Overview of the Project

The proposed UC Merced Vernal Pool-Grasslands Nature Reserve will fill an unmet need for education on the extensive but dwindling vernal pool-grassland ecosystems in California's San Joaquin Valley. Once widespread throughout the Central Valley, these unique ecosystems are treasures of beauty and enlightenment, but are disappearing due to urbanization, land-use conversion and habitat degradation. They are one of the most imperiled wildlife habitats in California.

The proposed Reserve will inspire environmental stewardship and combine the study of natural science with vernal-pool preservation, demonstration and education programs to serve a diverse population in the region while also providing a primary research area for undergraduate and graduate students, as well as faculty members from the UC system.

A better public appreciation of the multiple values of vernal pools, which are among California's least understood and appreciated ecosystems, is crucial to their long-term stewardship. The poor understanding of these systems may stem from their ephemeral nature and lack of large charismatic wildlife. The Reserve will provide the public with scientific, aesthetic, and intrinsic perspectives on vernal-pool and grassland habitats through interactive displays, tours, and public events.

The proximity of this reserve to campus provides unique opportunities to more fully integrate educational programs and curricula with campus activities than almost any other existing UC Natural Reserve site. The close proximity of the UC Reserve lands to campus provides UC Merced and other UC faculty the unique opportunity to use this precious resource in many educational settings. The site location also provides opportunities to develop reserve facilities that minimize impacts to the reserve land.

The Reserve will not only serve as a public resource for nature education on vernal pools and grasslands, but will also be an interactive classroom for K-16 classes and will serve as a venue for meetings related to environmental stewardship and resource conservation. Faculty and researchers will engage the community by giving public lectures, and docents can extend the impact of interpretation for the general public and younger students. The Center will serve as a hub to foster a greater environmental awareness and conservation ethic.

Unique Value

The vernal pool-grassland habitat is home to numerous rare and endangered plants and animals, many of which have unique adaptations to cope with the ephemeral nature of vernal pools. While the ecology and natural history of vernal-pool inhabitants is well studied and understood by specialists in the field, there is often little connection between the residents of the San Joaquin Valley and this ecosystem. The Reserve will provide a unique experience, not available elsewhere in the region, establishing the link between human use of the ecosystem and the natural and invasive flora and fauna and...
one of the most biologically diverse. The proposed reserve is in the middle of the largest intact vernal pool system in the Central Valley. The Merced fan has been described “as incomparable as the valley from which it was derived.”

*Endemic vernal-pool invertebrates.* Vernal pools house a unique assemblage of invertebrates, including a diverse community of crustaceans—fairy shrimp, tadpole shrimp, clam shrimp, water fleas, copepods and ostracods.

*Vernal-pool plants and specialist pollinators.* The unique plant communities that inhabit the ecosystems of the Reserve will provide visitors a spectacular visual display, particularly in spring. In addition to tours, displays will highlight the diversity and evolutionary adaptations of endemic vernal-pool plants and their specialist pollinators.

*Grassland wildlife.* The Reserve also contains many year-round opportunities for bird watching and wildlife viewing. The area is home to various mesocarnivores (bobcats and coyotes), ground squirrels, grassland birds, waterfowl and raptors, including a breeding population of burrowing owls. UC Merced is in discussions with a well-established bird/wildlife group to fully develop this aspect of reserve activities.

*Grazing.* The Reserve is currently grazed by cattle, providing an excellent opportunity to inform the public on the importance of grazing in the conservation and management of vernal-pool habitats. We will develop an exhibit that highlights grazing and how research is being used to inform grazing practices to maximize the productivity and biodiversity of vernal pools in the Central Valley.

*Geology, hydrology, and soils.* Eastern Merced County contains a diverse array of geological formations and surface/subsurface hydrology that will be used to educate visitors on the importance of considering ecosystem processes in the maintenance and conservation of vernal-pool grasslands. We will create a permanent ‘soil pit’, which will allow both the public and researchers to view the complex soil strata in the region, with an emphasis on the hard-pan layers that are necessary for vernal pool formation.

### Size of the Preserve and Location

The University of California has protected from development over 6,400 acres of land through the placement of conservation easements. A grant from the Hewlett Foundation to found the new university paid for the purchase of the acreage. This is the proposed Grasslands-Vernal Pool Reserve. These lands consist of the former Virginia Smith Trust (5,030-acres), Campus Natural Reserve (1,309-acres) and Myers Easterly (91-acres) properties.

The 3,070-acre Cyril Smith Trust ranch is adjacent to these University controlled lands to the north and is also conserved in perpetuity. It was purchased with funds allocated by the California Legislature in AB No. 1740 for the “University Of California Merced Grasslands Project”. Upon purchase by the Wildlife Conservation Board, the land was transferred to The Nature Conservancy through a grant agreement and was not proposed as part of the Grasslands-Vernal Pool Reserve. It is ideally situated to be a protective buffer for managing and enforcing access restrictions to the Reserve.

Adjacent to these two holdings is Lake Yosemite, a reservoir fed by a canal from the Merced River. It’s boating concessions are now operated by the student government of the university, and kayaks and canoes could be made available to visitors to observe the abundant waterfowl. In fact, the proposed Reserve can be an introduction to the ecology of other open spaces for which there is public access.
Cyril Smith Trust (3,670 Acres)

Campus Vernal Pool Reserve (6,428 Acres)

UC Merced Campus (815 Acres)

CITY OF MERCED


FIGURE 1
UNIVERSITY OF CALIFORNIA MERCED CAMPUS AND CAMPUS VERNAL POOL RESERVE SITE

Campus Vernal Pool Reserve (6,428 Acres)

- Virginia Smith Trust (5,030 Acres)
- Campus Natural Reserve (1,307 Acres)
- Meyers Easterly (91 Acres)

Business Plan for Grasslands-Vernal Pool Reserve 3
Models for the Reserve

There are a handful of parks or reserves which might provide models for aspects of the Grasslands-Vernal Pool Reserve adjacent to UC Merced. They underline that the Sacramento area is better served than the valley to the south. They vary in their programs and organizational structure, but several may also present opportunities for partnership.

Mather Field Vernal Pools is located in southeast Sacramento on a former military air base. There are about 300 vernal pools on 1,200 acres, operated by a nonprofit organization called Sacramento Splash. With a staff of 10 augmented by volunteers, Mather Field hosts an estimated 5,000 visitors annually, including more than 120 classes of students from 4th to 12th grades.

Jepson Prairie Preserve is outside of Dixon, off Interstate 80 in Solano County. The nonprofit Solano Trust operates the 1,556 acres, which include vernal pools, wetlands and grasslands. UC Davis Natural Reserve System contributes $3,000 annually towards maintenance for the land and $18,000 annually for staff time (about 10% of three staff members’ time), including in-kind contributions to the operation of the areas, as do the Jepson Prairie Docents. Just over 2,000 visitors come annually, particularly to see spring wild flowers. Educational tours for K-12 students are offered by docents and undergraduate and graduate students from UC Davis do research on the site.

Consumnes River Preserve is located north of Galt between I-5 and Highway 99. At more than 46,000 acres, it’s a very large riparian habitat managed by a consortium of nine government, nonprofit or educational organizations. Most of the preserve is restricted to public access, but there are several areas open to visitors along with an interpretive center where canoes can be rented. People can bring their own watercraft as long as it doesn’t have a motor. The preserve is known for its Sand hill cranes and innovative conservation of ag lands but does not feature vernal pools.

Great Valley Grasslands State Park is near Stevinson, about 20 miles west of Merced. It has no assigned staff or visitors’ center. Self-guided tours are available online and the 2,700 acre park is open to the public. The park includes vernal pools and is part of Grasslands Ecological Area, the largest contiguous section of wetlands in California.

Howard Ranch Trail is about 12,000 acres of permanently protected land within the Rancho Seco Park, a local park run by Sacramento Municipal Utility District. The trail is a seven mile loop on a privately owned cattle ranch. There is no visitor’s center and tours are self-guided, providing visitors the opportunity to see California Tiger Salamander and vernal pool fairy shrimp and tadpole shrimp.
Vernal Pools Preserve Staffing Narrative

Staffing for the preserve would be phased in over five years. The first year would be a planning phase, followed in year two by program development and interactive display creation, along with construction of the interpretive center. The third year would feature opening of the trails, center and volunteer programs. K-12 and student and faculty research would expand in the fourth year, with public use of the facility expected to double between years 3 and 5. If funding dictated, the plan could be paused after year one and/or year three. Funding is available to carry out first year activities from the remaining Hewlett Foundation corpus. Monitoring and reporting would require use of a portion or all of the grazing fees, depending on negotiations with the Department of Fish and Game.

Getting Started

The initial year’s work would be done by a half-time executive director working in cooperation with a development professional assigned from University Relations to seek principal gifts to establish the preserve, its building, and educational and research programs. Start-up funds would also cover the costs of financial processing and human resources support, along with a part-time communications coordinator who could articulate with the university’s communication staff.

The principal work in the first year would be to complete a proposal that could secure funding to sustain the preserve through the initial five years of operations, and present the opportunity to invest in the project to a range of potential funders. The executive director would work with a development officer assigned to the project from University Relations to identify prospects and submit proposals in the first quarter of the year. A quarter-time communications coordinator would design a promotions campaign to generate interest in the project from funders, the campus community and general public within 90 miles of Merced.

Under Construction

The center becomes more tangible as a 4,000 square foot building goes up, with an interpretive space, meeting rooms, office and lab facilities. The initial building could be expanded to its ideal size of about 10,000 square feet when funding was available. A program director joins the staff to design the activities of the education and research programs, as well as work with the consultants on interpretive displays. A part-time K-12 educator comes aboard to make contact with teachers and administrators who will be bringing students to the center in the third year. Fundraising focuses on the program elements and the trail system. Undergraduate docents would assist with interpretation, including participants in the Yosemite Leadership Program. Communication efforts include more web elements as the center gets ready to open.
Up and Running

The center opens in January of year three, just in time for the vernal pools to come to life. A volunteer coordinator, working on a half-time basis, becomes the seventh staff member, and recruits a range of volunteers who significantly increase the center’s ability to provide educational opportunities for children and adults. With the trails open, the outdoor portion of the preserve becomes the star of the show, and is complemented by the interpretive displays and lab elements. A summer program starts for junior high and high school students who learn about the role of open space in a healthy community.

Research and Expansion

Building on the excitement of the first year of full operations, year four sees development efforts focus on research, with national grants obtained to complement regional and state support. Graduate students target UC Merced because of the preserve and its center, and undergraduate courses integrate the vernal pools in a range of academic fields from climate change to management. The K-12 program includes science camps during the holidays and spring vacation periods, and the center is in demand for eighth grade and eleventh grade science classes from Fresno to Stockton.

Operational Organization

The Reserve Director would be appointed by the UC Merced Chancellor but operationally be a part of the Graduate Studies and Research division, a practice consistent with centers and institutes that serve multiple academic divisions of the university. Administrative support would come from the Sierra Nevada Research Institute, which would also supply academic leadership.

Sustainability Achieved

By the fifth year of operations, funding is being secured to endow operations for the next decade and beyond. With a full-time equivalent of 6.5, the center’s staff sees a doubling of usage from just two years before. The preserve becomes a destination for hiking clubs, senior groups and touring guides that cite it as a unique experience and a great example of a university opening itself up to the public. The preserve is cited in academic journal articles and some of the research done at the center is covered by daily media targeted at general audiences.
Vernal Pools Personnel Chart

<table>
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<tr>
<th>Position (FTE)</th>
<th>YR 1</th>
<th>YR 2</th>
<th>YR 3</th>
<th>YR 4</th>
<th>YR 5</th>
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<td>Communications Coordinator</td>
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Financial Resources

The UC Endowment Pool contains a $2 million gift fund that is dedicated to the management and monitoring of the Reserve. Between 4 and 5% of the corpus can be distributed annually from this endowment directed by the Resource Legacy Fund from the Hewlett Foundation. It is our estimate that this endowment is enough to get started with a development of the proposed reserve, but that it would need to grow to approximately $10 million to fully support the salaries and operations of the Reserve. This estimate does not include funds for the buildings.
Funding Plan

There is one existing revenue stream that might be applied to operations of the Reserve. About $200,000 is generated annually in grazing fees. Currently, the board overseeing the trust has designated these funds for college scholarships for Merced residents. The donor intent was for these grazing funds to be used to maintain the property. So it is possible to seek to have these funds devoted to the Reserve’s annual operations and programs.

The development director for the Sierra Nevada Research Institute has identified more than a dozen prospects for grants to support the Reserve. These prospects range from conservation groups to foundations, corporations and state and federal government departments.

### Vernal Pools Five Year Budget

<table>
<thead>
<tr>
<th></th>
<th>YR 1</th>
<th>YR 2</th>
<th>YR 3</th>
<th>YR 4</th>
<th>YR 5</th>
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<td>(excluding regulatory coordinator)</td>
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<td>Monitoring and compliance reporting</td>
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Several of these potential funders are in active discussion with UC Merced. One state agency is involved with management of an adjoining trust. One of the corporations is a current funder of the university, and may have funding for preservation of wildlife corridors. One potential funder is advised by one or more prospects (potential partner organizations) in the selection of grant awards. Several others are more likely to be partners rather than funders, bringing conservation management resources to the Reserve rather than direct funding.

Within 120 days, this group should be whittled down to a half-dozen strong prospects who can be solicited for funding during the spring grant cycle, with results available by the start of FY2012 in July, 2011.

**Evaluation**

We plan to use output, outcome and impact metrics to evaluate the extent to which the Reserve inspires environmental stewardship. This is in addition to the monitoring and compliance reporting for the property.

Metrics will include numbers of visits to the Reserve and demand for programs.

Outcome metrics will include financial contributions for the Reserve’s operations and educational programs as well as research funding that relates to the Reserve and the scientific and social issues it presents.

Media coverage that highlights the Reserve’s programs or people will be tracked on a monthly basis, and demand for student projects using the Center resources will be noted.

Entrance and exit questionnaires will be used with a representative sample of users to elicit information about the environmental stewardship attitudes and activities of both first-time and repeat visitors. Staff will also work with visiting school groups to incorporate evaluation of environmental stewardship into the classroom curriculum as a part of field trips and follow-up study.

Academic impact measures will include citations of the Reserve in research papers and publications, as well as presentations at seminars and conferences.

**UC Merced**

UC Merced opened Sept. 5, 2005, as the 10th campus in the University of California system and the first American research university of the 21st century. The campus significantly expands access to the UC system for students throughout the state, with a special mission to increase college-going rates among students in the San Joaquin Valley. It also serves as a major base of advanced research and as a stimulus to economic growth and diversification throughout the region. Situated near Yosemite National Park, the university is expected to grow rapidly, topping out at about 25,000 students within 30 years.