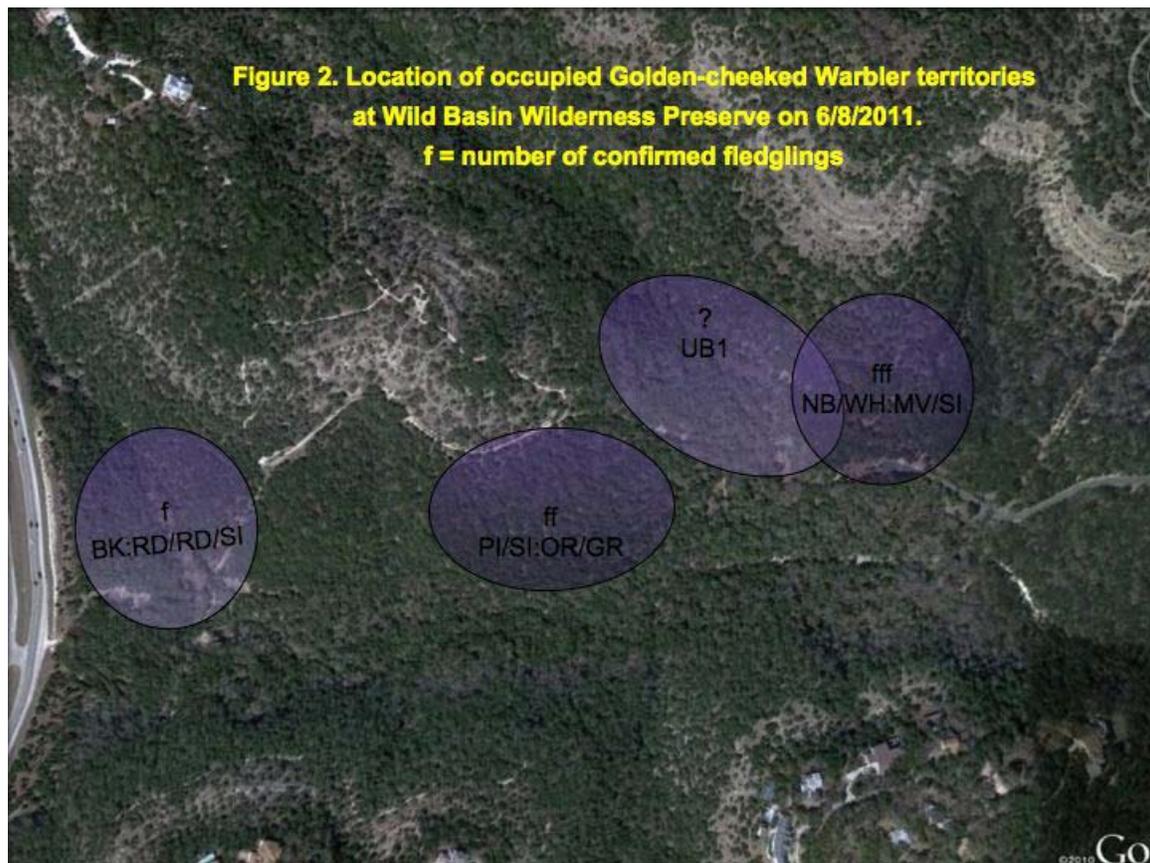


Table 2. GCWA WildBasin 2011 – Fledglings

PLOT	COLOR	FLEDGIES	COMMENTS
WILD BASIN	NB/OR:BK/SI	Unknown	male last seen 5-11-11
WILD BASIN	BK/RD:RD/SI	>1	one 7 day old fledgling observed with male on 6-3-11; first nest failed and new territory established
WILD BASIN	PI/SI:OR/GR	>2	nest fledged 5-11-11
WILD BASIN	GR/DB:WH/SI	None	no confirmed resightings
WILD BASIN	NB/SI:RD/PI	None	first observed 4-12-11, last observed 5-10-11 with PI/SI:OR/GR's female; never seen with his own female; territory usurped by BK/RD:RD/SI
WILD BASIN	UBWBO1	Unknown	almost certainly renested but reproductive success unknown
WILD BASIN	UBWBO2	Unknown	pair last seen 5-6-11
VIREO	NB/WH:MV/SI	3	female with three 7-10 day old fledglings observed by James Hart on 6-8-11



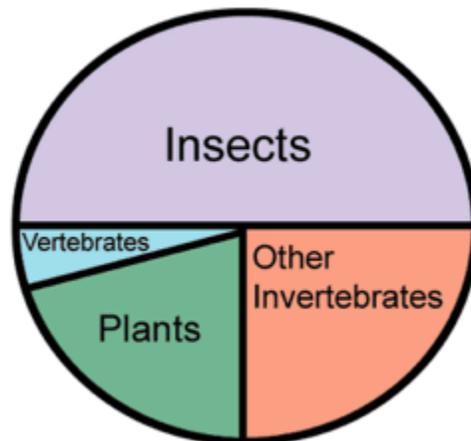
Survey of beetles (Coleoptera) and other insects in typical Golden-cheeked Warbler breeding habitat at the Wild Basin Wilderness Preserve

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Abstract – Invertebrate surveys conducted in late March and early April at Wild Basin Wilderness Preserve yielded some 93 species of insects in 4 Orders, primary Hemiptera (sensu lato), Coleoptera adults and Lepidoptera larvae. Images of all species were posted online (at BugGuide.net, Picasaweb.Google.com and TexasEnto.net) along with taxonomy, distribution, seasonality and host information (when known) for each species. A master website (www.texasento.net/Wild_Basin.html) was created showing thumbnails of all species collected. The thumbnails link to BugGuide where each species' biological information is posted. This website is a compilation of species found during 2010 and 2011 surveys. The anticipated survey season was severely truncated due to the severe drought.

Introduction – Most biologists are trained in the identification and management of only a relatively small portion of the total biological diversity of the lands under their jurisdiction. Typically this training is limited to birds, mammals, herps and woody and herbaceous plants, yet invertebrates are the dominant primary and secondary consumers as well as the dominant pollinators of non-wind pollinated plants.



Balcones Canyonlands Preserves were established primarily to protect two endangered insectivorous songbirds (as well as a large number of karst invertebrates), yet Travis County Natural Resources doesn't have a single entomologist on staff.

Quinn's (2000) thesis was an attempt at bridging the gap between wildlife managers' knowledge and the entomofauna under their care. Over 1600 species were quantitatively collected over the course of two summers in western Travis County. Even though this required an *immense* amount of work, providing the scientific names of 1600 species, their abundance through time and host preferences alone wasn't enough to provide the education needed. What was required were photographs of each species posted on-line, something that wasn't practical before digital photography or possible before the internet.

Materials and Methods – Main collecting tools employed for surveys at Wild Basin Wilderness Preserve from March 30 to April 7 were a one-meter square beat sheet and a canvas sweep net. Specimens were brought home alive and photographed before being shipped to the Texas A&M University Insect Collection for curation. Photographs were almost exclusively shot using Canon's seminal MP-E 65mm f/2.8 1-5x Macro Lens. Photographs of every invertebrate were posted at <http://picasaweb.google.com/entomike/BasinBugs2011> and <http://bugguide.net> and at http://www.texasento.net/Wild_Basin.html.

Results - A total of 185 insect photographs were posted on-line. Some 93 species of invertebrates in four Orders were collected primarily in the Orders of Hemiptera (sensu lato), adult Coleoptera and larval Lepidoptera along with a lesser number of immature and adult Hymenoptera.

Discussion and Conclusions – One of the primary benefits of this research is to provide through images information to the non-entomologist about the rich entomofauna in typical Golden-cheeked Warbler habitat. Without the use of images, such information is mostly available only to entomologists who are generally not among those employed to manage endangered species habitat.

The surveys in the early portion of the GCWA's breeding season in 2011 were particularly important as I wasn't able to conduct surveys at time of the year in 2011.

As the adult insect become better known, from an identification stand point, on going surveys will be particularly important to get to know the immature stages which, in the case of Lepidoptera larvae are of primary importance the GCWA.

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White-tailed Deer Census of Wild Basin Wilderness Area Using Modified Hahn Line Technique

Kirstine M. Thorne
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ABSTRACT

Census data for white-tailed deer (*Odocoileus virginianus*) utilizing Wild Basin Wilderness, Travis County, Texas was collected for four years (2007, 2008, 2010 and 2011). The estimated population density for the Wild Basin Wilderness herd has gone from 1 deer for every 1.44 acre in 2007 to a high of 1 deer for every 3.63 acres in 2010. Density dropped slightly in 2011 to 1 deer for every 3.30 acres. This calculations support the conclusion that the Wild Basin Wilderness Area contains more deer than can be supported without degradation to the habitat and, which will negatively impact the health of the Wild Basin deer population.

INTRODUCTION

The objective of the Deer Censuses of the Wild Basin Wilderness Area is to evaluate the health of white-tailed deer (*Odocoileus virginianus*) herd that utilizes Wild Basin Wilderness in Travis County, Texas.

METHOD

Before beginning a census, the number of acres along the census route upon which deer may be observed is calculated. The previously selected route is driven and at regular intervals (0.10 mile), the vehicle is stopped and the distances to the right and left at which a deer could be seen are measured in yards (line of sight or LOS). Line of sight is not measured across an open draw or gully and cannot exceed 250 yards.

The LOS distances are added together and then divided by the number of stops to provide an average width (in yards) of the census strip. Then, the average width is multiplied by the length of the census route (also in yards) giving the census area in square yards. This number is divided by 4,840 sq. yds per acre to arrive at a final number of acres censused.

There are three types of census methods that are recommended by Texas Parks and Wildlife: Hahn Line, Spotlight Census and Mobile Line (*Deer Census Techniques*, M Shult and B. Armstong, Texas Parks and Wildlife). A Modified Hahn Line was used:

1. The census route was laid out to follow the route used in 2007, with the exception of Wild Basin Road (east perimeter), which was omitted in order to concentrate on the central area of the wilderness area.
2. LOS measurements were taken at 0.10 mile intervals (as measured using the odometer on the research vehicle). An electronic rangefinder was used to measure the visibility distance. If a LOS was at a driveway or other non-habitat area, the vehicle rolled forward until a measurement could be taken.
3. The census route was surveyed five times by two researchers; the driver and the passenger.
4. Each census was conducted before the opening of white-tailed deer hunting season (end of October).
5. A census was conducted only when winds were less than 20 miles per hour, relative humidity was less than 70 percent (as measured using a Kestrel® 3000 Pocket Weather ® Meter with Backlight) and cloud cover was less than 50 percent (as estimated by researchers).
6. The census began 30 minutes prior to official sunset.
7. The research vehicle did not exceed 10 miles per hour.
8. Whenever deer were spotted, the driver stopped the vehicle. The driver counted and identified the deer to the left of the vehicle and the passenger counted and identified the deer to the right of the vehicle.
9. All deer observed within the census area were recorded. Deer were not recorded if they were across a draw or gully.
10. Binoculars were used as necessary to identify sex and age. Spotlights were not used.
11. The Wild Basin Wilderness Area Land Manager notified local fire and police dispatch centers before each survey and provided the description and license plate of the research vehicle. The vehicle also had magnetic signs on the sides and back identifying it as a Wild Basin Wilderness Area survey vehicle.

RESULTS

Wild Basin Wilderness Area encompasses 227 acres. Sixty-nine acres were surveyed in 2008, 2010 and 2011 totaled. The linear distance covered added up

to 3.5 miles with line of sight (LOS) measurements taken 35 times. The average LOS distance was 29 yards per side (for a total average LOS width of 58 yards).

In 2007, 13 census surveys were completed (August 9, 11, 13-15, 19-21, 24, 27, 30, September 5 and 7). A total of 540 deer were observed (50 bucks, 390 does, 100 fawns and no unknown.) Based on the first 100 deer that were counted, the ratio in 2007 was 1 buck to 7.70 does to 1.30 fawns.

In 2008, five census surveys were completed (September 4, 5, 6, 19 and 27). A total of 145 deer were observed (23 bucks, 96 does, 24 fawns and 2 unknown.) Based on the first 100 deer that were counted, the ratio in 2008 was 1 buck to 3.76 does to 1.12 fawns.

In 2010, five census surveys were completed (August 27 and September 12, 16, 28 and 29). A total of 94 deer were observed (17 bucks, 67 does, 10 fawns and no unknown.) Fewer than 100 deer were counted, so it was not possible to calculate a buck to doe to fawn ratio.

In 2011, five census surveys were completed (October 11, 12, 14, 15 and 16). A total of 104 deer were observed (19 bucks, 55 does, 30 fawns and no unknown.) Based on the first 100 deer that were counted, the ratio was 1 buck to 3.00 does to 1.56 fawns.

DISCUSSION

The total number of deer observed in 2011 (104) was greater than that observed in 2010 (94), but less than 2007 and 2008 (540 and 145, respectively). The driven distance surveyed remained the same all four years (3.5 miles or 6160 yards). Number of survey days (5) remained the same for 2011, 2010 and 2008; but were fewer than in 2007 (13). The number of stops was standardized after 2007 (23 stops post-2007; 43 stops in 2007); and the average line of sight measurement was also standardized post-2007 (58 yards versus 122 yards in 2007). These changes reduced the estimate of acres surveyed post-2007 (69 acres versus 155 acres in 2007). However, since the summary numbers are averaged, calculations for all surveys can be compared equally.

Because of increased awareness of fire danger, homeowners along the survey route cleared underbrush between the road and their homes in September 2011. While this potentially allowed for observing deer more easily, the researchers do not believe this had a significant impact on numbers observed.

When the overall percent deer by sex is compared, there appears to be a trend of bucks increasing, does decreasing and fawns increasing (Table 1).

Table 1. White-tailed Deer by Sex (2007 to 2011)

	Total	Buck	Doe	Fawn	Unkn
2011	104	19	55	30	0
		18.3%	52.9%	28.8%	0.0%
2010	94	17	67	10	0
		18.1%	71.3%	10.6%	0.0%
2008	145	23	96	24	2
		15.9%	66.2%	16.6%	1.4%
2007	540	50	390	100	0
		9.3%	72.2%	18.5%	0.0%

Based on the first 100 deer recorded, sex ratios were estimated for 2007, 2008 and 2011 (Table 2). Fewer than 100 deer were observed in 2010. The data indicate that the number of does per buck decreased from 8 does per buck in 2007 to 3 does per buck in 2011.

Table 2. White-tailed Deer Buck : Doe and Doe : Fawn Ratios (rounded to 0.1)

	Buck	Doe	Doe	Fawn
2011	1	3.0	1	0.6
2008	1	3.8	1	0.3
2007	1	7.7	1	0.2

In 2011, the number of acres per deer decreased slightly from 2010 (3.30 in 2011 versus 3.67 in 2010), but still an increase from 2008 (2.38) and 2007 (1.44). However, none of the years are close to the optimum carry capacity for deer in Travis County which is 15 - 20 acres per deer (J. Kuhl in *Playing Whack-a-Deer at Pace Bend Park*, The Austin Chronicle, February 2, 2007).

CONCLUSION

The preferred diet of white-tailed deer is forbs (broadleaf herbaceous plants) then browse (leaves and twigs of living woody plants). Grasses are less than 15% of a deer's diet (Armstrong, WE and EL Young; White-tailed Deer Management in the Texas Hill Country, Texas Parks and Wildlife, September 2000). The clearing of the underbrush may allow for additional growth of forbs in future years, but not enough to provide adequate forage for the number of deer that are currently estimated to be in the Wild Basin Wilderness Area.

When White-tailed Deer density is greater than one deer for every 10 to 20 acres, the habitat will be negatively impacted deer (Kuhl, 2007). The estimated density for the Wild Basin Wilderness Area herd has improved from 1 deer for every 1.44 acres (2007) to 1 deer for every 3.30 acres (2011), but is still not at a healthy carrying capacity.

A healthy herd has 1.2 to 1.5 does per buck and 0.8 to 1.2 fawns per doe (Armstrong, 2000). The ratio at Wild Basin is between 3.0 to 7.7 does per buck and between 0.2 to 0.6 fawns per doe. These numbers also support the conclusion that the Wild Basin Wilderness Area does not have a healthy White-tailed Deer population.

WILD BASIN DEER CENSUS
DATA COMPARISON
2007, 2008, 2010, 2011

	2007	2008	2009	2010	2011
Total number of census dates	13	5	None	5	5
Begin Date	9-Aug	4-Sep		27-Aug	11-Oct
End Date	7-Sep	27-Sep		29-Sep	16-Oct
Average depth per stop (yds)	122	58		58	58
Distance of survey line (yds)	6160	6160		6160	6160
Total yards observed	6160	1885		1885	1885
Number of stops	43	35		35	35
Total area surveyed (sq yds)	708,507	331,760		331,760	331,760
Acres observed	155	69		69	69
Total number of deer seen	540	145		94	104
Bucks	50	23		17	19
Does	390	96		67	55
Fawns	100	24		10	30
Unknown	0	2		0	0
Average number deer per census	108	29		19	21
Bucks	4	5		3	4
Does	30	19		14	11
Fawns	8	5		2	6
Unknown	0	0		0	0
Average acres per deer	1.44	2.38		3.63	3.30
Average deer per acre	0.70	0.42		0.28	0.30
Sex of first 100 deer				<100 deer	
Bucks	10	17		NA	18
Does	77	64		NA	54
Fawns	13	19		NA	28