

Review of UH Academic Centers and Institutes for FY 2014

Information and Contacts:

Center or Institute Name: University of Houston Coastal Center

Year Established (1972):

Website Address (url): <http://www.uhcc.uh.edu/>

Director:


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11/11/2014
Date

University of Houston Coastal Center

Annual Report for 2013-2014

Introduction and historical context

The University of Houston Coastal Center (UHCC) was formally established by President Hoffman in 1968. From 1976 to 2010, it was administered by Dr. Glenn Aumann. During Dr. Aumann's tenure, the primary missions of the UHCC were support of graduate students (in the form of small grants) and support of research (by providing access to pristine prairie and large open spaces as needed). During this time, the UHCC did not capture IDC return from funded projects, and it operated as a free University facility.

Drs. Steven Pennings (Biology and Biochemistry) and Barry Lefer (Earth and Atmospheric Sciences) assumed responsibility for administration of the UHCC in September 2010, with Pennings serving as Director and Lefer as Assistant Director. A five-year strategic plan for the UHCC was developed in 2010 following discussions with Dr. Birx, Vice President for Research. This plan emphasized growing the externally-funded research mission of the UHCC. Subsequent direction from the Vice President for research emphasized the importance of diversifying the user base among multiple colleges.

Over the following four years, University-wide budget cuts, coupled with repeated turnover in leadership and vision at the Division of Research, made the 2010 plan irrelevant. Pennings and Lefer have continued to recruit new faculty to work at the UHCC and to pursue short-term opportunities for the institute. The major impediment to these efforts is uncertainty over the long-term future of the UHCC.

In September 2014, the Vice President for Research and the Dean of the College of Natural Sciences and Mathematics agreed that the UHCC would start reporting to NSM instead of DOR. The major immediate need for the UHCC is to develop a new funding and strategic plan in cooperation with the Dean of NSM that provides a measure of long-term stability for the operations of the UHCC.

B. Goals and objectives

The goals of the UHCC are to 1) develop a facility that meets the needs of environmental scientists for field sites, equipment and facilities, 2) develop a facility that meets the needs of environmental educators for field courses and informal educational activities, 3) develop a facility that provides the unique opportunity for environmental service activities benefitting Houston, Texas and the nation, and 4) foster productive collaborations among those using the UHCC.

The primary objectives over the past four years have been to 1) increase the number of faculty working at the UHCC, 2) diversify the user base among multiple colleges, 3) increase the number of academic courses using the UHCC, and 4) hold annual meetings of advisors and users to foster interactions centered on the UHCC.

C. Mission

The primary mission of the UHCC is to support environmental research on the Texas coast by providing researchers with access to field sites, equipment and facilities. A secondary mission of the UHCC is to conduct service and educational activities related to the environment.

The UHCC is the only field laboratory serving the University of Houston. It provides a unique and essential facility for faculty doing environmental research, because it provides large areas of land (~1,000 acres) where equipment or experiments can be deployed, it provides access to a highly-endangered natural habitat (pristine coastal prairie), and the equipment and experiments are fairly secure because the UHCC property is partially fenced and has a caretaker who lives on site.

By preserving a large stand of pristine coastal prairie, the UHCC is also serving the nation at large. Coastal prairie is a highly endangered habitat (less than one tenth of one percent remains), and the prairie at the UHCC is one of the highest quality prairies (as assessed by plant diversity) in the nation. Conservation NGOs and State and Federal agencies are highly aware of the conservation value of the prairie at the UHCC, and regularly express concern to the director about the long-term stability of the property.

The UHCC also provides an ideal location for field courses taught by Earth and Atmospheric Sciences and by Biology and Biochemistry. The UHCC provides access to equipment and field sites coupled with immediate access to an air-conditioned building that has laboratory space and restrooms. Work can be done outside, but it is easy to retreat inside if rain or high temperatures require it.

The UHCC may provide an ideal location for field courses in petroleum engineering, because we host wells from two oil companies on our property. We are currently exploring this possibility.

Finally, the UHCC provides a unique venue for outreach and service activities related to the environment. In particular, we work closely with groups that are restoring coastal prairie habitat by providing a seed supply. The high diversity of the vegetation at the UHCC makes seed from our facility more desirable for restoration than seed from other prairie sites.

Few of the activities conducted at the UHCC could be moved to other UH properties, and the natural habitat itself is irreplaceable.

D. Metrics

The 2010 Strategic Plan for the UH Coastal Center set out goals for increasing external funding that were based on the assumption that DOR would continue previous strong levels of support for the UHCC. Over the following four years, University-wide budget cuts that severely affected the UHCC, coupled with repeated turnover in leadership and vision at the Division of Research, and the eventual transfer of the

UHCC from DOR to NSM, have made the 2010 plan irrelevant. In the coming year, we will work with the NSM Dean to develop a new strategic plan for the UHCC that reflects our new reporting structure and funding situation.

E. UH Participants and level of participation

College of Natural Sciences and Mathematics

Department of Earth and Atmospheric Sciences

Regina Capuano (hydrology). Active.
Shuhab Khan (field course). Active.
Barry Lefer (atmospheric science, field course). Active.
Bernhard Rappenglueck (atmospheric science). Active.
Jon Snow (arctic hard rocks). Active.
Robert Stewart (geophysics, field courses). Active.
Robert Talbot (atmospheric sciences). Active.
Bob Wang (geophysics). Active.

Department of Biology and Biochemistry

Ann Cheek (field course). Course in development.
Kerri Crawford (ecology). New faculty with high interest.
Christopher Gabler (ecology). Active.
Marc Garbey (modeling). Active.
Steven Pennings (ecology). Active.
Chelse Prather (ecology). Active.
Diane Wiernasz (ecology). Active.
Larry Williams (field course). Active.

College of Architecture

Patrick Peters (graduate design). Active.

College of Education

Wallace Dominey (environmental education). Looking for opportunities.
John Ramsey (environmental education). Looking for opportunities.
Sissy Wong (environmental education). Looking for opportunities.

Cullen College of Engineering

Petroleum Engineering program. Interest in two active oil wells on UHCC property.

Effectiveness. The UHCC is providing a valuable resource to faculty in NSM, with use for research, education and outreach steadily increasing. We are engaging faculty in Architecture whose courses will assist with renovation scenarios for the UHCC. The UHCC is potentially a valuable resource for faculty in Education, but current use is in the early stages. The UHCC is potentially an extremely valuable resource for faculty in Petroleum Engineering, but they are overwhelmed trying to set up their new program, and we have not yet been able to develop this potential.

F. Outside Interactions

Academic

Rice University: Evan Siemann (ecology). Heavy involvement in previous years.
San Jose State University: Craig Clements (fire research). Active.
University of Houston Downtown: course field trips. Active.
University of New Mexico: Ken Whitney (evolution). Active.
Texas A&M: Charles Criscione (parasite life history). Active

Conservation

Native American Seed: annual seed harvests. Active.
Coastal Prairie Partnership: research, conservation, education. Active.
Texas Master Naturalists: regular seed harvests. Active.

Effectiveness. The UHCC is providing a valuable resource to a number of outside groups. In particular, we provide an extremely valuable source of seed for prairie restoration in Texas and Louisiana. There is strong community interest in the UHCC, and we would be able to do considerably more outreach activities than we currently do if we had the necessary staff.

G. Role of the Institute

Within UH

The UH Coastal Center serves a number of UH faculty, primarily in NSM, who need the space or habitats uniquely provided by the UHCC (Section E).

Regional

The UHCC serves conservation organizations in the Texas and Louisiana area by providing tours and seed for prairie conservation (Section F).

National

The UHCC serves faculty in the Houston area and nationally who need the space or habitats provided by the UHCC (Section F).

The UHCC serves the nation by conserving a pristine parcel of high-quality coastal prairie, a habitat type that is highly endangered (Section C).

Other units

The UHCC is the only field laboratory serving the University of Houston. Few of the activities conducted at the UHCC could be moved to other UH properties, and the natural habitat itself is irreplaceable.

Students

Graduate and undergraduate students are active at the UHCC through the research programs in faculty laboratories.

H. Anticipated Changes

Over the coming year, we will work with the NSM Dean to develop a new strategic plan for the UHCC that reflects our new reporting structure and provides long-term stability for the UHCC.

Pennings and Lefer are continuing to recruit new faculty to conduct research, education and service activities at the UHCC. Several faculty members who are interested but have not yet developed programs at the UHCC are listed in section E.

We intend to submit a proposal to NSF that would support renovations of some of the laboratory space at the UHCC.

As the number of users at the UHCC continues to grow, at some point it will be helpful to develop a more complex administrative/governance structure, perhaps including formal rules for membership.

I. Current Measures of Performance

(1) Personnel. The UHCC does not have an official membership process. A list of faculty who use the UHCC or are interested in doing so is provided in section E. We don't track how many postdocs or students from these labs are active at the UHCC. The UHCC has a single full-time staff person (Mr. Tim Becker) who is responsible for maintenance, security, grounds-keeping, janitorial duties, and providing logistical support to research operations.

(2) Funding. In 2013-2014 we largely relied on funding balances established in previous years for direct operations of the UHCC.

Category	2013-2014 income	Comments
Support from OVPR	\$7,455	Significant support was received in previous years and was recently received for 2014-2015.
IDC return	\$4,587	Variable among years.
Seed sales	\$7,329	Highly variable among years.
User fees	\$300	1 significant user from outside UH.
Total	\$19,671	

(3) Contracts and Grants. The UHCC does not directly receive grants; rather, faculty with grants through their departments work at the facility. A list of awards for projects active at the UHCC follows.

Awards Active during 2013-4 (\$2,158,659.00 to UH).

PI: Steven Pennings and Anna Armitage. Mangroves are invading Texas salt marshes: what are the consequences? Texas Sea Grant. \$176,603. 5/2014-4/2016. This project uses the UHCC for logistical support.

PI: Steven Pennings, Anna Armitage. Mangroves invading Texas salt marshes: does it matter? Texas Sea Grant. Total Award: \$300,000. Project Period: 6/2012-5/2014. This project uses the UHCC for logistical support.

PI: Merryl Alber, Steven Pennings. LTER: Georgia Coastal Ecosystems III. National Science Foundation. \$5,880,000. UH budget \$292,021. 2012-2018. This project uses the UHCC for logistical support.

PI: Guoquan Wang. Title: TUES (Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics): Integrating GPS and LIDAR into geosciences education. Sponsor: NSF. Project period: October 1, 2013—September 30, 2016. Total Award: \$168,187.

PI: Guoquan Wang, co-PIs: Ramesh Shrestha, T. C. Hsu, Shuhab Khan, and Barry Lefer, "MRI: Acquisition of GPS Equipment for Establishing a Continuously Operating Dense GPS Network in Houston Metropolitan Area for Urban Natural Hazards Study" (G105029) National Science Foundation [\$401,374] September 2012 – August 2015.

PI: Barry Lefer, co-PI: James Flynn, "Monitoring related to ozone formation in and particulate transport into the Houston region" (G108439) Texas Commission on Environmental Quality [\$189,000] April 2014 – June 2015.

- PI: Barry Lefer, “Analysis of Surface Particulate Matter and Trace Gas Data Generated during the Houston Operations of DISCOVER-AQ” (G107731) Air Quality Research Program [\$109,635] April 2014 – June 2015.
- PI: Barry Lefer, “Improved Analysis of VOC, NO₂, SO₂ and HCHO data from SOF, mobile DOAS and White cell DOAS during DISCOVER AQ” (G107840) Air Quality Research Program [\$23,080] April 2014 – June 2014.
- PI: Barry Lefer, “Houston Aerosol Characterization and Health Experiment (HACHE)” (G106085) Houston Endowment, Inc. [\$228,759] April 2013 – May 2015.
- PI: Barry Lefer, “Ozonesonde Releases in Southeast and East Texas” (G106666) Texas Commission on Environmental Quality [\$80,000] February 2013 – December 2013.
- PI: Barry Lefer, “Monitoring Related to Ozone Formation in the Houston Region” (G106624) Texas Commission on Environmental Quality [\$190,000] February 2013 – April 2014.
- PI: Charles Criscione, William Font. NSF DEB # 1145508 “Biodiversity in the parasitic fluke genus *Alloglossidium*: Evolutionary origins of changes in life cycle complexity”.
- PI: Ken Whitney, Loren Rieseberg. National Science Foundation DEB 1257965. Repeatability and genetic architecture of adaptive introgression: a long-term experimental evolution study in sunflowers.

Pending Awards

- PI: Barry Lefer, "Urban System Science for Sustainable Atmospheres (US3A) SRN", (T11767) National Science Foundation, [\$725,452] January 2015 - December 2019.
- PI: Chelse Prather. Pennings is Senior Personnel. NSF. Are micronutrients important in structuring plant and herbivore communities? A test in coastal tallgrass prairie.
- PI: Steven Pennings, Linda Blum, Sergio Fagherazzi, Christine Hladik, James Morris. Macrosystems Biology: global warming and the resilience of salt marshes to sea-level rise. NSF. \$2,691,984. 2/2015-1/2020. This project would use the UHCC for logistical support.
- PI: Steven Pennings, Anna Armitage, John Kominoski, Paolo D’Odorico, Jose Fuentes. Collaborative Research: Predicting the functional implications of ecological regime shifts in coastal wetlands. NSF. This project would use the UHCC for logistical support.

Likely Submissions in near future

- Field Station Marine Laboratories Facilities Grant. Pennings will lead in collaboration with Lefer and Ottinger.

(4) Expenditures. The UHCC does not have a business manager and relies on staff in the department of Biology and Biochemistry to handle our accounts. We are currently not able to recompense the department for this service. Major expenses were funding for the UHCC caretaker, who provides grounds-keeping, maintenance, security, janitorial and research services, and a postdoc, who has now moved on to a faculty position elsewhere.

Category	2013-2014 Expenditures	Comments
Salary	\$92,306	UHCC caretaker (Tim Becker) and postdoc (Chelse Prather).
Fringe	\$3,193	
M&O	\$18,921	Maintenance expenses, matching or seed funding for research projects.
Travel	\$1,225	Matching or seed funding for research projects.
Total	\$115,645	

(5) Publications and Presentations. Below we list publications from 2012-2014.

In review or in press

Bittebiere, K., M.Garbey, M.Smaoui, B.Clement and C.Mony, A comparative study of plastic and non-plastic plant individuals under competition: importance of clonal architecture determinants, to appear in *Evolutionary Ecology*.

Wang, Y. L. Zhu, E. Siemann and J. Ding. Repeated damage by specialist insects suppresses the growth of a high tolerance invasive tree (22 pages, 1 Table, 2 Figures, in review, *Biocontrol*)

Whitney, K. D., K. W. Broman, N. C. Kane, S. M. Hovick, R. A. Randell, and L. H. Rieseberg. in review. QTL mapping identifies candidate alleles involved in adaptive introgression and range expansion in a wild sunflower. *Molecular Ecology*.

Yang Q., S. Wei, L. Shang, J. Carrillo, C.A. Gabler†, S. Nijjer, B. Li, E. Siemann. Mycorrhizal associations of an invasive tree are enhanced by both genetic and environmental mechanisms (27 pages, 2 tables, 3 figures, in review, *Ecography*)

Yang Q., B. Li, and E. Siemann. The effects of fertilization on plant-soil interactions and salinity tolerance of invasive *Triadica sebiferum* (25 pages, 3 tables, 5 figures, in review, *Plant & Soil*)

2014

- Ahern, J. R. and K. D. Whitney. 2014. Sesquiterpene lactone stereochemistry influences herbivore resistance and plant fitness in the field. *Annals of Botany* 113: 731-740.
- Ahern, J. R. and K. D. Whitney. 2014. Stereochemistry affects sesquiterpene lactone bioactivity against an herbivorous grasshopper. *Chemoecology* 24: 35-39.
- Carrillo J., D. McDermott, and E. Siemann. 2014. Loss of specificity: Native but not invasive populations vary in tolerance to different herbivores. *Oecologia* 174: 863-871.
- Gu X., E. Siemann, L. Zhu, S. Gao, Y. Wang, and J. Ding. 2014. Invasive plant population and herbivore identity affect latex induction. *Ecological Entomology* 39:1-9.
- Guo, H., K. Więski, Z. Lan and S. C. Pennings. 2014. Relative influence of deterministic processes on structuring marsh plant communities varies across an abiotic gradient. *Oikos* 123:173-178. DOI: 10.1111/j.1600-0706.2013.00425.x.
- He, Q., M. D. Bertness, J. F. Bruno, B. Li, G. Chen, T. C. Coverdale, A. H. Altieri, J. Bai, T. Sun, S. C. Pennings, J. Liu, P. R. Ehrlich, B. Cui. 2014. Economic development and coastal ecosystem change in China. *Scientific Reports* 4:5995, DOI: 10.1038/srep05995.
- Holland, J.N. and F. Molina-Freaner. 2013. Hierarchical effects of rainfall, nurse plants, granivory, and seed banks on cactus recruitment. *Journal of Vegetation Science* 24: 1053-1061.
- Holland, J.N., Y. Wang, S. Sun, and D.L. DeAngelis. 2013. Consumer-resource dynamics of indirect interactions in a mutualism-parasitism food web module. *Theoretical Ecology* 6: 475-493.
- Hovick, S.M., and K. D. Whitney. 2014. Hybridization is associated with increased fecundity and size in invasive taxa: meta-analytic support for the hybridization-invasion hypothesis. *Ecology Letters* 17: 1464–1477.
- Huang, W., E. Siemann, L. Xiao, X. Yang, and J. Ding. Species-specific defense responses facilitate conspecifics and inhibit heterospecifics in above-ground herbivore interactions. *Nature Communications* 5: 4851. doi:10.1038/ncomms5851
- Malek, S. and M. Garbey, Improving Volunteer Computing Scheduling for Evolutionary Algorithms, *Future Generation Computer Systems*, Vol 29 Issue 1:pp1-14, 2013.
- Pennings, S. C., B. D. McCall and L. Hooper-Bui. 2014. Effects of oil spills on terrestrial arthropods in coastal wetlands. *Bioscience* 64:789-795. DOI:10.1093/biosci/biu118.
- Sharitz, R. R., Batzer, D. P. and S. C. Pennings. 2014. Ecology of freshwater and estuarine wetlands: an introduction. In, D. P. Batzer and R. R. Sharitz, eds. *Ecology of Freshwater and Estuarine Wetlands*. Second edition. University of California Press. In press.

- Sharitz, R. R. and S. C. Pennings. 2014. Development of wetland plant communities. In, D. P. Batzer and R. R. Sharitz, eds. Ecology of Freshwater and Estuarine Wetlands. Second edition. University of California Press. In press.
- Whitney, K. D., and E. Gering. in press. Five decades of invasion genetics. *New Phytologist*.
- Więski, K. and S. C. Pennings. 2014. Latitudinal variation in resistance and tolerance to herbivory of a salt marsh shrub. *Ecography* 37:763-769. DOI:10.1111/ecog.00498.
- Więski, K. and S. C. Pennings. 2014. Climate drivers of *Spartina alterniflora* saltmarsh production in Georgia, USA. *Ecosystems* 17: 473-484. DOI: 10.1007/s10021-013-9732-6.
- Wilmot C.-S. M., Rappenglück B., Li X. (2014): MM5 v3.6.1 and WRF v3.2.1 model comparison of standard and surface energy variables in the development of the planetary boundary layer, *Geosci. Model Dev. Discuss.*, 7, 2705-2743, doi: 10.5194/gmdd-7-2705-2014
- Yang, Q., B. Li, and E. Siemann. 2014. Positive and negative biotic interactions and invasive *Triadica sebifera* tolerance to salinity: a cross-continent comparative study (In press, *Oikos*).

2013

- Chamberlain, S. A., K. D. Whitney, and J.A. Rudgers. 2013. Proximity to agriculture alters abundance and community composition of wild sunflower mutualists and antagonists. *Ecosphere* 4(8): 96.
- Chen L, C.Tiu, S. Peng, and E. Siemann. 2013. Phenotypic plasticity and invasion: invasive populations of *Triadica sebifera* have performance advantage over native populations only in low soil salinity. *PLoS-one* 8(9): e74961. doi:10.1371/journal.pone.0074961
- Ewers, C., A. Beiersdorf, K. Wieski, S. C. Pennings, and M. Zimmer. 2012. Predator/prey-interactions promote decomposition of low-quality detritus. *Wetlands* 32: 931-938. DOI 10.1007/s13157-012-0326-4.
- Gabler C.A. and E. Siemann. 2013. Timing of favorable conditions, competition and fertility interact to govern recruitment of invasive Chinese tallow tree in stressful environments. *PLoS ONE* 8(8): e71446. doi:10.1371/journal.pone.0071446
- Gabler C.A. and E. Siemann. 2013. Rapid ontogenetic niche expansions in invasive Chinese tallow tree permit establishment in unfavorable but variable environments and can be exploited to streamline restoration. *Journal of Applied Ecology* 50(3)748-756.
- Gu X., E. Siemann, L. Zhu, S. Gao, Y. Wang, and J. Ding. 2013. Invasive plant population and herbivore identity affect latex. *Ecological Entomology*.

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- Ho, C.-K. and S. C. Pennings. 2013. Preference and performance in plant-herbivore interactions across latitude—a study in U.S. Atlantic salt marshes. *PLOS One*. doi: 10.1371/journal.pone.0059829.
- Horn K.C., M.D. Eubanks, and E. Siemann. 2013. The effect of diet on intra- and interspecific interactions of Caribbean crazy ants (*Nylanderia pubens*) *PLoS ONE* 8(6): e66912. doi:10.1371/journal.pone.0066912
- Marczak, L. B., K. Więski, R. F. Denno and S. C. Pennings. 2013. Importance of local versus geographical variation in saltmarsh plant quality for arthropod herbivore communities. *Journal of Ecology* 101:1169-1182.
- Pennings, S. C. 2013. Forging collaborations between ecology and historical ecology. In V. D. Thompson and J. C. Waggoner Jr. (eds.), *The archaeology and historical ecology of small scale economies*. The University Press of Florida, Gainesville.
- Schalles, J. F., C. M. Hladik, A. A. Lynes and S. C. Pennings. 2013. Landscape estimates of habitat types, plant biomass, and invertebrate densities in a Georgia salt marsh. *Oceanography* 26:88-97.
- Treplin, M., S. C. Pennings, and M. Zimmer. 2013. Decomposition of leaf litter in a U.S. saltmarsh is driven by dominant species, not species complementarity. *Wetlands*. 33:83-89. DOI 10.1007/s13157-012-0353-1.
- Wang Y., J. Carrillo, E. Siemann, G.S. Wheeler, L. Zhu, X. Guand J. Ding. 2013. Specificity of extrafloral nectar induction by herbivores differs among native and invasive populations. *Annals of Botany* 112:751-756.
- Yang Q., J. Carrillo, H. Jin, L. Shang, S.M. Hovick, S. Nijjer, C.Gabler, B. Li, E. Siemann. 2013. Plant-soil interactions and *Triadica sebifera* invasion: a cross-continent comparative study. *Soil Biology & Biochemistry* 65:78-85.
- Zhang L., Y. Zhang, JW Zou, and E. Siemann. 2013. Chinese tallow trees (*Triadica sebifera*) from the invasive range outperform those from the native range with an active soil community or phosphorus fertilization. *PLoS ONE* 8(9): e74233. doi:10.1371/journal.pone.0074233

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- A.K.Bittebiere, C.Mony, B.Clement and M.Garbey, 2012. Modeling competition between plants using an Individual Based Model: Methods and effects on the growth of two species with contrasted growth forms, *Ecology Modelling* 234: pp 38-50.

- A. El Hamidi, M. Garbey and N. Ali, 2012. A PDE model of clonal plant competition with nonlinear diffusion, *Ecology Modelling* 234: pp. 83-92.
- A. El Hamidi, M. Garbey and N. Ali, 2012. On Nonlinear Coupled Diffusions in Competition Systems, *Nonlinear Analysis: Real World Applications* volume 13, issue 3, pp. 1306 – 1318.
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- McCall, B. D., S. C. Pennings. 2012. Disturbance and recovery of salt marsh arthropod communities following BP Deepwater Horizon oil spill. PLoS ONE 7 (3) e32735. DOI. 10.1371/journal.pone.0032735.
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(6) Outreach and Service. In 2013-2014, the UHCC hosted visits by the Texas Master Naturalists who collected seed and prairie plants for restoration projects. Prairie seed was also harvested by Native American Seed for sale to individuals and organizations interested in prairie restoration projects.

(7) Courses taught at the UHCC.

Lefer and Khan. Environmental science field camp.

Stewart. Geophysics courses. Geophysics Field Camp. NASA astronaut training. Nautilus field camp.

Wang. GEOL4330 Introduction to Geophysics, GEOL6323 GPS Geodesy. Field trips to UHCC to study land subsidence, GPS instrumentation, groundwater measurement, and oil & gas field instrumentation.

BIOL 4206, Ecology and Evolution Laboratory. Larry Williams. Field trips to UHCC.

BIOL summer field course in development. Ann Cheek.

UHD, BIOL-CHEM-GEOL 4260 Environmental Lab and Field Studies, Michael Tobin.
Field trips to UHCC.

(8) User days. We recorded 1,134 visitor-days to the UHCC In 2012, 1,633 in 2013, and 1640 to date (as of November 1) in 2014, indicating a steady increase in use over the last 3 years. Visits to the UHCC are primarily for research (40%) and operation of the oil wells (50%), with the remainder education and outreach (10%).

J. Future Measures of Performance

Administration of the UHCC was transferred from the Division of Research to the Dean of NSM in the fall of 2014. Pennings and Lefer will work with the Dean to discuss how the UHCC will be administered and funded in future years, and to develop a new strategic plan. Our general goals will remain unchanged: to continue to increase research, teaching and service activities that are facilitated by UHCC.