BIOLOGICAL PLANNING NEWSLETTER
TECH TALK– FALL 2016

December 7

Location:

Empire Ranch Headquarters

Stone Corral 8:30 am

Agenda?

See your email for the agenda

Themes

Upland

Landscape

In This Issue

- Research Ranch Update
- Heritage News
- Annual Wet/Dry Walk
- Upland Monitoring Summary
- Grazing Management
- Restoration Prioritization
- YES! 2016 Results

Materials? Go to: //sites.google.com/site/lcncaadaptivemanagement/reference-materials

UPDATES FROM THE APPLETON-WHITTELL RESEARCH RANCH —-FALL 2016

Submitted by Linda Kennedy

The **Research Ranch website** is new and improved! Check it out at researchranch.audubon.org!

Coordinated Resource Management Plan

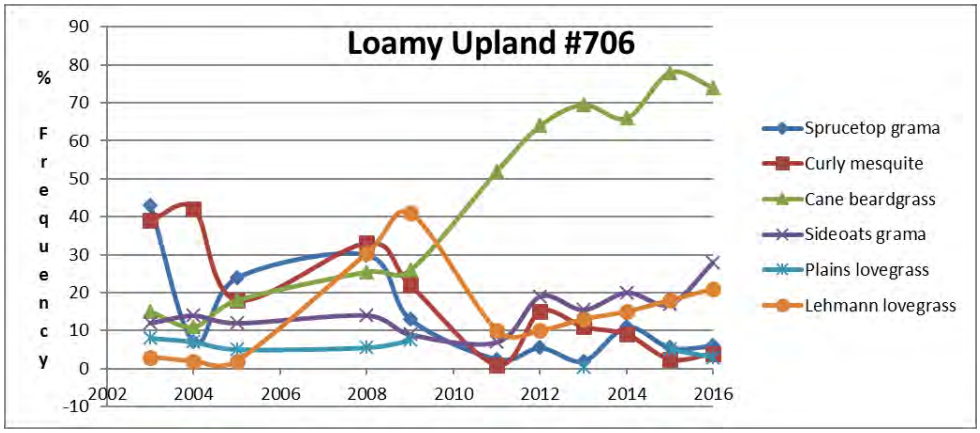
Due to the leadership and dedication of Kristen Egen, NRCS District Conservationist, the Coordinated Resource Management Plan for the Research Ranch is out for signature! According to Kristen, this was an unusual plan because the focus was on management for conservation and research rather than for conservation and livestock management (and there was an excessive amount of data to incorporate). Thanks to everyone who shared expertise, provided technical assistance and helped in the field! The CRMP is available in the library on the Research Ranch website.

Research Ranch Working Group

The Board of Directors of Audubon Arizona has agreed to convene a working group specifically for the Research Ranch. In addition to board members, the group includes representatives from the research, ranching, and conservation communities.

Upland Vegetation Monitoring

Thanks to great volunteer help and pleasant weather, all 18 upland vegetation transects were read this fall. Overall the 2016 results were very similar to 2015. One of the heartening notes is a gradual increase in frequency of Plains lovegrass in several transects from a low in 2011. Two natives, Cane beardgrass and Sideoats grama, continue to dominate in one plot that had been dominated by Lehmann lovegrass (see Loamy Upland #706 graph). We're still wondering what the causal mechanism is here.



Precipitation at Headquarters

June 1.5", July 1.93", August 7.36", September 2.43", October 0.23", YTD 16.36". Nice.

Fires

No fires were reported or discovered on the Research Ranch so far in 2016.

THE RESEARCH RANCH CONTINUED

Elgin Students at the Research Ranch

Seventh grade students in Mrs. Koweek's science class learned to identify native grasses and helped collect seed for rehabilitation efforts. They also learned about the importance of wildlife friendly fence to allow safe movement of large native animals, especially pronghorn.

Research

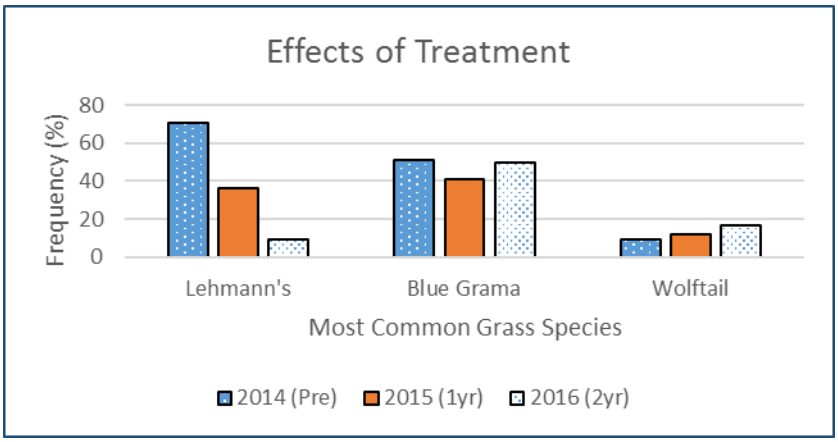
Another active field season – in addition to Arizona-based researchers, scientists from South Carolina, Virginia, Ohio, California, Tennessee, and New Mexico collected data on the Research Ranch this summer and fall. The housing complex booked nearly 600 nights of use.

Living Gently on the Land

This fall our seminar series (aka Potlucks & Presentations) featured **Monarch Butterflies** by Gail Morris of the Southwest Monarch Study, **Grassland Plant I.D. for Everyone** by author, Jim Koweek, and **Solar Cars**, by Alain Chuzel of SunCat Solar.

Science on the Sonoita Plain

SoSP 2016 is a fond memory and the planning team is working on the event for 2017 scheduled for June 3rd. This symposium, an outgrowth of the Sonoita Valley Planning Partnership, has brought scientists, students, land managers, and other interested parties together annually since 2009.



Invasive Plant Treatment

It's a lot of work – but it's possible to set back Lehmann Lovegrass without damaging natives. This graph shows the effects of 2 years of treatment we were able to conduct with financial assistance from AZ State Forestry (IPG-13-701). Contact researchranch@audubon.org for more information.

HERITAGE PROJECTS UPDATE

Shela McFarlin on behalf of the Heritage Technical Team

Members of the Heritage Technical Team, volunteers of various watershed-wide work groups like the Cienega Timeline, and individuals associated with the Empire Ranch Foundation, University of Arizona and more continue to work on several projects. Taken together, this work is filling in the history of the area and enhancing the cultural resources management already underway by BLM Tucson and Coronado National Forest——a collaborative heritage network!

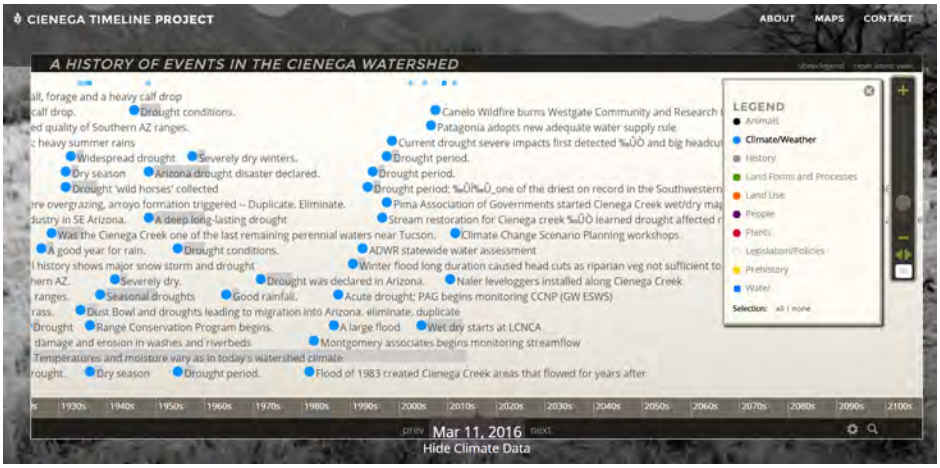
The **Cienega Watershed Timeline Project** continues as a workgroup focused on collecting, verifying and sourcing events in the watershed. This effort began in November 2012 as a shared history exercise but has evolved into an interactive, web-based timeline with over 700 events. All events are being verified and sourced and dates, titles and descriptions are being edited to improve accuracy and understanding.

Next meeting December 13 but much of the work takes place by individuals and small groups. Coming up in June 2017: the work group hopes to present at the annual Arizona Preservation Conference along with other talk on southeast Arizona heritage efforts.

Members: Shela McFarlin, Alison Bunting, Gita Bodner, Haiyan Wei, Robin Pinto, Gerardo Armendariz, Kathy Donahue, JJ Lamb, Martie Maierhauser, Doug Duncan

Needed! The biological sub-group could use some assistance. Please let Doug or Gita know of your interest. We will also be contacting individuals who participated in the 2012 flipchart exercises to correct, augment or mine more information from you.

To see the latest product, go to: http://apps.tucson.ars.ag.gov/cienegatimeline/



Empire Ranch added to the Historic American Landscapes and won an award too!

HALS stands for the Historic American Landscapes program. The Empire Ranch HALS Report will be added to the Library of Congress where it will be available online and maintained in perpetuity. In addition, the 2016 American Society of Landscape Architects named the Empire Ranch entry to their annual contest for landscape write-ups as #1 of 43 entries. A group of University of Arizona professors and students aided by local folks worked last spring and summer to complete the study and enter it into the awards competition. This incredible document not only described the Empire Ranch Headquarters in architecture and history but the wider context of the Empire Ranch, neighboring ranches and now the Las Cienegas National Conservation Area.

The Historic American Landscapes Survey (HALS) was created in 2000 as a federal program (administered by the National Park Service) to document historic landscapes in the United States and its territories, ritical to preserving these significant sites for future generations. The American Society of Landscape Architects (ASLA) provides professional guidance and technical advice for the program through its Historic Preservation Professional Practice Network. The Library of Congress (LOC) accepts and preserves HALS documents, furnishes reproductions of material, and makes records available to the public (www.loc.gov/pictures/collection/hh/). Results of the 7th annual HALS Challenge were announced at the HALS Meeting of the New Orleans ASLA Annual Meeting and Expo October 22, 2016.

HERITAGE CONTINUING

HALS work at the Empire Ranch corrals by U of A students and mentors.

1st Place: Empire Ranch HALS AZ-19, Greaterville vicinity, Pima County, Arizona.
By Gina Chorover, MLA, Heritage Conservation Program, University of Arizona; Helen Erickson, MLA, Drachman Institute, University of Arizona; Robin Pinto, Ph.D., Consultant; and University of Arizona and Heritage Conservation Program Student Researchers: Abrar Abdullah H. Alkadi, Heather Leigh Havelka,Armando Lagunas, Gabrielle Miller, Taira Lynn Newman, Genna Renee Vande-Stouwe, Jessica PaolaEstrada, Rachelle Hornby, Nicole Lavely, Kathryn Elizabeth McKinney, and Chelsea Parraga. Assisting the project documentation and fieldwork were: Alison Bunting and the Empire Ranch Foundation, Chris Schrager and Jeff Simms from the Bureau of Land Management, and Shela McFarlin from the Cienega Watershed Partnership.

As part of this work is an impressive history of the Empire Ranch (and its vicinity) that provides the context for the ranch and its significance. Great work under the leadership of Robin Pinto for her research and to Alison Bunting for reaching into the ERF archives.

Filling in the past land uses—-the hunt for the Vail orchard and pipeline. Associated with the HALS landscape work has been the hunt for an orchard used from the Vail period with remnants known to exist in 1940s (Gerald Korte). Based on Walter Vail's homestead filings, rough sketches of the location of the orchard and associated pipeline and 50ft trough are "known". It took three field visits with the final one including Gerald Korte, to locate the pipeline and trough. The orchard location is still probable at this stage and will take some more work to authenticate. The same workgroup is digging into records, maps, photographs and written materials to fill in land use in the area. A GIS map showing land transfers and usage is in the works.

Needed! The work group needs data! That is, who has worked on old well locations? Who has maps of stock ponds or fence lines and pastures from years past? If you can fill in past land uses, please contact Shela, Robin, Alison or Dave Tuggle or timeline@cienega.org and we'll get back to you.

WATER AND WATERSHED MANAGEMENT NEWS

Mead Mier, Pima Association of Governments

THE WET-DRY MAPPING EXPERIENCE — December 16

Information about joining a wet-dry mapping experience with PAG is available by contacting Mead Mier, PAG's Watershed Planning Lead, at MMier@PAGregion.com to register. The next event will take place on December 16 and ability to conduct a full day 9-mile hike is required. Participants are welcome to join, to help contribute wildlife identification, and encouraged to bring these standardized methods to additional streams in arid lands. Space is limited. Carpooling can be provided but four -Wheel drive vehicles are a great asset if you can contribute to the caravan.

PAG's HYDROLOGIC MONITORING on lower Cienega Creek in the Pima County Natural Preserve reveals that drought impacts have been noticeable since 2002. Cienega Creek experienced record breaking drought conditions in for three consecutive years until we saw marginal improvements in 2015 and 2016 but levels still remain well below pre-drought conditions. Because surface water base flows and groundwater are strongly correlated, these trends parallel each other.

PAG conducts flow mapping quarterly to track miles of baseflow that is found segmented through the length of the stream channel. Baseflow is the groundwater fed streamflow that is not influenced by any immediate rainfall runoff. The driest times of year show the minimal perennial extent while the wetter times of year reveal the full habitat available and connectivity between segments that characterize our streams through late summer and mid-winter. PAG's methodology has been shared and coordinated with groups across the state and PAG provides results important for

RIVER RUN NETWORK. Watershed Management Group (WMG)'s newly forming **River Run Network** is an online platform to help stakeholders, including residents, learn and share about local target restoration areas, priority actions, and progress towards stewardship goals.

View water budgeting plans that will sustain our precious resources by working together. CWP has partnered with WMG with a result that Ciénega Creeks is one of 3 pilot streamsheds in the region.

Join the River Run Network and take the pledge as part of this web platform. Go to: https://watershedmg.org/advocacy/50-year/river-run-network

To catch up on WMG activities, read the Fall 2016 newsletter at: https://watershedmg.org/article/catch-our-current-fall-2016-newsletter

Submittted by: Mead Mier
Sustainability Coordinator - Watershed Planning Lead
Pima Association of Governments
Cienega Watershed Partnership Vice-Chair

MONITORING IN A SEMI-ARID GRASSLAND

Gita Bodner and Marcos Robles

A very pertinent new paper on drought studies at Las Cienegas National Conservation Area by Gita and Marcos was just published: *Enduring a decade of drought: Patterns and drivers of vegetation change in a semi-arid grassland*" in the Journal of Arid Environments. This paper looks at changes in plant and ground cover in Las Ciénegas between 2004 and 2014. This time period included some of the driest seasons on record. In addition to documenting grassland conditions across this working landscape, their analyses evaluated several potential drivers of these changes. Their study illustrates the value of monitoring and partners in this work.

Highlights include:

- In 11 years of hot drought, perennial grass basal cover and shrub cover both declined, while leaf litter increased and Lehmann lovegrass expanded.
- Several species of perennial grass showed die-offs during the driest years but mortality was patchy.
- Declines were associated with low rainfall in January–June "extended spring" season – contributing to a small but growing set of evidence that C4 "warm season" grasses in this region are vulnerable to cool-season droughts.
- Soil and topography mediated how drought affected plant and ground cover.
- Despite drought impacts, ground cover and grass diversity persisted.

For the entire article, go to www.azconservation.org.

As a special note for the Biological Planning Newsletter, Gita and Marcos add: "We thank the many people who contributed to collecting and discussing this data, especially BLM and NRCS staff, grazing permittees, volunteers, and other Biological Planning stakeholders."

UPLAND SUMMARY MONITORING TABLE

Key area monitoring results, 2004-2016, point intercept methods

Bare ground basal cover %

Pasture	Key Area	Season of use	Objective	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Most recent
Trap #1	1	intermed.	30	51.4	40.8	49.6	18.3	36.2	34.2	28.8			15.9	10.7	48.6	31.4	31.4
North	2	intermed.	20	9.9	9.6		12.9			2.3		1.1	7.1	5.0	4.9	15.4	15.4
North	3	intermed.	30	13.1	14.5		23.0			16.5		1.1	10.0	8.8	9.9	5.5	5.5
North	4	winter	30	21.5	20.0		20.4			3.9				0.9			0.9
Upper 49	5	winter	30	16.5	25.5		32.2			21.6							21.6
Rockhouse	6	winter	30	13.5													13.5
Rockhouse	7	winter	30	19.4													19.4
North	8	intermed.	30	51.8	58.5	46.4	21.1	18.6	12.1		20.4	7.4	16.0	11.8	16.8	31.9	31.9
Alamo Solo	9	intermed.	30	36.4	42.9	54.2		47.4		27.8		26.5		17.9			17.9
Johnson	10	summer	30	20.9	20.3	37.3	5.2	6.4	11.2		9.2	10.1		3.5		16.2	16.2
Hilton	11	summer	20	7.2	5.4	11.5	8.1	2.8		2.6		1.2					1.2
Hilton	12	summer	30	18.1	28.0	31.9	11.3	13.1	17.2	16.5		5.5			21.65		21.7
Beck	13	summer	30	26.9	47.7	49.2	42.5	13.3	10.5	10.2	11.5	5.2	5.7		13.57		13.6
Davis	14	summer	30	25.7	22.6	26.0	11.2	4.0	3.0	4.0	5.2	1.7	6.1	2.3	6.6		6.6
Davis	15	summer	20	16.2	8.0	7.5	11.4	8.0	8.8		3.7	1.0					1.0
Springwater	16	winter	30	22.3	29.3	32.1	35.1	21.0	21.5		10.0	9.5	4.8		38.5	25.8	25.8
West grazed	17	intermed.	30	32.7	23.9	23.4	10.8	12.2	10.0	14.5	17.5	3.5	7.0	5.2	11.6	28.5	28.5
exclosure	18	intermed.	30	19.4	16.7	25.3	11.5	13.5	10.3	7.8	10.4	2.8	5.4	5.6	10.6	16.6	16.6
5 Wire	19	summer	30	23.9	24.0		6.9	18.5									18.5
Lower Mattie	20	summer	30	28.1													28.1
Fresno	22	winter	30	26.4	24.8			22.0	18.4		13.7	11.4	3.1	9.0	15.8		15.8
Triangle	23	winter	30	10.0	10.3			7.5						14.5			14.5
Mac's Sacator	30	winter	30	23.2	25.6			16.7				1.6					1.6
Springwater g	31	winter	30	47.3	42.2			35.9	13.2		26.5						26.5
Springwater o	33	winter	30			41.7	35.1	27.3	22.3		9.0	4.2				30.3	30.3
Springwater e	34	winter	30			51.4	36.2	28.9	25.8		11.8	0.9				35.8	35.8
Screwworm o	35	winter	30			37.8											37.8
Screwworm e	36	winter	30			41.3											41.3
Wood out	37	winter	30			43.7			16.1		4.8	0.5			9.7	14.0	14.0
Wood excl	38	winter	30			43.1			9.0		2.9	0.7			8.7	14.3	14.3
Apache out	39	winter	30			44.1		30.8	17.8	11.0		5.6					5.6
Apache excl	40	winter	30			45.9		21.3	23.5	13.1		5.5					5.5
Maternity	41	intermed.	30			39.0	20.8	9.9	12.5	18.0	18.7	6.5	13.0	9.1	17.7	22.0	22.0
Empire	42		30							9.9	4.8	3.3			15.6	18.9	18.9
North	44		30							12.3		7.7		0.8	2.3	12.3	12.3
Trap #2	46		30						43.7		32.3	32.3					32.3
Enzenburg	47b		30						29.7	20.7	42.3	26.3			26.8	27.3	27.3
Blue Hilton	49		30						13.9	8.2	7.7	7.0	2.7		7.6		7.6

paired exclosure and grazed plots

Mesquite removed

Many factors affect cover including recent & past precipitation, temperatures, other drought effects, historic and recent livestock use, soil, topography, historic soil erosion, shrub invasion, recreational use, exotic plants, wildlife use, etc.

does not meet objective

meets objective

meeting	
#	31
%	82%

Monitoring Table continued: Submitted by Gita Bodner

Key area monitoring results, 2004-2016, point intercept methods

Pasture	Ecological site	Key Area	Objective	Perennial grass basal cover %													
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Most Recent
Trap #1	SaLoUp/LoUp	1	8	9.5	3.6	5.6	2.5	4.8	4.4	5.3			0.6	1.3	2.7	3.0	3.0
North	LoHi	2	8	12.7	18.0		6.8			13.5		6.5	6.1	7.4	10.8	7.1	7.1
North	LoHi	3	7	7.5	11.7		5.7			8.3		2.6	3.4	3.6	9.3	11.1	11.1
North	VoHi/LiSl	4	5	4.2	3.4		4.2			10.3				6.5			6.5
Upper 49	SaLoUp/LoUp	5	5	2.8	5.1		3.9			4.6							4.6
Rockhouse	VoHi/LiSl	6	5	4.0													4.0
Rockhouse	VoHi/LiSl	7	5	3.8													3.8
North	SaLoUp/LoUp	8	8	7.9	4.2	7.8	9.0	8.3	11.9		6.3	4.3	4.5	12.5	6.9	7.5	7.5
Alamo Solo	SaLoUp/LoUp	9	8	10.5	4.7	7.7		7.0		9.1		4.8		3.6			3.6
Johnson	SaLoUp/LoUp	10	#	26.8	10.6	15.8	13.7	15.6	18.2		8.4	11.1		0.9		14.1	14.1
Hilton	LoHi/LiSl	11	8	20.3	16.1	12.0	15.9	18.4		17.2		14.1					14.1
Hilton	LoHi/LiSl	12	7	11.0	9.7	3.4	14.5	12.4	8.6	11.3		11.5			9.87		9.9
Beck	LoUp/Sw	13	9	18.9	13.7	8.9	9.6	11.3	9.3	18.5	12.1	17.5	12.2		14.27		14.3
Davis	LoUp/Sw	14	#	29.6	26.7	13.6	11.2	15.7	23.1	17.9	19.0	12.5	10.9	14.4	13.9		13.9
Davis	LoUp/Sw	15	7	22.5	22.5	6.3	6.7	11.4	10.6		6.4	6.1					6.1
Springwater	SaLoUp/LoUp	16	8	20.4	11.7	4.7	5.5	10.3	7.8		5.7	4.0	5.2		13.9	12.0	12.0
West grazed	LoUp/Sw	17	9	12.4	19.3	16.0	12.5	15.0	13.5	11.9	5.4	5.8	5.6	6.0	10.8	15.6	15.6
exclosure	LoUp/Sw	18	9	17.8	24.8	19.5	10.9	11.4	11.7	14.1	9.7	9.7	6.6	9.2	7.0	12.3	12.3
5 Wire	LiSl/LoUp	19	10	19.0	26.7		13.9	23.4									23.4
Lower Mattie	LiSl/LoUp	20		9.4													9.4
Fresno	LiSl	22	5	5.9	4.3			6.8	6.9		7.3	2.6	5.3	11.2	14.3		14.3
Triangle	BaHi	23	5	1.7	5.1			2.9						5.0			5.0
Mac's Sacator	LiSl/LoUp	30	8	11.3	8.0			5.8				5.9					5.9
Springwater g	LiSl/LoUp	31	8	5.3	5.0			3.1	7.0		4.9						4.9
Springwater o	LiSl/LoUp	33	5			0.4	0.9	3.6	4.7		7.4	3.8				6.3	6.3
Springwater e	LiSl/LoUp	34	5			1.3	1.8	3.8	5.5		8.6	3.0				6.0	6.0
Screwworm o	VoHi/ShUp/ClHi	35	5			7.8											7.8
Screwworm e	VoHi/ShUp/ClHi	36	5			6.0											6.0
Wood out	LiSl	37	5			1.6			5.0		4.1	2.0			4.3	4.4	4.4
Wood excl	LiSl	38	5			2.2			4.8		8.4	4.2			5.1	4.7	4.7
Apache out	LiSl	39	5			0.4		2.7	2.4	4.0		1.8					1.8
Apache excl	LiSl	40	5			0.1		2.2	3.7	5.7		2.9					2.9
Maternity	LoUp/Sw	41	8			7.2	7.7	13.1	9.3	9.6	4.4	6.2	3.5	6.5	11.2	8.2	8.2
Empire	LoHi	42	7							14.3	13.2	5.1			9.4	12.0	12.0
North	LoHi	44	7							8.8		0.7		2.6	17.2	6.3	6.3
Trap #2	SaLoUp/LoUp	46	8						4.6		3.0	2.7					2.7
Enzenburg	SaLoUp/LoUp	47b	8						6.7	8.7	7.5	7.4			5.9	11.4	11.4
Blue Hilton	LoUp/Sw	49	9						14.7	18.9	16.0	13.5	12.2		10.2		10.2

BaHi: Basalt Hills. LiSl: Limy Slopes. LoUp: Loamy Uplands
LoHi: Loamy Hills. Sw: Swales. SaLoUp: Sandy Loam Uplands.
VoHi: Volcanic Hills. ShUp: Shallow Uplands. ClHi: Clay Hills.

meeting objectives:

#	22
%	58%

WHAT WE LEARNED

Ian Tomlinson

We were able to graze both Hilton and Davis more effectively this year than 2014. The cattle spread out more, used previously unused areas and stayed out of the bottoms more. In Davis pasture, we used the flats above at Lower Elgin Road better. We put all the feeders up top by Lower Elgin Road and down the power line road. This enabled us to more effectively keep the cattle up high, in the draws and out of the two bottoms in both East and West Davis pasture. In order to more effectively utilize the top portions of the pasture, we may need to also run water to it.

In the Hilton pasture, we placed the supplement feeders and mineral high up Road Canyon, above Cornwall Tank and along the fence line between Springwater and Hilton pastures (north end). We also used the new water at Mud Springs. This combination kept the cattle out of the bottom of Road Canyon and the bottom of the Hilton pasture. The heaviest grazing was high on the north end of the pasture. This was the first time that utilization was heaviest in this location. Looking to the future, we will change and not concentrate the feeders on the fence line, but rather space them out throughout the pasture. The goal is to have the cattle spread out and evenly graze the Hilton Pasture; using both the bottoms and the higher ground.

In good rain summers, we have the ability to rest one of the pastures and only use two. This can be accomplished by keeping the cattle in the Sacaton pastures a little longer and spreading the cattle out in the upland pastures. Also, monitoring rainfall and amounts in the two pastures grazed is imperative.

Cieneguita May 2014 Biological Planning

PROJECTS THAT NEED NEPA AND/OR ASLD APPROVAL (Still pending)

Ian Tomlinson

1. Cross fences in North pasture and Springwater pastures.

2. Artesian Well project.

3. Road Well Project.

4. Frog Well Project.

5. Lower Hilton Windmill Project.

6. Pipeline from Diamond A northwest to back of North Pasture. Install 5000-gallon storage tank and two livestock troughs.

7. Pipeline from North well northwest to back of North pasture and southern end of Upper 49 pasture. Install 5000-gallon storage tank and one livestock drinker in each the North pasture and Upper 49 pasture.

Cottonwood Tank Project June 2015

SPRING SUMMER 2016 GRAZING ROTATION

Ian Tomlinson

May 1 to 15 thru July 15: **480 cows in West Sacaton pastures, 500 Acres West, Cieneguita, Bills, Gardner, Little Hummel. Waters used are Rattlesnake, Bills, Oil Well, Cottonwood and Hummel House.**

Actual: May 1 to July 29: 422 cows and 20 Bulls from West River to Blue Pasture. REASON: We had early rains and then a significant dry spell in the middle of July. The cattle were content in the Sacatons so we thought it was prudent to let the upland pastures (Davis) rest as long as possible.

May 15 to 20 to July 15, 2016: **526 cows in East Sacaton pastures, Mac's, 500 Acres East, 5 Wire, Hummel Sacaton, and Hilton Sacaton. Waters used are Cinco Ponds, Irrigation Well, Cienega House Tank, Lane Tank, and Hummel Pothole.**

Actual May 1 to July 15: 305 cows and 11 bulls from East River to Blue Pasture.

July 15 to August 15: **1006 cows and 65 bulls in both Davis pastures.**

Actual July 16 to July 29 305 cows in Davis Pasture.

July 29 to August August 7 750 cows Davis Pasture.

August 7 to August 31 1031 cows 48 Bulls in Davis Pasture.

REASON: Late rains. We slowly added cattle to Davis pasture because the rains were late and we held them longer because the pasture was holding up well to utilization. In addition, we decided to rest Springwater pasture for the summer. Springwater received the least amount of rain for the months of July and August. The Hilton pasture received good rains in July and August.

August 15 to September 30: **1006 cows and 65 bulls (Possibly add 100 first calf heifers depending on the rain) ****

Actual August 31 to September 24 1031 cows in Hilton pasture.

September 30 to October 3: **1006 cows in Blue trap. Will wean calves and sort out dry cows. Expect to have approximately 75 dry cows.**

Actual: 1031 cows September 25 to September 27

October 3 to November 30: **930 cows in Hilton pasture.**

Actual: 969 cows in Hilton pasture September 27 to November 7.

Actual: 884 cows to Springwater pasture through Hilton.

Actual: Total of 102 cows West (added 71 on November 11)

October 3 thru November 30 : **60 cows Beck Pasture.**

Actual 31 cows in West pasture 61 bulls Beck Pasture. REASON: Dirt tank in Beck did not have much water and we had many fewer dry cows.

September 15 thru November 30: **60 bulls Davis pasture or move to Vera Earl.**

Actual: 61 bulls November 15 through March 1 in Davis pasture.

▲

PROPOSED FALL AND WINTER 2016/2017 GRAZING ROTATION

Ian Tomlinson

November 11 thru December 1: 884 cows in Hilton and Springwater Pastures

September 26 thru November 18: 61 Bulls in Beck Pasture

November 11 thru March 1: 102 cows in West Pasture

November 18 thru March 1: 61 bulls in Davis Pastures

December 1 thru December 31: 884 cows in Springwater Pasture

December 31 thru May 1: 100 cows in Alamo Solo Pasture

December 31 thru May 1: 150 cows Fresno Pasture

December 31 thru May 1: 100 cows North pasture

December 31 thru May 1: 75 cows Upper Mattie pasture

December 31 thru May 1: 350 cows Apache pasture

December 31 thru May 1: 100 cows Upper 49 pasture

December 31 thru May 1: 84 cows Springwater Pasture

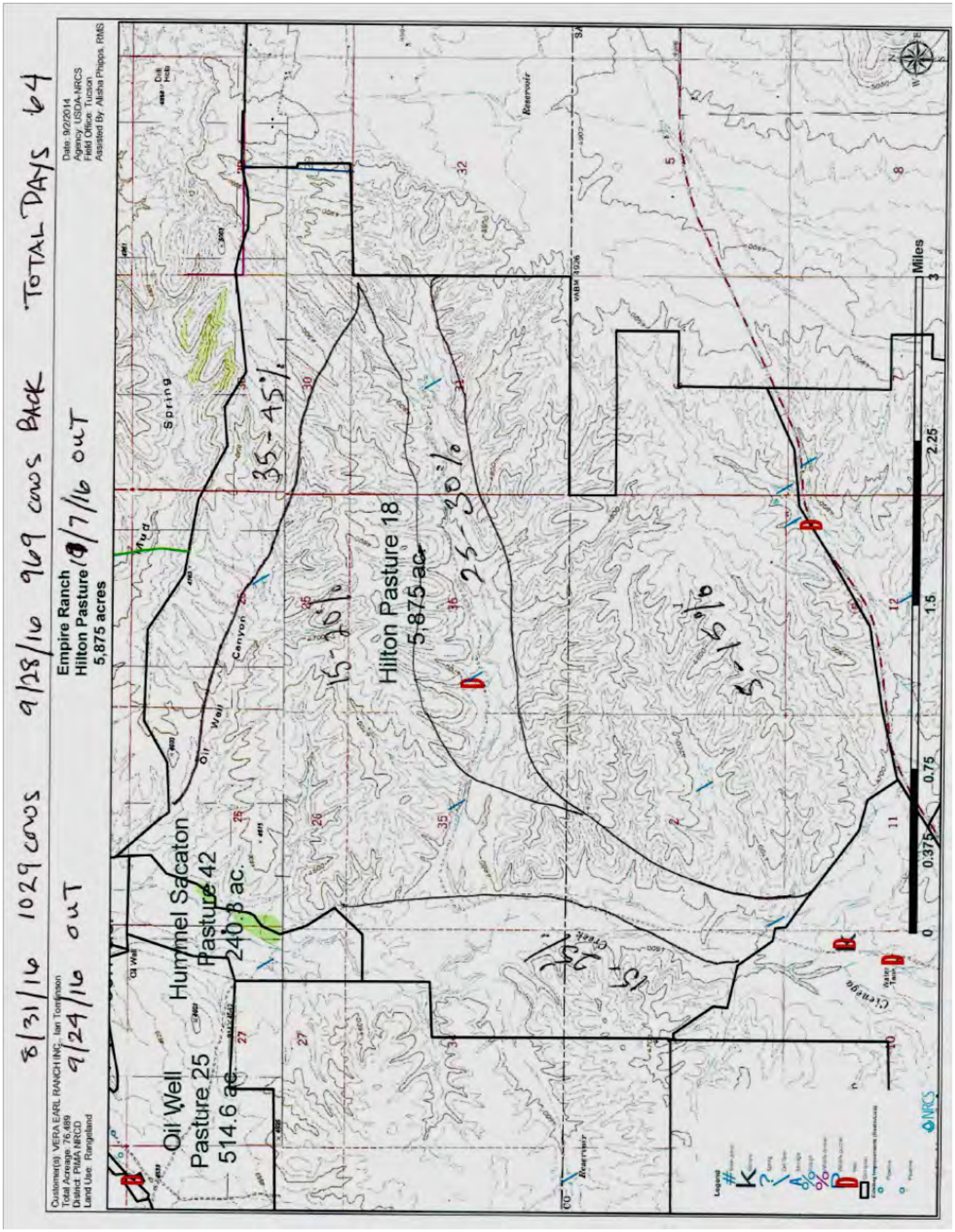
March 1 thru May 1: 102 cows Maternity

March 1 thru May 1: Use Lower Mattie to gather cattle to

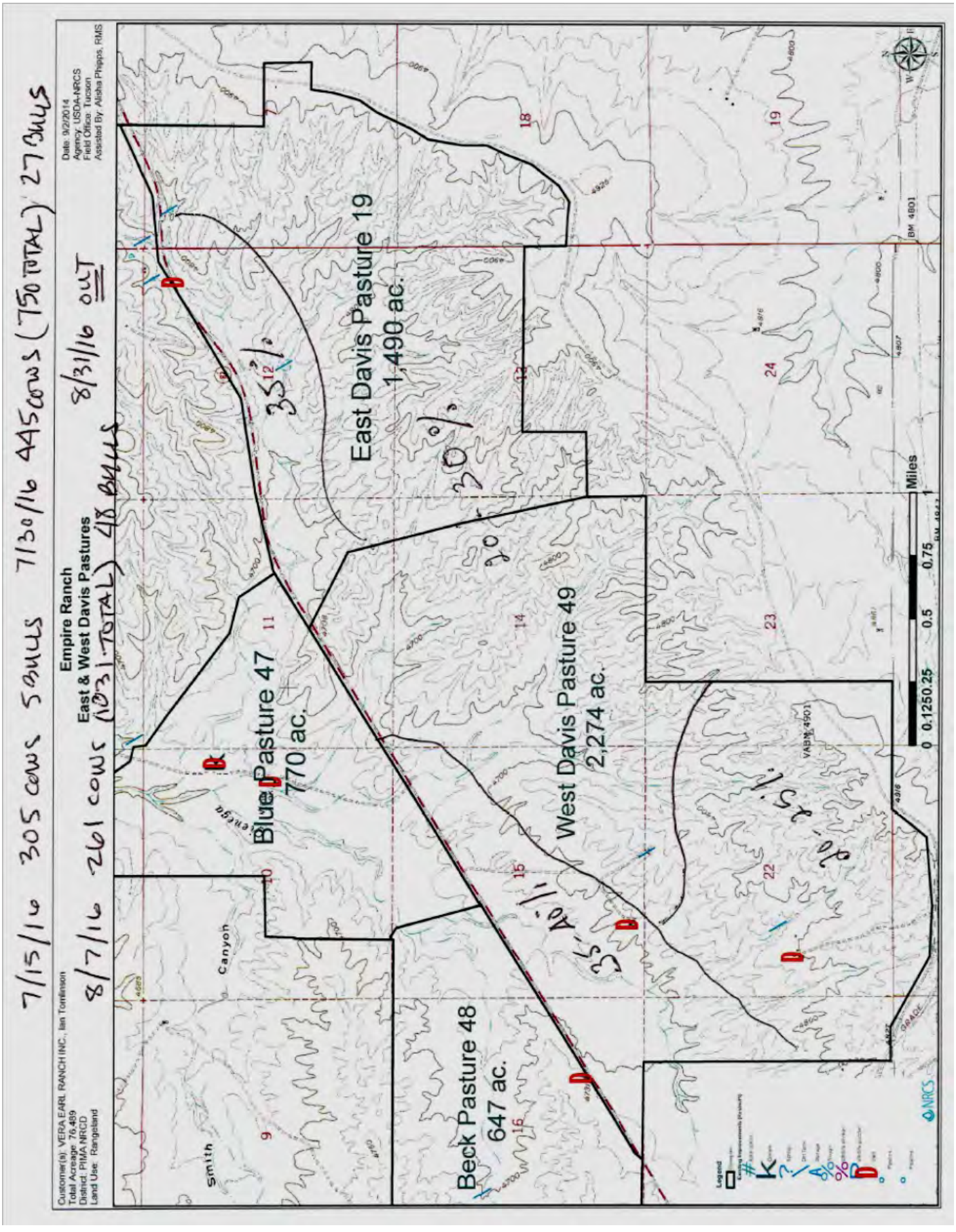
November 15 thru March 1: 55 bulls in Beck pasture

How to snip for utilization—Biological Planning April 27, 2012 West Pasture

PASTURE MAPS



PASTURE MAPS



Watershed Management Group-Cienega Watershed Partnership -Bureau of Land Management Tucson-Restoration Prioritization Project

Trevor Hare, WMG

With funding from the BLM, the CWP has enlisted WMG to lead the effort in creating a restoration plan to begin the process of revitalizing and conserving Ciénega Creek. To remind biological planning folks, Cienega Creek is located in one of the Tucson basin's rare shallow groundwater area and has more than 280 native species, several of them threatened or endangered. Both riparian animal and plant species have threats. The creek's banks are suffering from erosion and an influx of non-native invasive species that choke out important native species.

From our years of collaborative work at Las Cienegas, we already know that both individual property owners, and local and federal agencies are passionate about creating a brighter future for the watershed. Through a stakeholder prioritization process WMG is seeking input from these stakeholders in work group meetings where we ask folks what's important to you and how do we protect it. A prior effort to train individuals through hands-on restoration at Las Cienegas was done by CWP in partnership with Sky Island Alliance. This current effort takes a larger landscape view but will eventually offer hands-on training as well.

The 2016-2017 efforts. A steering committee was formed to guide the development of a flow chart for decision making for upland, arroyo and riparian restoration, and use our collective knowledge to ID areas to investigate. Example criteria included high risk, important/resource value, position in watershed, scale of impact, achievability, knowledge, land owner sensitivities, accessible, management/jurisdiction, affordable, clearances. Shela McFarlin, Mead Meir, Gita Bodner, Ben Lomeli and Dave Murray participated.

With the help of Amanda Smith, UA graduate student and PAG summer intern, we produced a draft GIS map of issues and opportunities. With Amanda, we developed a modelling approach to help weight factors in the decision-making process and a site-specific knowledge acquisition form.

2010 Zeedyk Workshop

Restoration Prioritization Project continued

Engaging the LCNCA Technical Teams, we conducted four meetings with experts to review data, proposed criteria and provide input on implementation. The project was presented at Science on the Sonoita Plain Symposium, and at the Sentinel Landscape Restoration Partnership meeting. The CWP watershed indicators and State of the Watershed processes are also important to this project.

Current work includes collaborating with a wider partnership (CWP) for peer review and site specific knowledge acquisition efforts. This includes meetings with the FROG project personnel, the US Forest Service, more BLM personnel, and local landowners. Ground truthing will be conducted where needed to improve map. We will finalize the knowledge acquisition form and model/flow chart to represent prioritized and achievable projects as a results of feedback from Steering Committee and Restoration Assessment Teams. We will also document the whole process to guide our efforts related to erosion control, riparian restoration, training, and outreach to people living, working and recreating in the watershed. Contact Trevor Hare, Mead Mier or Ben Lomeli with your questions (and answers).

DON'T FORGET TO CHECK OUT THE NEW WEBSITES

FOR CIENEGA WATERSHED PARTNERSHIP cienega.org

Send short news notes and views to outreach@cienega.org for posting.

THE APPLETON-WHITTELL RESEARCH RANCH researchranch.audubon.org

Contact Linda Kennedy about the RR website

YES! YOUTH ENGAGED STEWARDSHIP

CHRIS IN-ALBON, EMPIRE HIGH SCHOOL

For the third year in a row, student chose to work at the Gardner Sacaton restoration site. Past summers had implemented different techniques to mitigate soil erosion, planting of salt tolerant sacaton and fencing off an area to control grazing affects. This summer students decided to focus work within the fenced section of the restoration site. Larger salt tolerant sacaton starts were planted in clusters, both adjacent to existing mature grasses and in open eroded areas to test success rates. Working with Jason Field, UofA soil ecologist, students also transplanted bio-crust from healthy ecosystems into the fenced area. Students systematically designed study plots in order to best determine transplant rates and establishment of healthy crust.

Students in Empire High School's Environmental Science class are monitoring the restoration site throughout the 2016/2017 school year. To date the students have found that the sacaton grass plugs that were planted in groupings and clusters are all thriving and healthy after our substantial summer rains. The sacaton grass plugs that were planted independently were still green at their bases, but not as robust as those planted in groupings.

The bio-crust that was transplanted into the study area is also being monitored. YES! students had placed he crust in meter square plots that were subdivided into 4 subplots. The subplots received one of the following treatments of bio-crust: a. top 1/4in of soil displaced and crust placed in dense clumps b. top 1/4in of soil displaced and crust placed in small patches well spaced apart c. no top soil removed and crust placed in dense clumps d. no top soil removed and crust placed in small patches well spaced apart.

Empire High School students have found that the bio-crust that was placed in areas where 1/4in of top soil had been removed was established and appeared healthy. Interestingly, in 2 areas of the restoration site it appears as if run-off from the heavier summer rains carried the bio-crust out of the sub plots where they re-established and appeared healthy.

Summer participants planted a few sacaton starts outside of the fenced area, adjacent to french drainage structures that they constructed in an area of heavy erosion. Bio-crust was also placed around the grass plugs. During field visits this Fall, no sign of the grass starts or bio-crust were found.

Biological Planning is a collaborative process to implement the flexible management prescriptions in the LCNCA RMP (with emphasis on livestock grazing management) using the best available science and with opportunity for meaningful stakeholder involvement to reduce conflicts.

Some contacts:

Tahnee Robertson, tahnee@swdresources.com
Karen Simms, ksimms@blm.gov
Shela McFarlin, shela_mcfarllin@yahoo.com

BLM Tucson Field Office 520-258-7200
3201 E. Universal Way, Tucson, AZ 85756

Web sites and links:

Google site: http://sites.google.com/site/lcncaadpativemanagement/

Cienega Watershed Timeline: http://apps.tucson.ars.ag.gov/cienegatimeline/

Cienega Watershed Partnership: www.cienega.org

Photographs: Thanks to Tahnee Robertson, Shela McFarlin, Mead Mier, Gita Bodner, Annamarie Schaecher

SCIENCE ON THE SONOITA PLAIN ——June 3, 2017 —- 9th Annual Symposium

The Planning Committee is forming a program to include invited presentations, papers and posters.

Contact Larry Fisher at lafisher@email.arizona.edu to propose a topic.

Proceedings for 2016 and previous years: go to www.cienega.org/projects/science/sonoita-plain/

or to the Research Ranch Library at http://researchranch.audubon.org/landing/library/science-sonoita-plain