

The Vernal Pool Landscape At The Nature Conservancy's Vina Plans Preserve

**Presentation by
Barbara Castro,
California Department of Water Resources**

**Text and photographs prepared by
Rob Schlising,
California State University, Chico (retired)**



A wooden sign for Vina Plains Preserve is mounted on two dark grey posts. The sign has a dark background with white text. Below the main title, it says 'The Nature Conservancy' and 'Protecting nature. Preserving life.' with a small globe icon. The sign is set in a grassy field with a wire fence in the foreground and a clear blue sky in the background.

VINA PLAINS PRESERVE

The Nature Conservancy
Protecting nature. Preserving life.



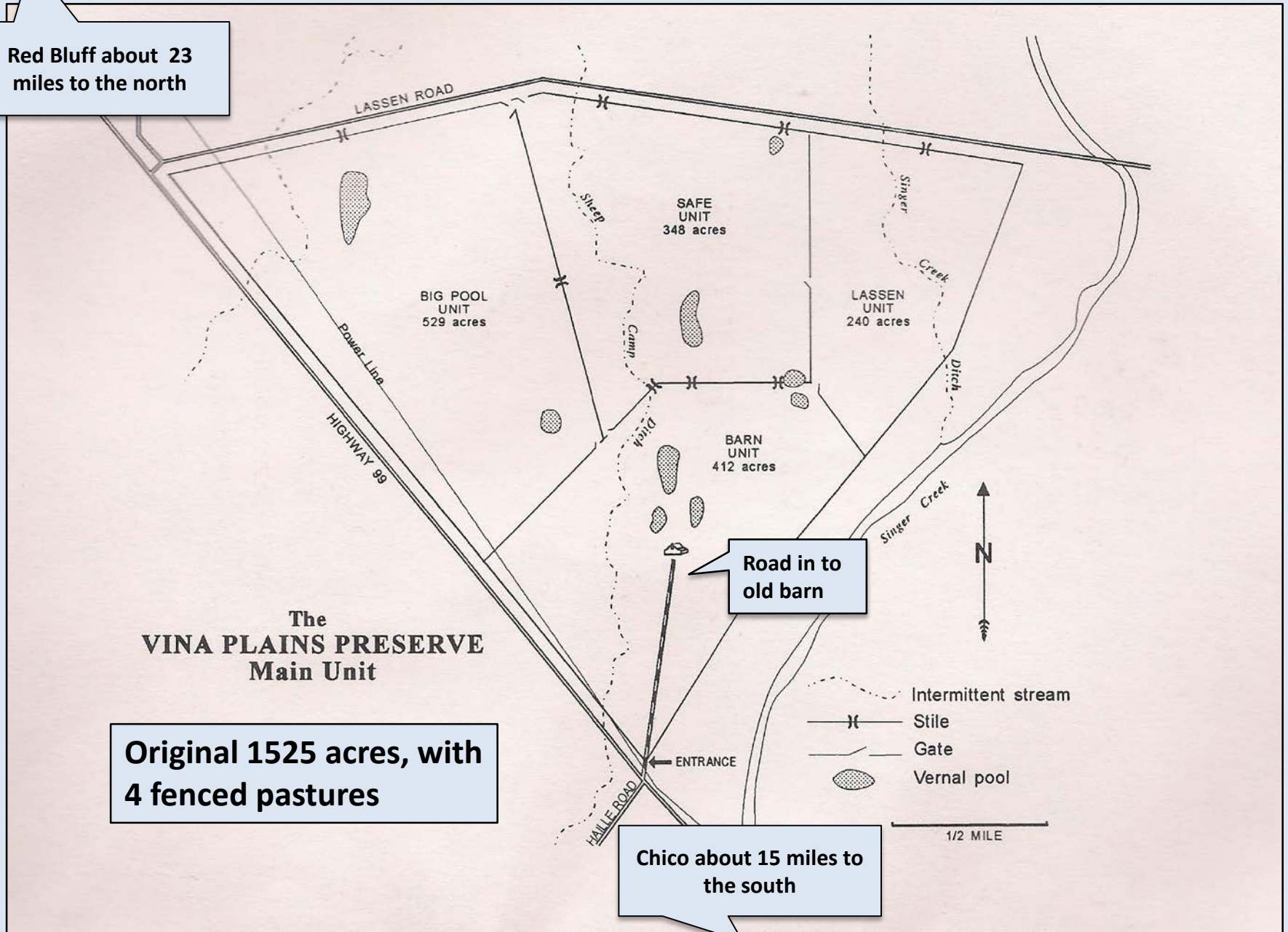
Topics

- I Location, and history of, Vina Plains Preserve
- II The results of research done at VPP: a major resource
- III ...and the U.S. Fish and Wildlife Service's Vernal Pool Recovery Plan

Red Bluff about 23 miles to the north

The
VINA PLAINS PRESERVE
Main Unit

Original 1525 acres, with
4 fenced pastures



Road in to
old barn

Chico about 15 miles to
the south

Intermittent stream

Stile

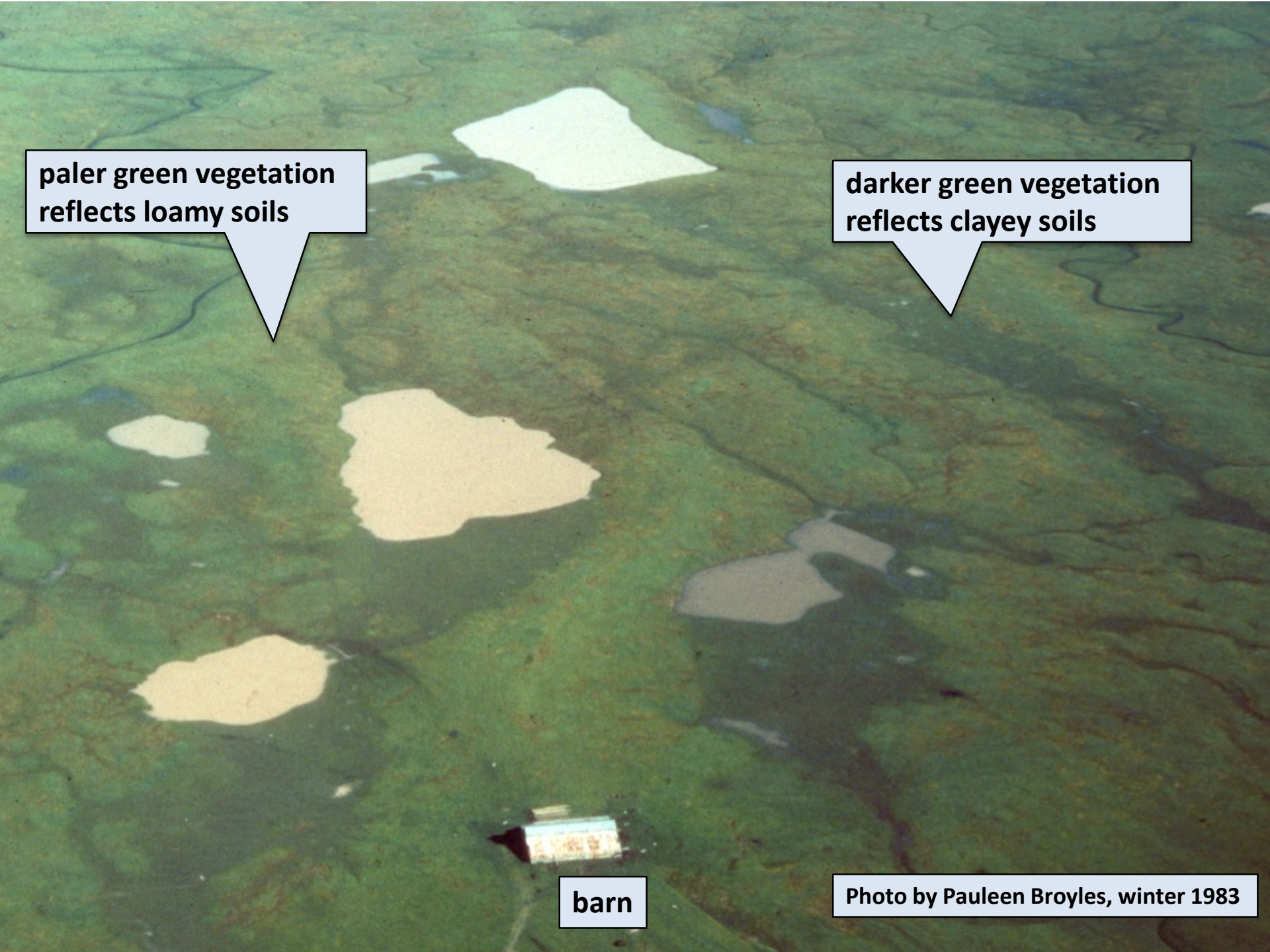
Gate

Vernal pool

1/2 MILE



**Cemented volcanic
mudflow underlies
whole area and forms
Northern Hardpan
Vernal Pool bottoms**

An aerial photograph of a rural landscape. The terrain is covered in green vegetation, with several distinct patches of different colors and textures. A barn is visible in the lower center. The image is annotated with text boxes and callouts.

**paler green vegetation
reflects loamy soils**

**darker green vegetation
reflects clayey soils**

barn

Photo by Pauleen Broyles, winter 1983

The Nature Conservancy assembled a team of docents, spring 1983, that prepared in the field...



**Docents also prepared indoors.
Graduation of the first class of docents, spring 1983**



**The Nature Conservancy hosted a dedication ceremony of the
Vina Plains Preserve, at the old sheep-barn, on 16 April 1983**

**Mounts Lassen and Brokeoff
showed that day 35 years ago**



350 people attended, for a program by TNC—with a band, a catered chicken picnic lunch, and tours of the landscape by the docents.





Landscape tours by the docents began for the public in 1984, starting from old logs located north of the sheep-barn.



Over 1200 people visited VPP during the first several years of tours.


The docent committee
prepared a VPP
handbook in 1984
(1994 revision shown)

Robert A. Schilling

The Nature Conservancy's



**VINA
PLAINS
PRESERVE**



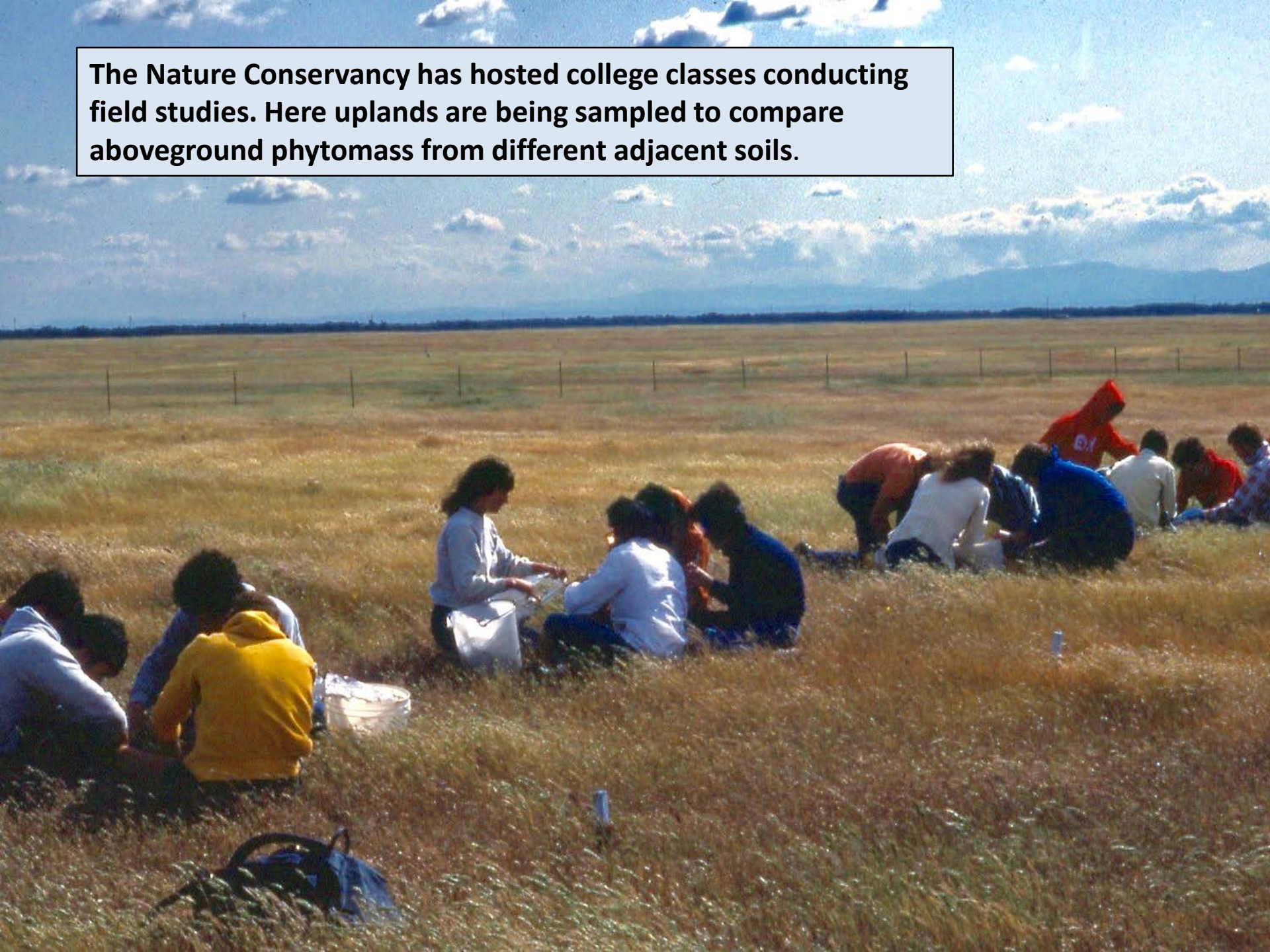
The Nature Conservancy has maintained ownership—and management—of the Preserve. Their prescribed burns produce beneficial effects, including reduction of medusa-head grass and yellow star thistle populations.

TNC experimented by omitting burns and found that these invasive exotics dominated the landscape.

Grazing by cattle during the winter months is another major aspect of landscape management. The Vina Plains Preserve is a working ranch, and thus is open to the public on a reservation basis.



The Nature Conservancy has hosted college classes conducting field studies. Here uplands are being sampled to compare aboveground phytomass from different adjacent soils.



Before some of the invertebrates were “listed” by USFWS, college classes could freely net and examine organisms in vernal pools at the Preserve.



Physical changes in VPP:

The old, dilapidated barn is gone.

Corrals exist for the cattle-grazers.



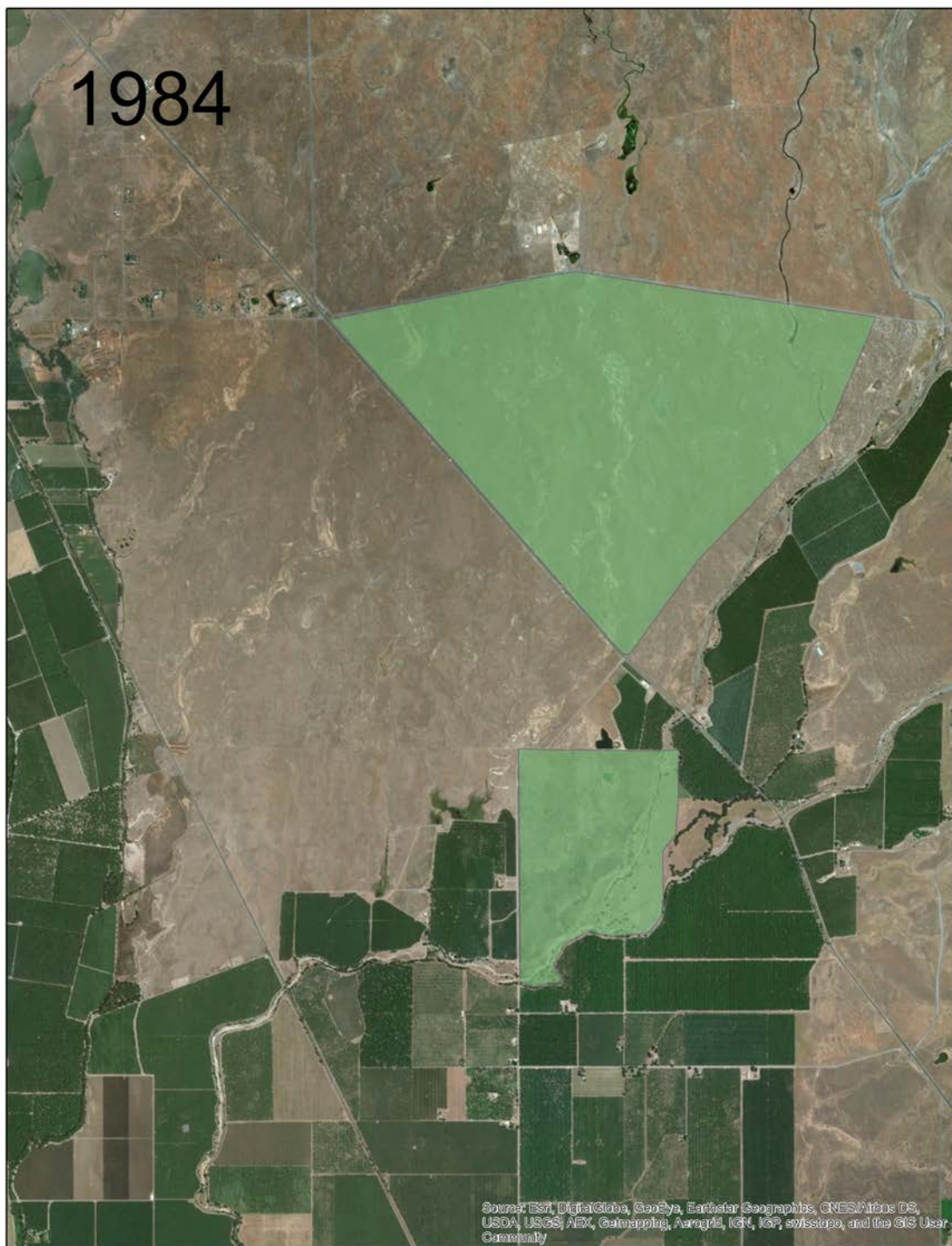
1982



**The Nature Conservancy has purchased
land to add to the Vina Plains Preserve**

**Map by Scott
Hardage, TNC**

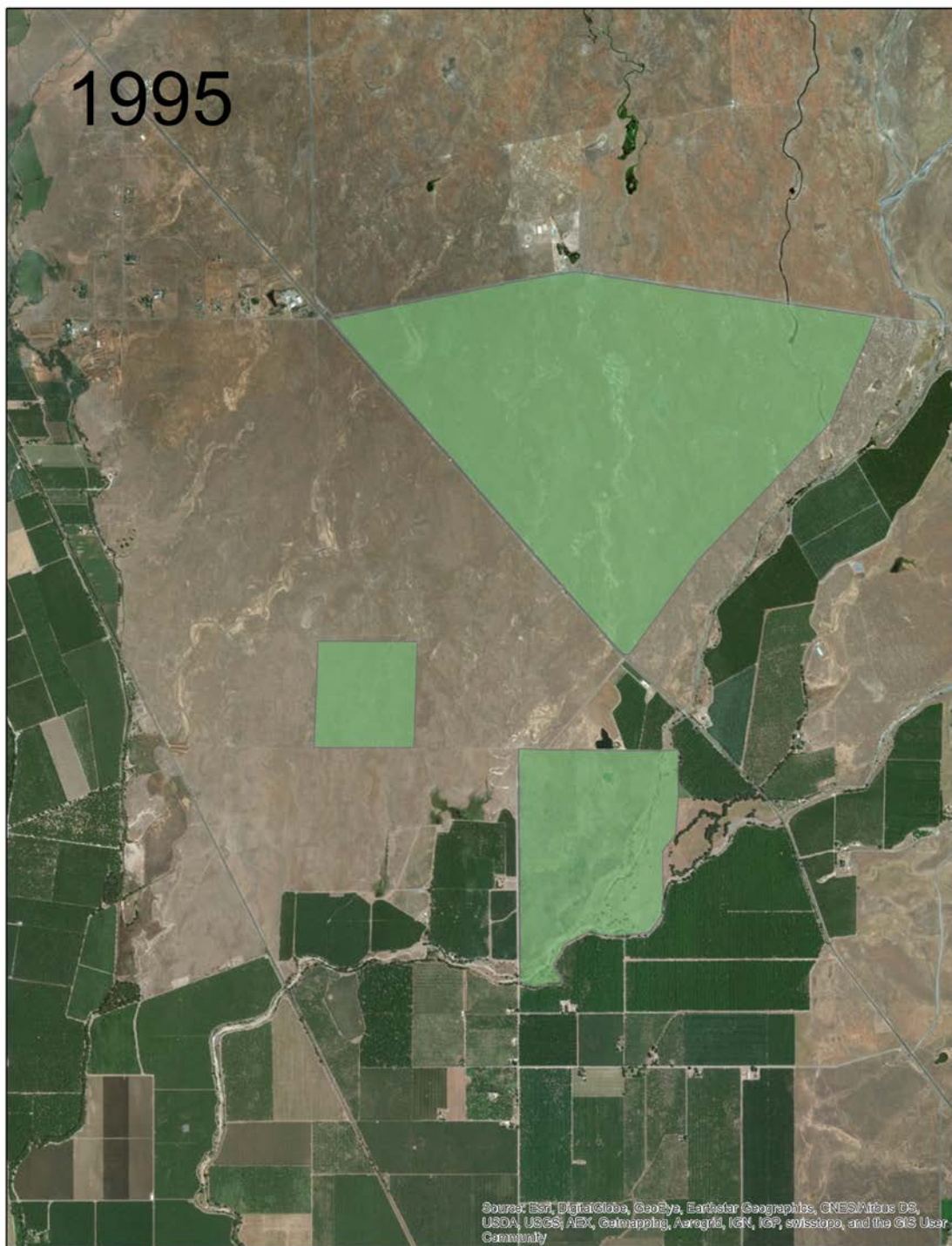
1984



**Map by Scott
Hardage, TNC**

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

1995



**Map by Scott
Hardage, TNC**

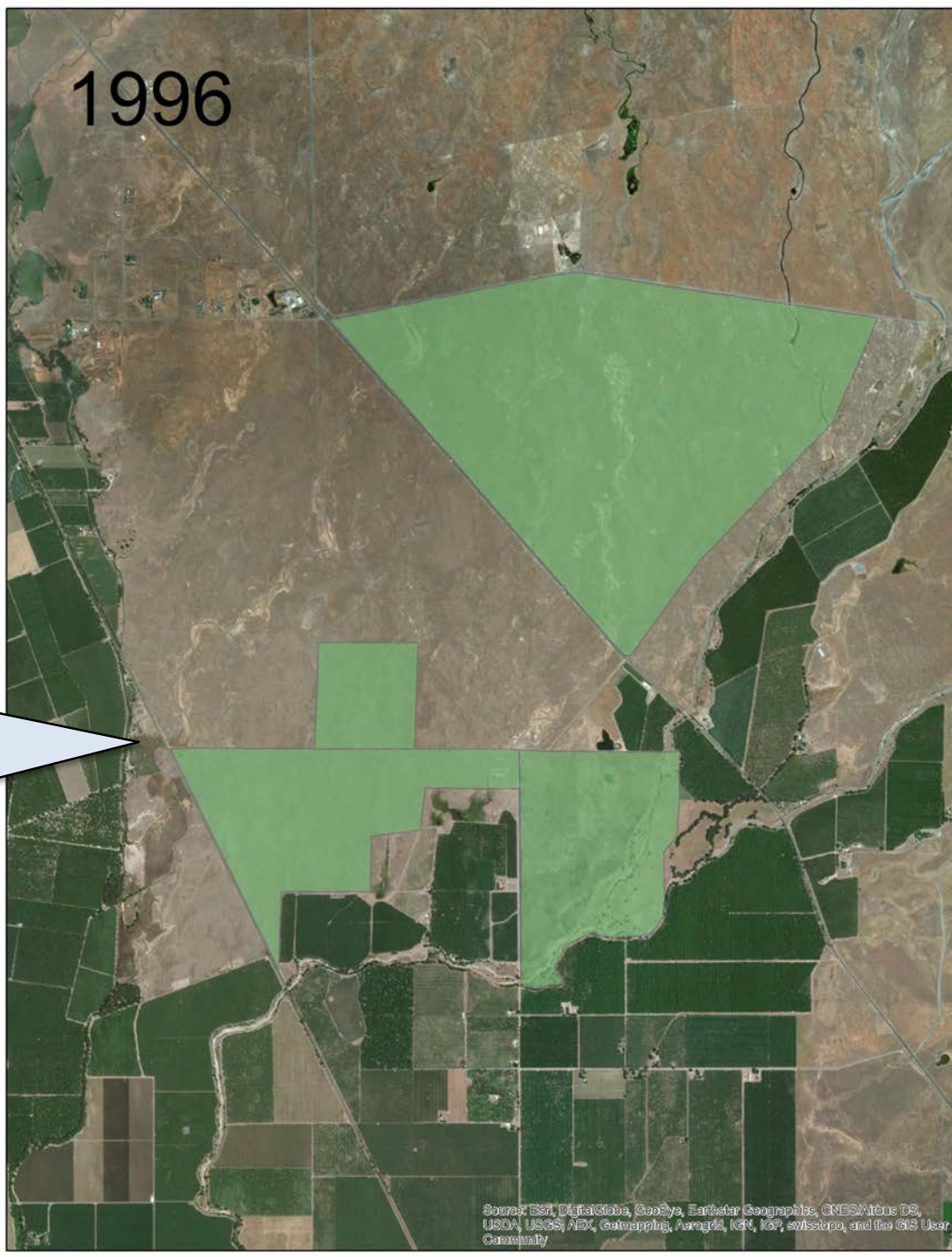
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

1996

Tehama Co.

County Line

Butte Co.

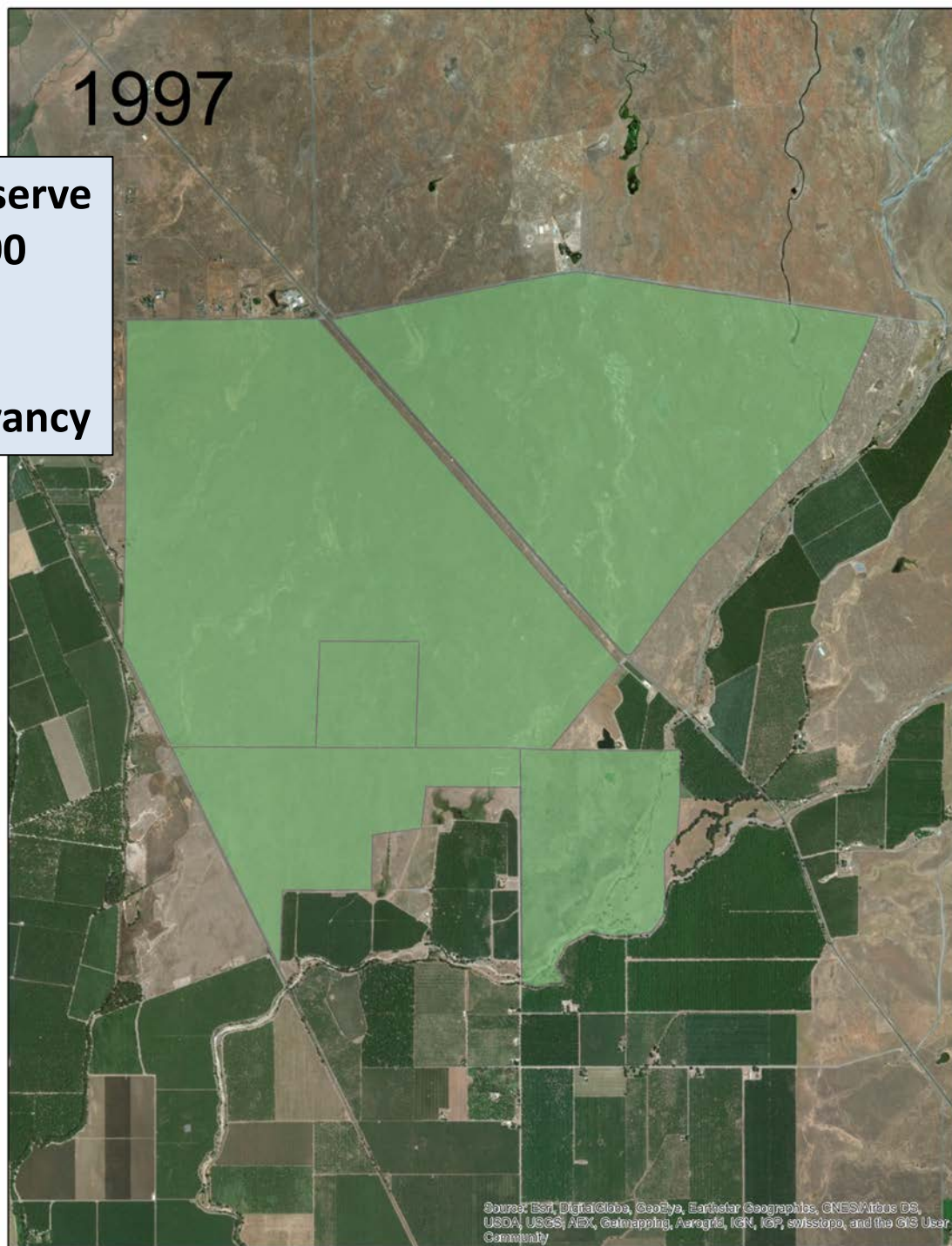


Map by Scott
Hardage, TNC

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

1997

Vina Plains Preserve
now covers 4600
acres that are
owned by The
Nature Conservancy



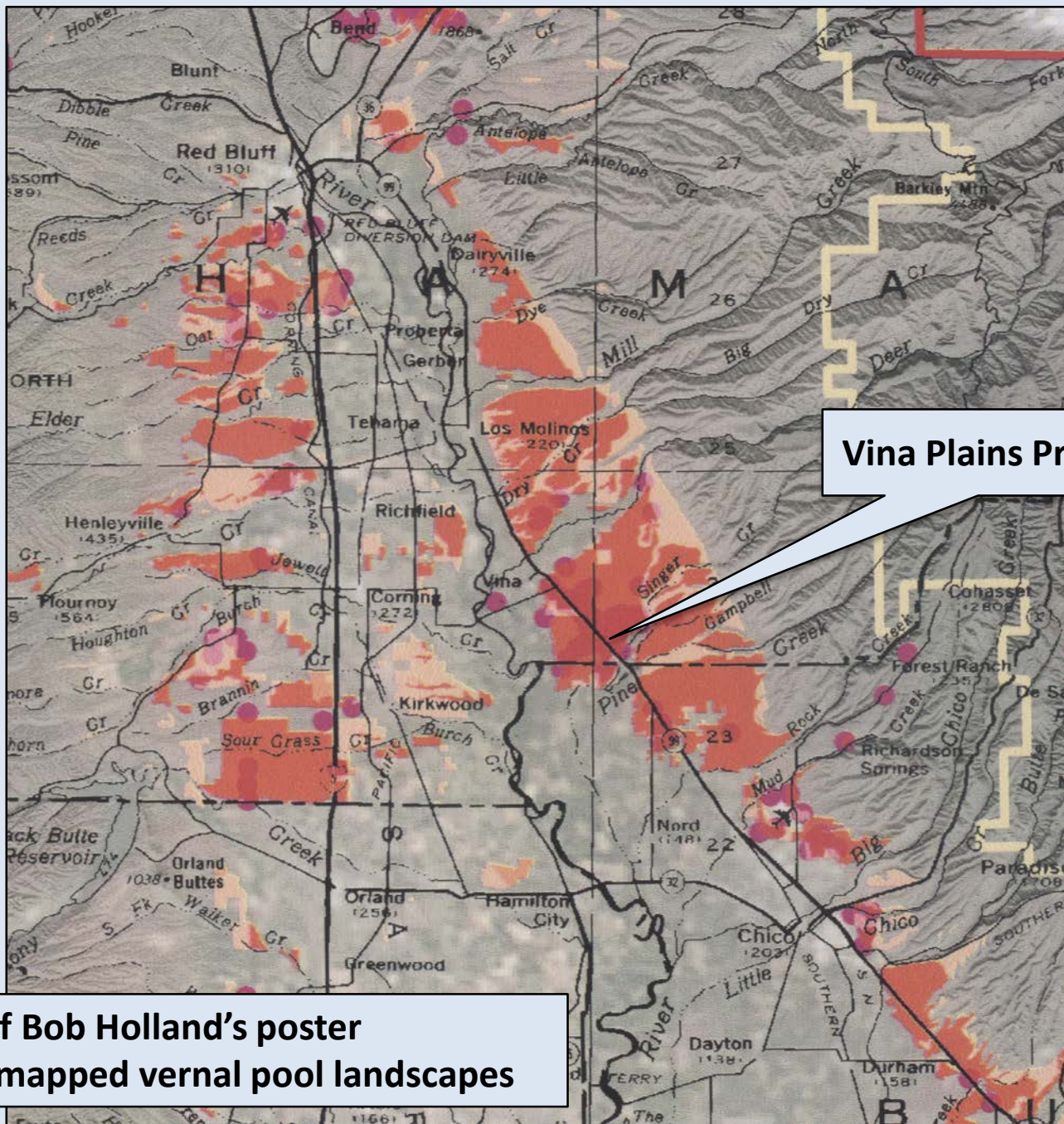
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

Map by Scott
Hardage, TNC

VP Preserve west of Hwy 99: Monster Pool



Erin Gottschalk Fischer with *Orcuttia pilosa* seedlings



Vina Plains Preserve

Portion of Bob Holland's poster showing mapped vernal pool landscapes

II The results of research done at VPP: a major resource

Field studies done at VPP only

Field studies done at VPP
and elsewhere



Field research written up, and a manuscript submitted for peer-review



Published in a journal
or in a book

Published as an
agency document

“Published” (held in a
library) as an academic
thesis or dissertation

Overview of major field studies covered in published research at VPP

Subjects cover landforms, soils, habitats, invertebrates,
vertebrates, vascular plants, micro-organisms

Example

Guy King	Geomorphology of piedmont vernal pool basins, California	1992 The California Geographer (journal)
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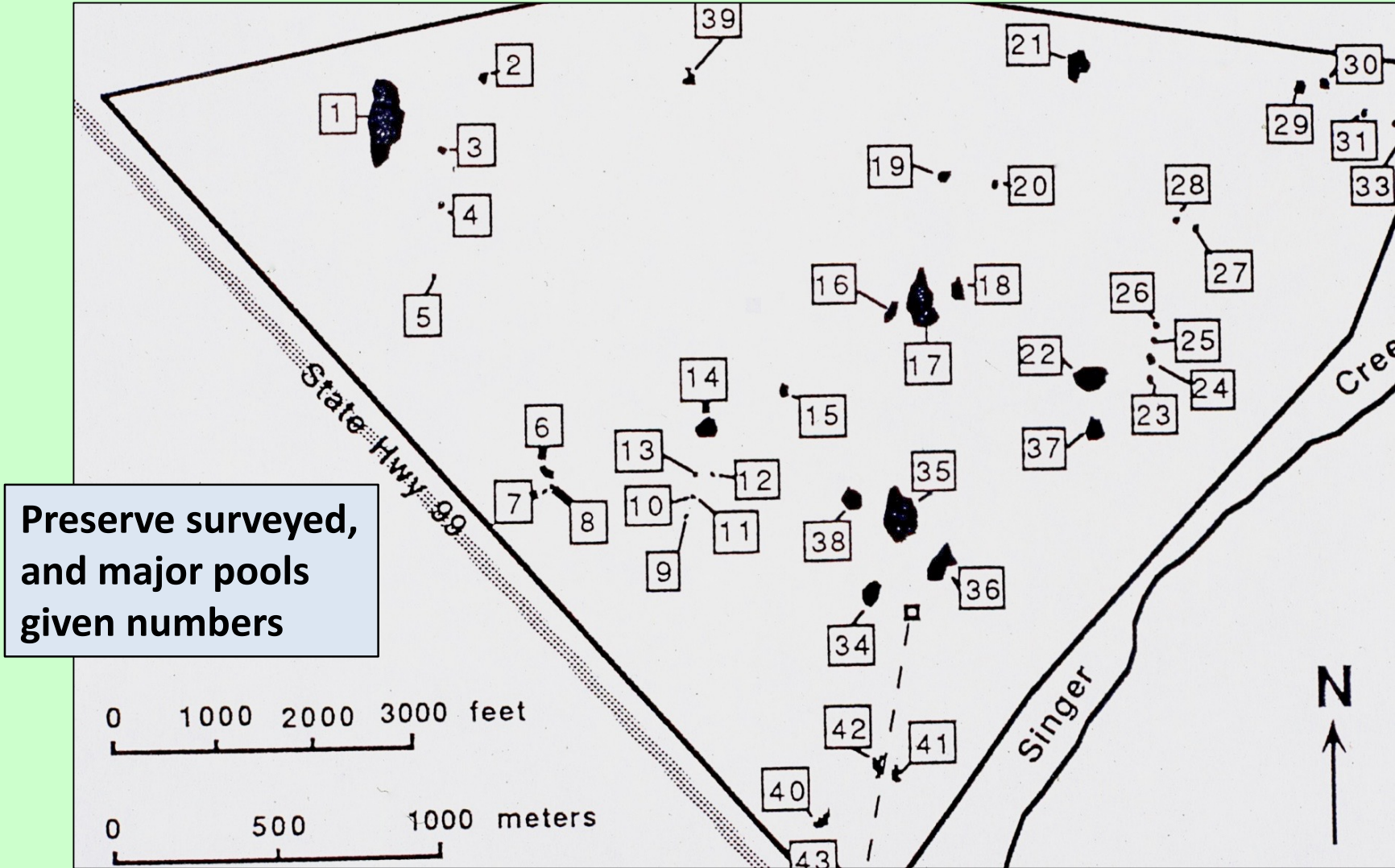
Focus during this talk: only on shortened title or subject **in
large font**

Goal of this talk: to illustrate “breadth” of peer-reviewed field
research done on biology of vernal pool organisms

Guy King

Geomorphology of piedmont vernal pool basins, California

1992
The California Geographer (journal)





Doug Alexander has had a series of graduate students studying invertebrates of vernal pools at VPP

Doug Alexander

Thirty years research on vernal pool macroinvertebrates from Vina Plains

2007 Vernal Pool Landscapes (book 1)

Terrill
Wolt

***Cyzicus mexicanus* Life History and
a comparison of growth, maturity
and egg production in five ponds**

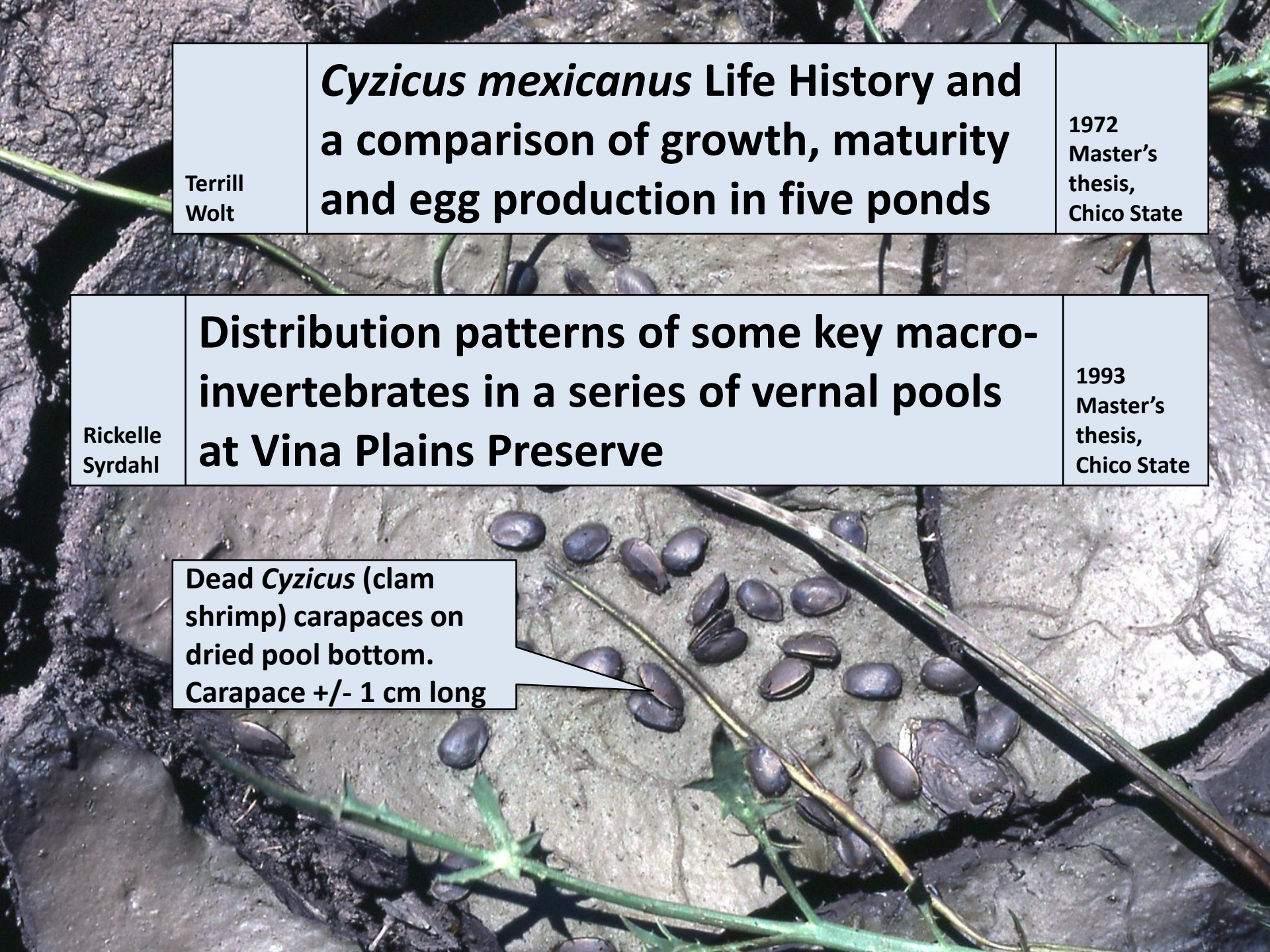
1972
Master's
thesis,
Chico State

Rickelle
Syrdahl

**Distribution patterns of some key macro-
invertebrates in a series of vernal pools
at Vina Plains Preserve**

1993
Master's
thesis,
Chico State

Dead *Cyzicus* (clam
shrimp) carapaces on
dried pool bottom.
Carapace +/- 1 cm long



J. A.
Eads

Genetic comparison of two populations of the endangered fairy shrimp, *Branchinecta conservatio*, using RAPD techniques

1995
Master's
thesis,
Chico State

Photo by Doug Wirtz,
from CalPhotos

Scott
Patton

The life history patterns and the distribution of two Anostraca, *Linderiella occidentalis* and *Branchinecta conservatio*

1984
Master's
thesis,
Chico
State

Jonna Ahl

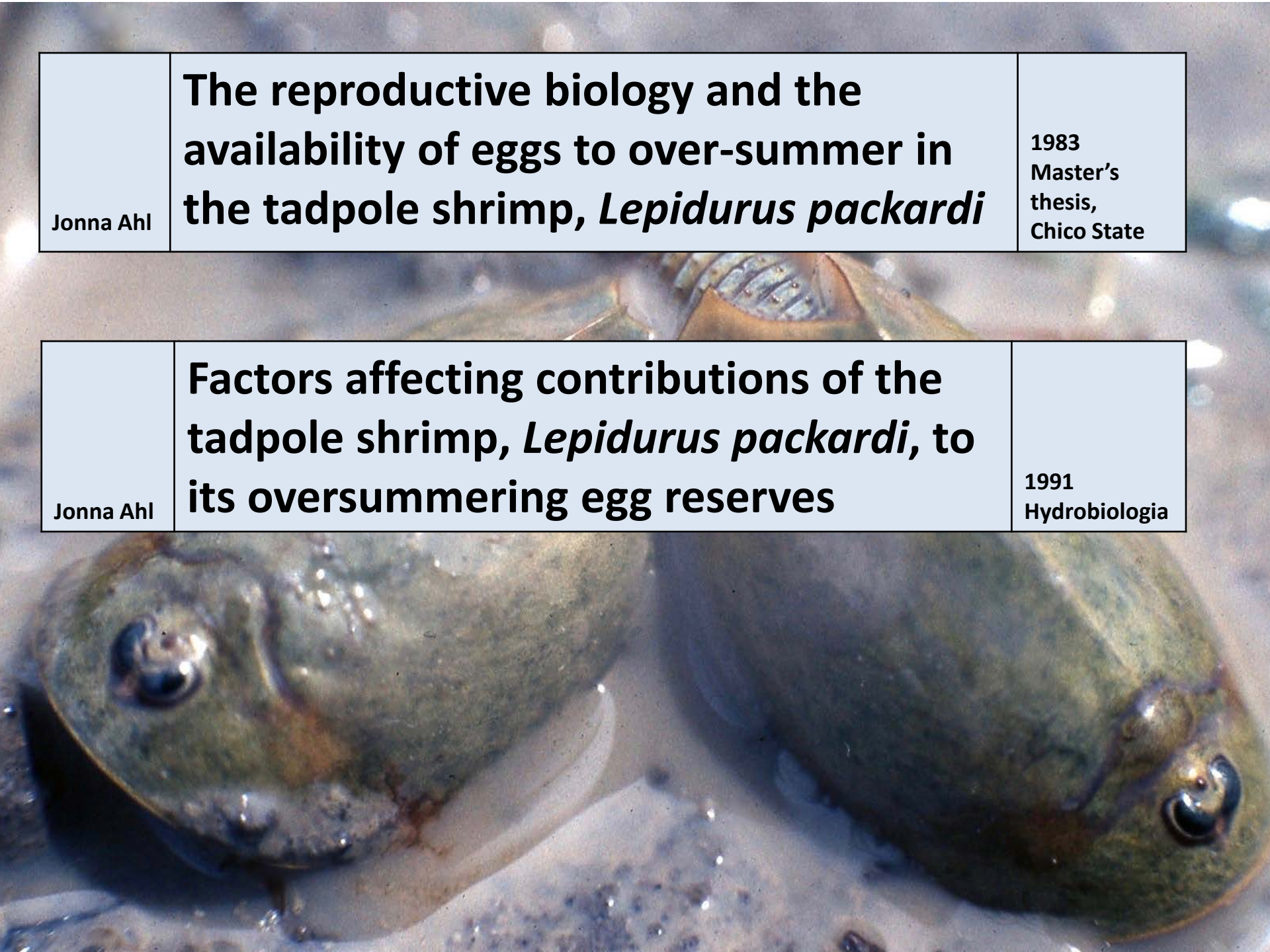
The reproductive biology and the availability of eggs to over-summer in the tadpole shrimp, *Lepidurus packardii*

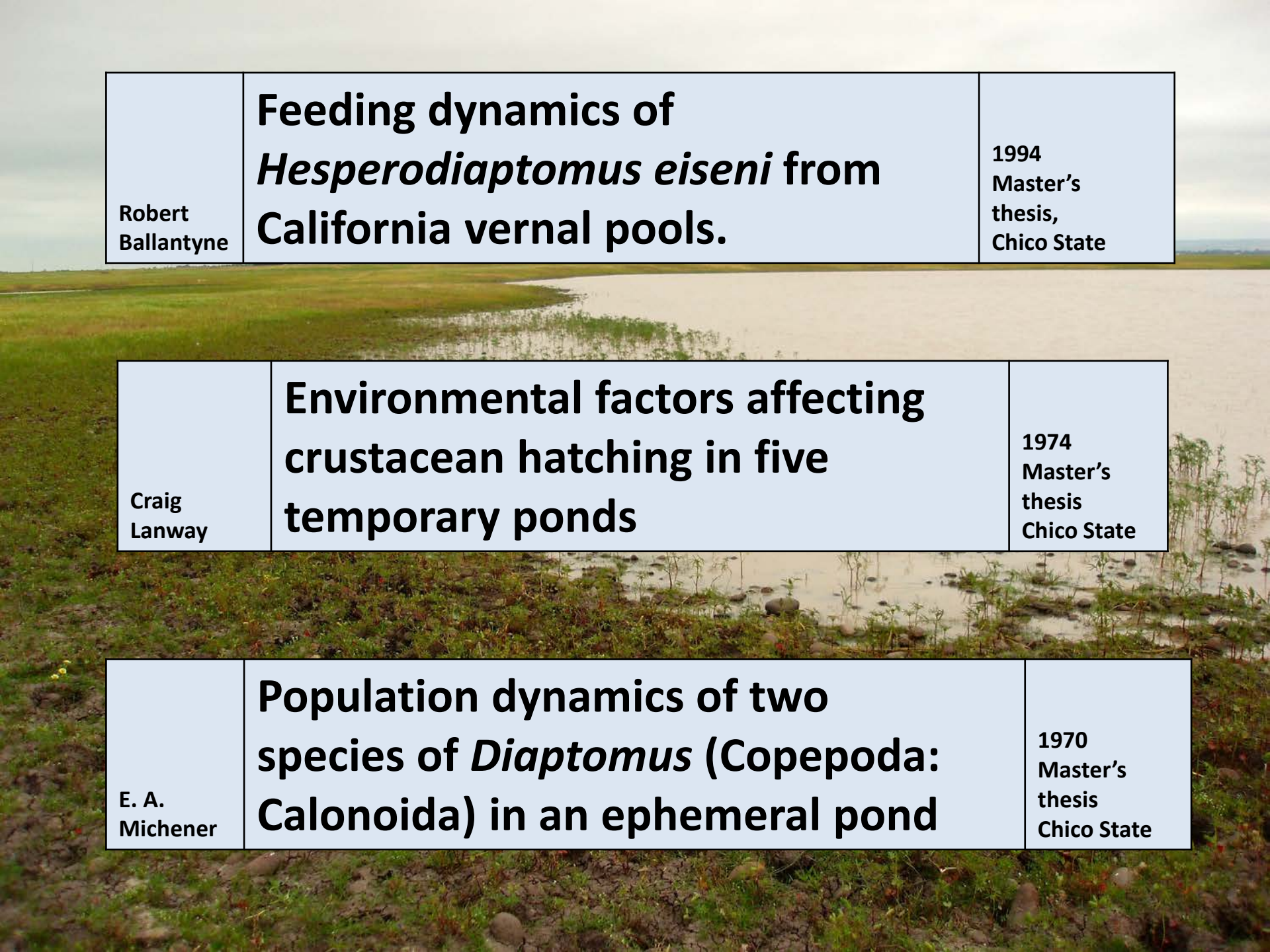
1983
Master's
thesis,
Chico State

Jonna Ahl

Factors affecting contributions of the tadpole shrimp, *Lepidurus packardii*, to its oversummering egg reserves

1991
Hydrobiologia

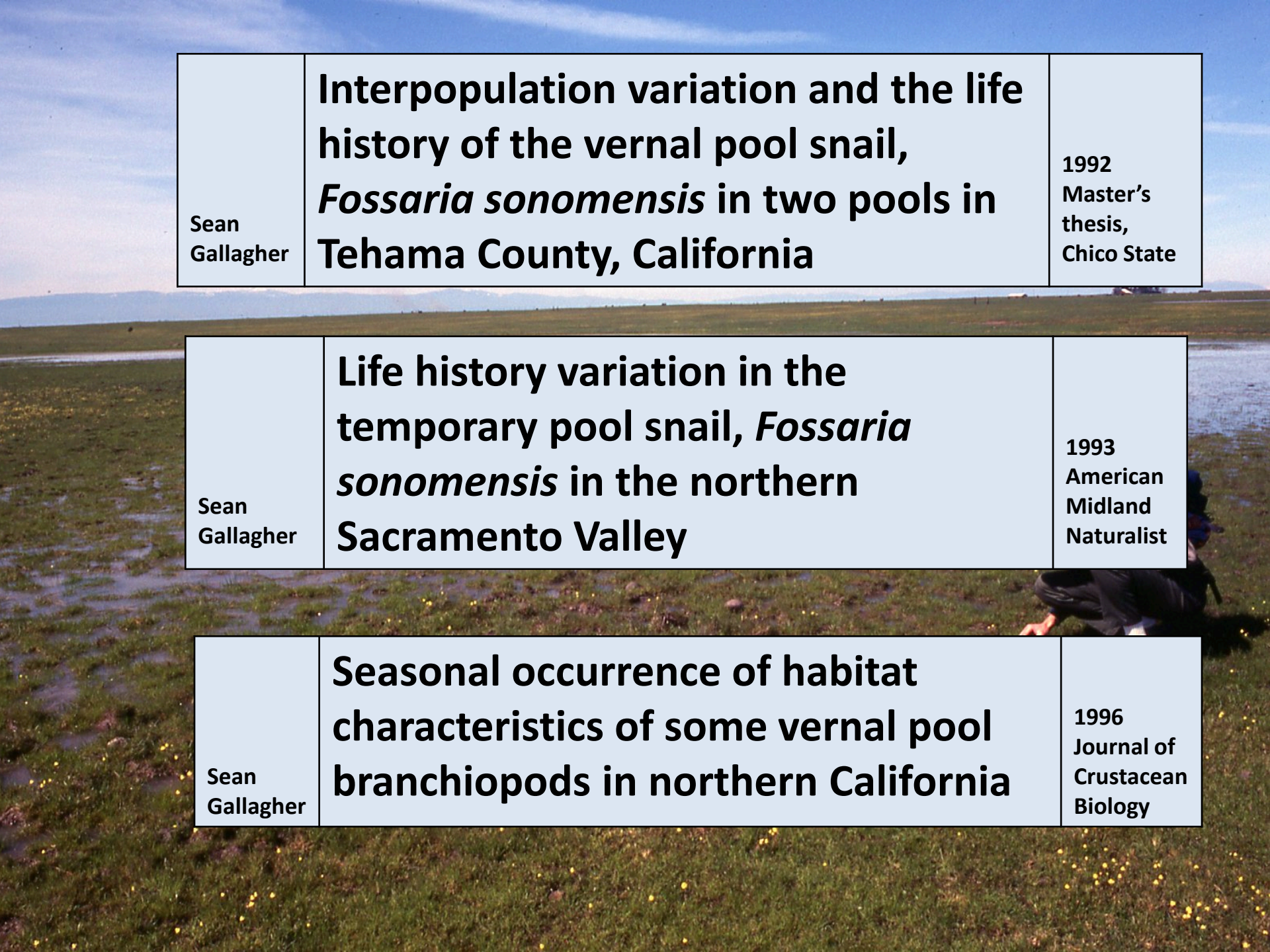




Robert Ballantyne	Feeding dynamics of <i>Hesperodiaptomus eiseni</i> from California vernal pools.	1994 Master's thesis, Chico State
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Craig Lanway	Environmental factors affecting crustacean hatching in five temporary ponds	1974 Master's thesis Chico State
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E. A. Michener	Population dynamics of two species of <i>Diaptomus</i> (Copepoda: Calonoida) in an ephemeral pond	1970 Master's thesis Chico State
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Sean Gallagher	Interpopulation variation and the life history of the vernal pool snail, <i>Fossaria sonomensis</i> in two pools in Tehama County, California	1992 Master's thesis, Chico State
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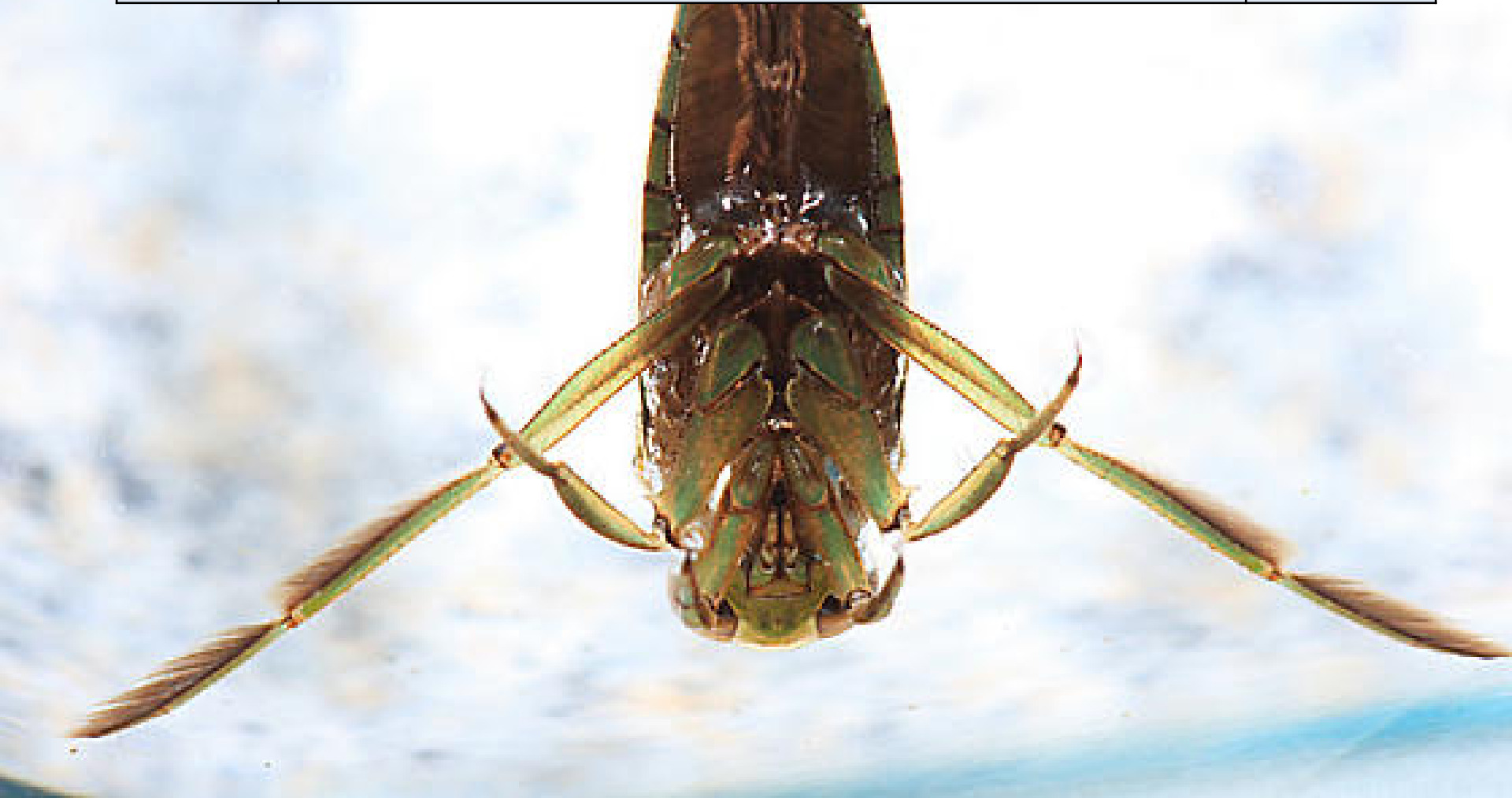
Sean Gallagher	Life history variation in the temporary pool snail, <i>Fossaria sonomensis</i> in the northern Sacramento Valley	1993 American Midland Naturalist
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Sean Gallagher	Seasonal occurrence of habitat characteristics of some vernal pool branchiopods in northern California	1996 Journal of Crustacean Biology
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**Environmental factors affecting
Notonecta kirbyi (Hemiptera:
Notonectidae) predation in vernal
pools at Vina Plains Preserve**

Shelly Kirn

1997
Master's
thesis
Chico State



Jay Bogiatto
and John
Karnegis

The use of eastern Sacramento Valley vernal pools by ducks

2007
Vernal Pool
Landscapes (book 1)



Jay Bogiatto
and others

The use of eastern Sacramento Valley vernal pool habitats by geese and swans

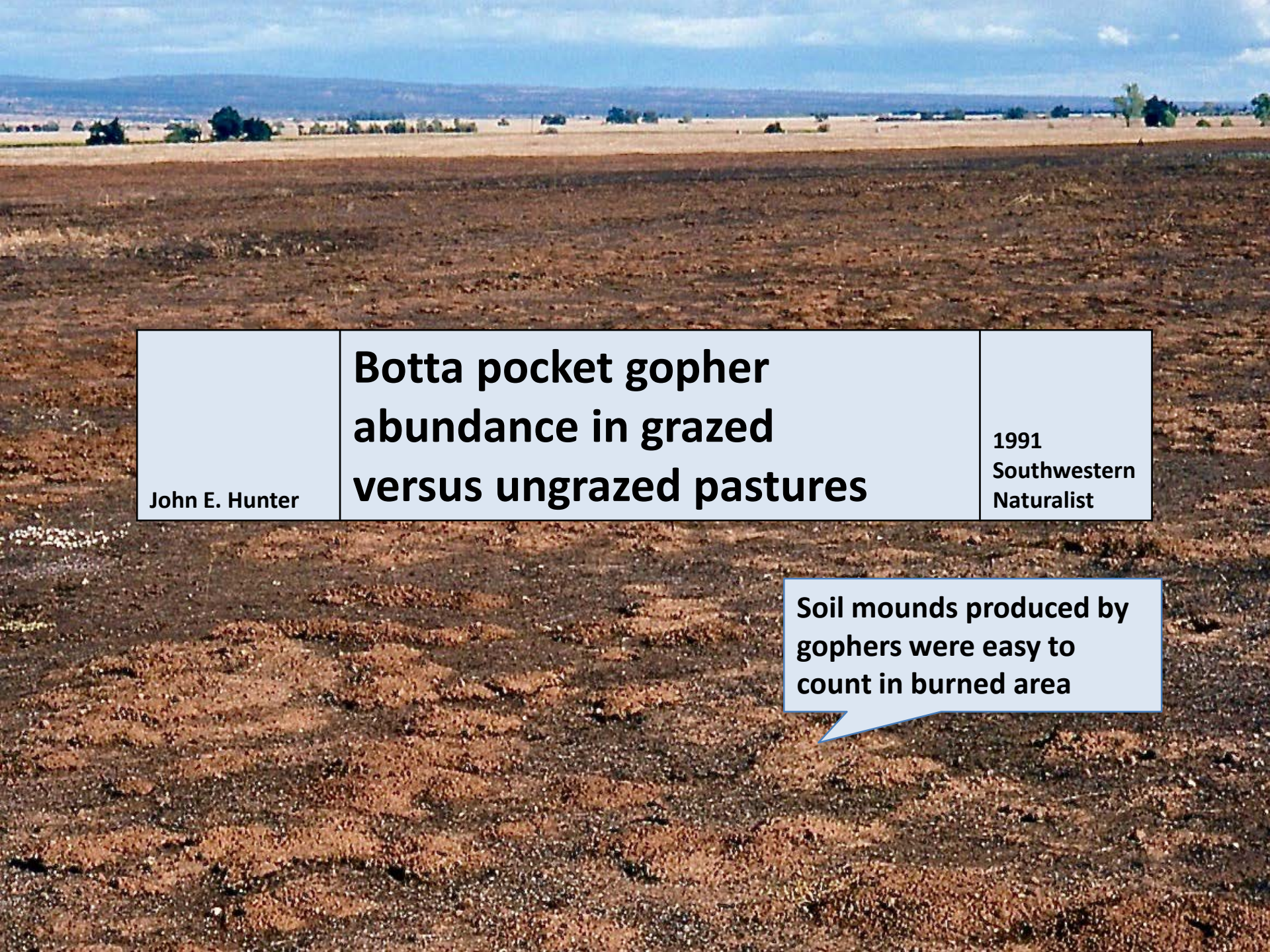
2011
Vernal Pool Landscapes
(book 2)
Also 2010
California Fish and Game
(journal)

Jackson Shedd

Distribution of the western spadefoot (*Spea hammondi*) in the northern Sacramento Valley

2016
Vernal Pool
Landscapes
(book 3)






John E. Hunter

**Botta pocket gopher
abundance in grazed
versus ungrazed pastures**

1991
Southwestern
Naturalist

Soil mounds produced by
gophers were easy to
count in burned area

A woman with dark hair, wearing a vibrant, multi-colored poncho and a matching hat, is lying on her side on a blue blanket in a grassy field. She is smiling and holding a Canon camera with a lens attached. The background is a lush green field with some small yellow flowers in the foreground.

Pauleen
Broyles

**A flora of the Nature Conservancy's
Vina Plains Preserve, Tehama
County, California**

1983
Master's
thesis,
Chico State

Pauleen
Broyles

**A flora of Vina Plains Preserve,
Tehama County, California**

1987
Madroño

**The biogeography of the unicorn
plant (*Proboscidea louisianica*) at
the Vina Plains Preserve**

John Hale

1997
Master's
thesis,
Chico State





Rob
Schlising

**Yearly fluctuations in a vernal
pool annual, *Sidalcea hirsuta***

1989
Evolutionary
Ecology
of Plants (book)

Gina
Costella

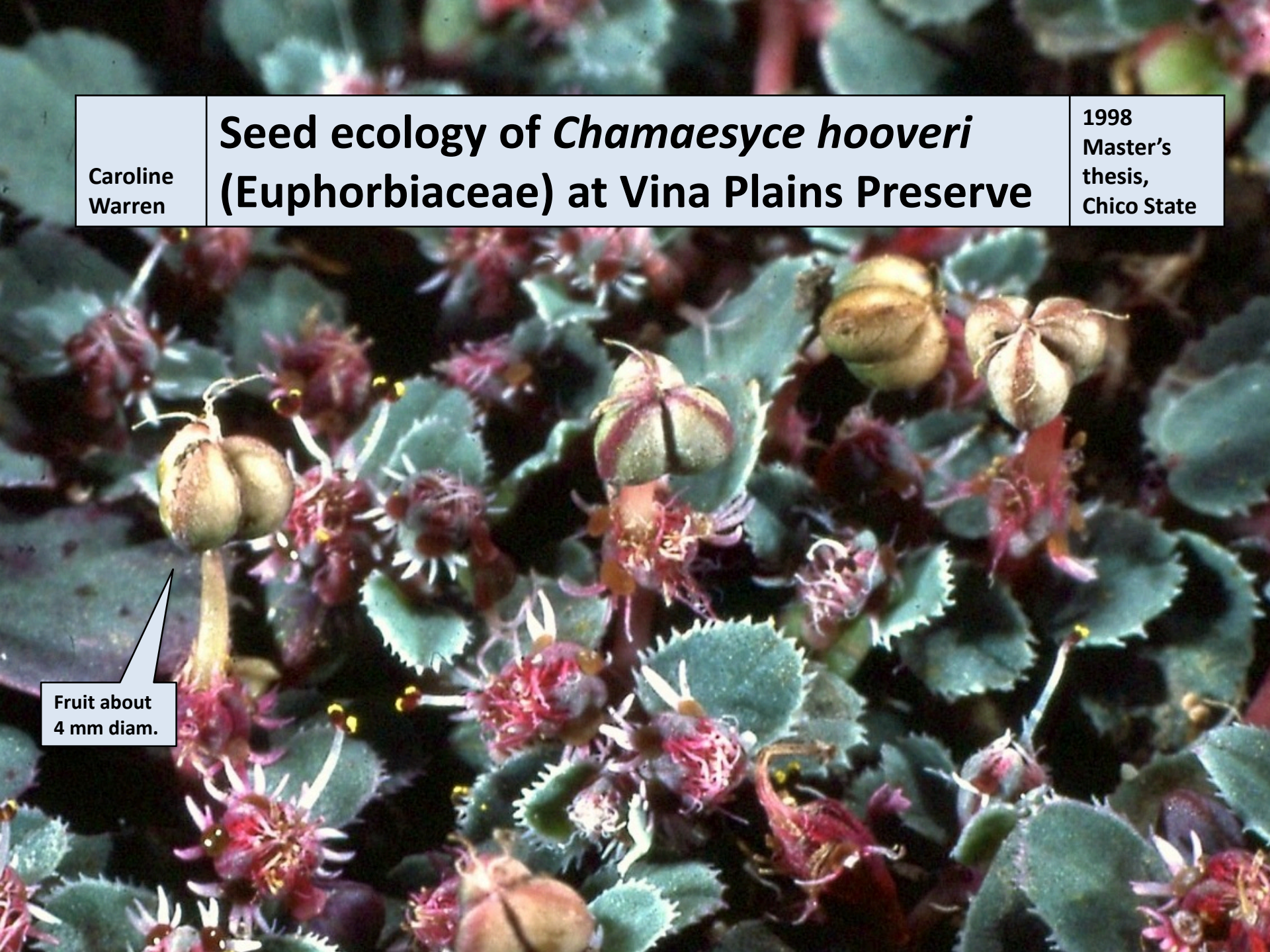
**Seed dormancy and germination in
Sidalcea hirsuta (Malvaceae), a
species endemic to vernal pools**

2004
Master's
thesis,
Chico State

Caroline
Warren

Seed ecology of *Chamaesyce hooveri* (Euphorbiaceae) at Vina Plains Preserve

1998
Master's
thesis,
Chico State



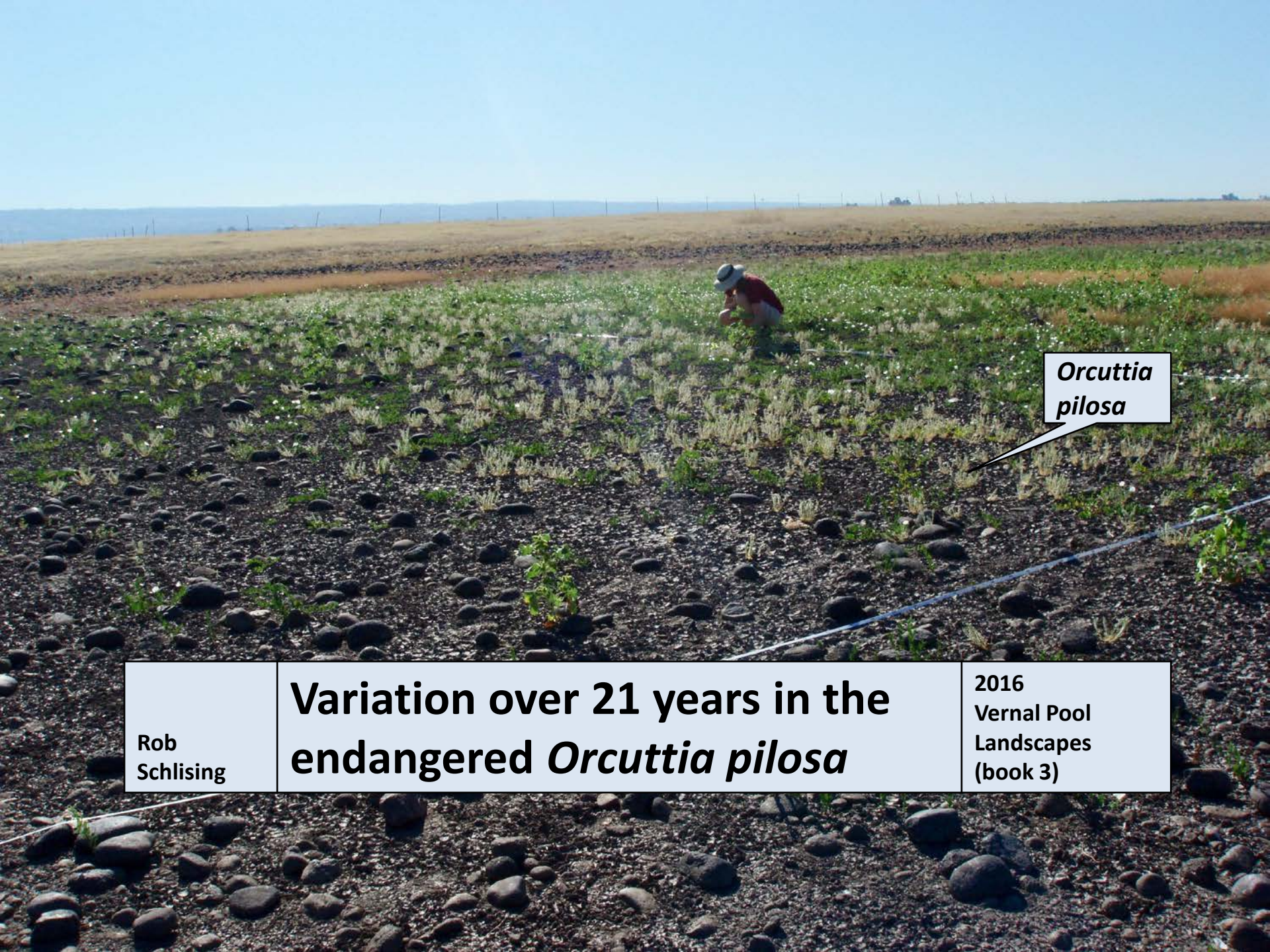
Fruit about
4 mm diam.



**Rob
Schlising**

Summer plant life in large vernal pool basins at the Vina Plains Preserve

**2007
Vernal Pool
Landscapes
(book 1)**

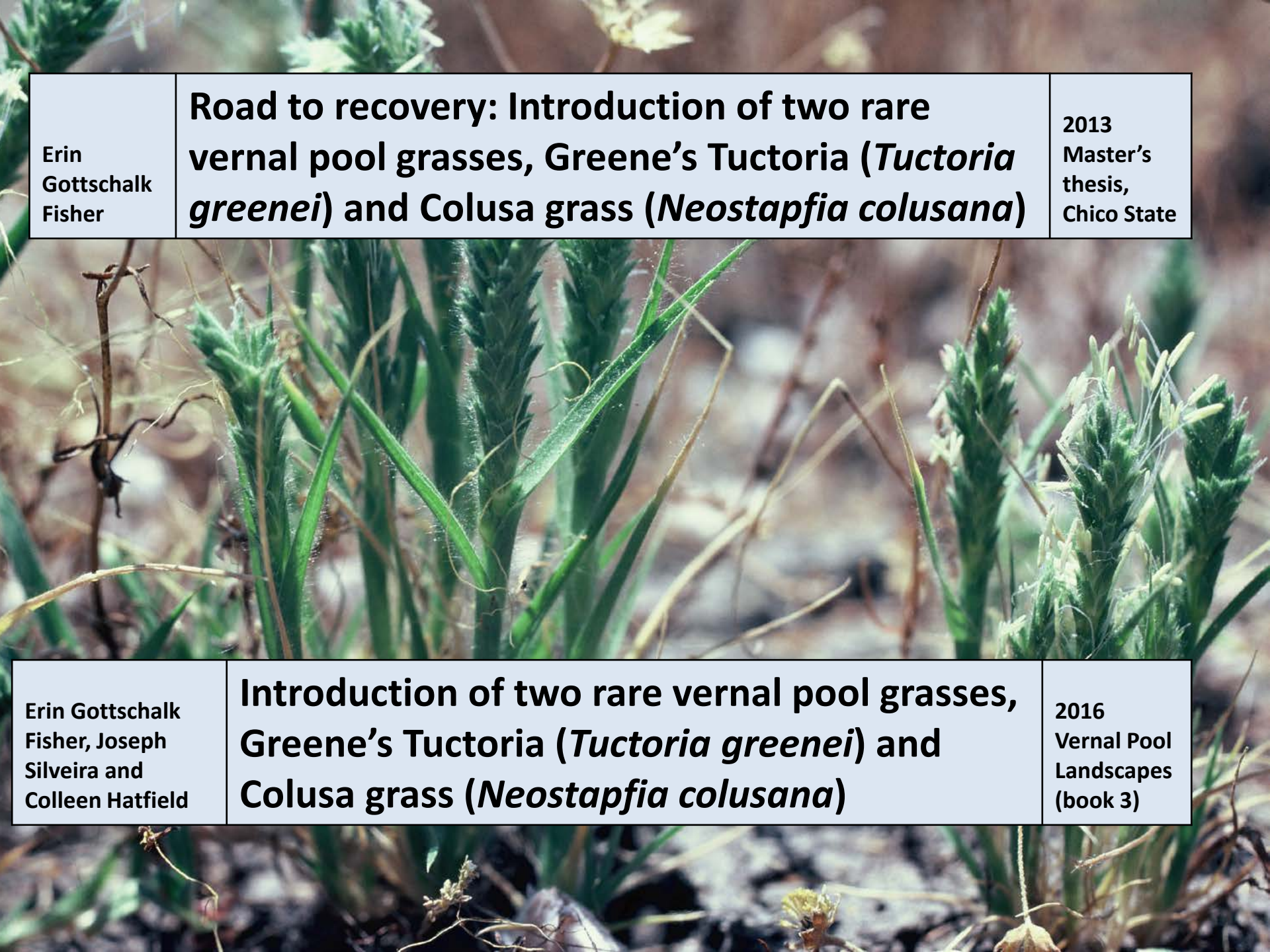


Orcuttia pilosa

Rob
Schlising

**Variation over 21 years in the
endangered *Orcuttia pilosa***

2016
Vernal Pool
Landscapes
(book 3)



Erin
Gottschalk
Fisher

Road to recovery: Introduction of two rare vernal pool grasses, Greene's Tuctoria (*Tuctoria greenei*) and Colusa grass (*Neostapfia colusana*)

2013
Master's
thesis,
Chico State

Erin Gottschalk
Fisher, Joseph
Silveira and
Colleen Hatfield

Introduction of two rare vernal pool grasses, Greene's Tuctoria (*Tuctoria greenei*) and Colusa grass (*Neostapfia colusana*)

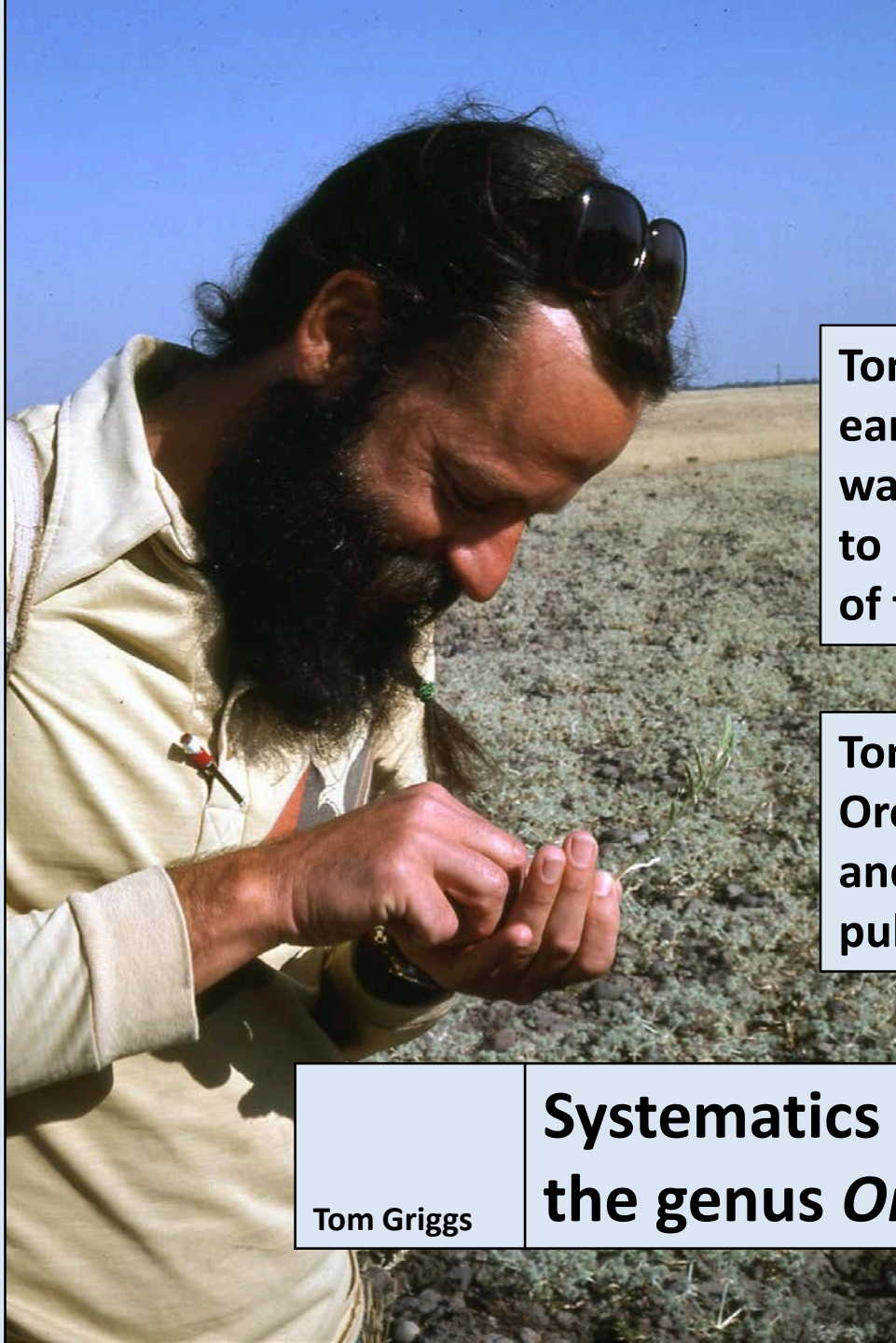
2016
Vernal Pool
Landscapes
(book 3)

Gavin Blosser

Diversity and characterization of arbuscular micorrhizal fungi in soils of vernal pools in northern California

2004
Master's
thesis,
Chico State





Tom also served as one of the earlier Managers of the VPP, and was one of the first biologists here to promote “adaptive management” of the Preserve.

Tom did his PhD dissertation on Orcutt grasses throughout the state, and produced several important publications on them.

Tom Griggs

**Systematics and ecology of
the genus *Orcuttia***

1974
Master's
thesis,
Chico State

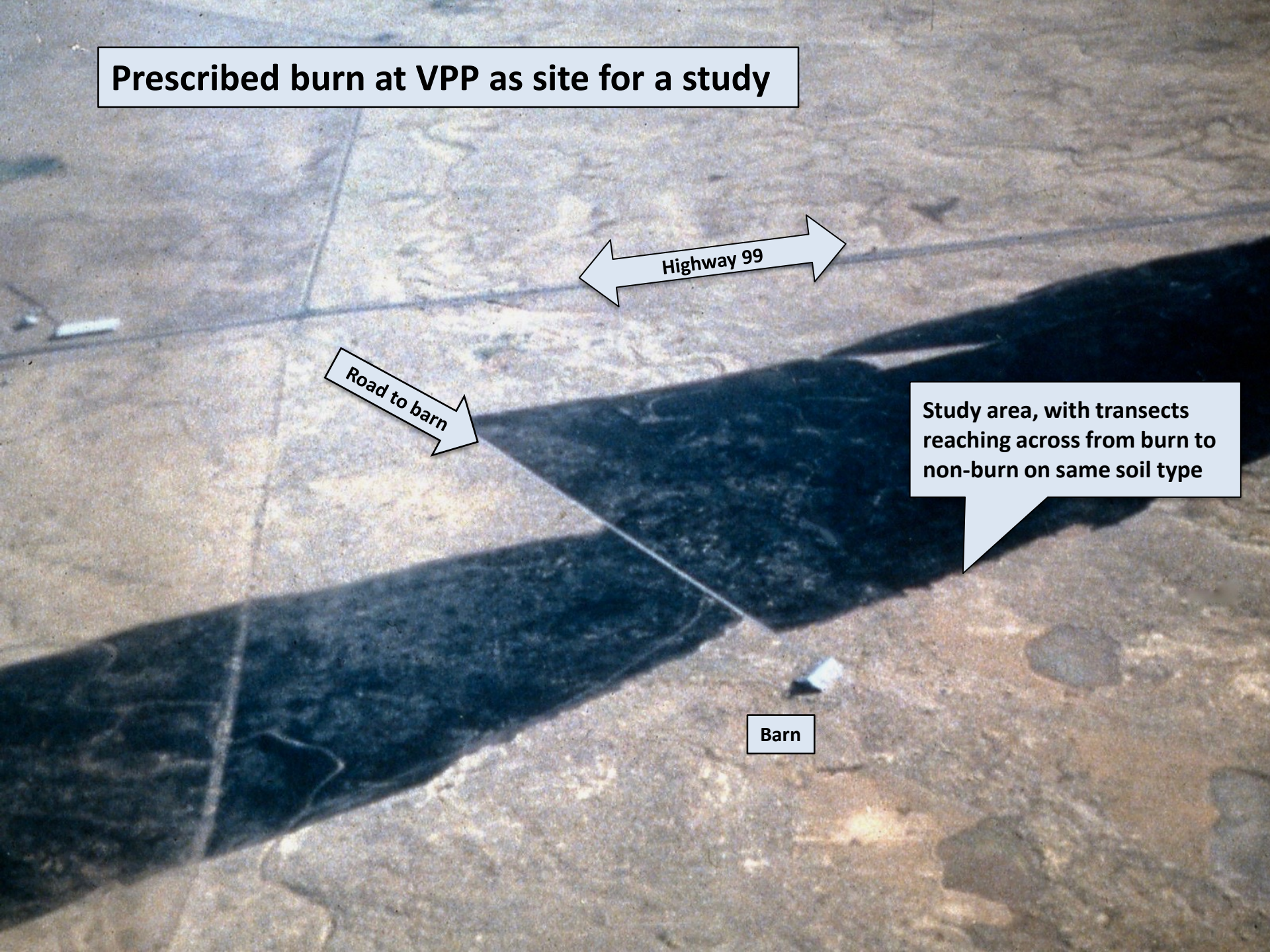
Prescribed burn at VPP as site for a study

Highway 99

Road to barn

Study area, with transects reaching across from burn to non-burn on same soil type

Barn



Rob Schlising,
Caroline Warren
and Greg Treber

First year response after fire, by the
lowland shooting star, *Dodecatheon*
clevelandii subsp. *patula*

2000
Madroño



Rob Schlising and
Scott Chamberlain

Biology of the geophyte
***Triteleia laxa*, (Ithuriel's spear)**

2006
Madroño



Scott Chamberlain
and Rob Schlising

Pollination in *Triteleia laxa*,
(Ithuriel's spear)

2008
Environmental
Entomology

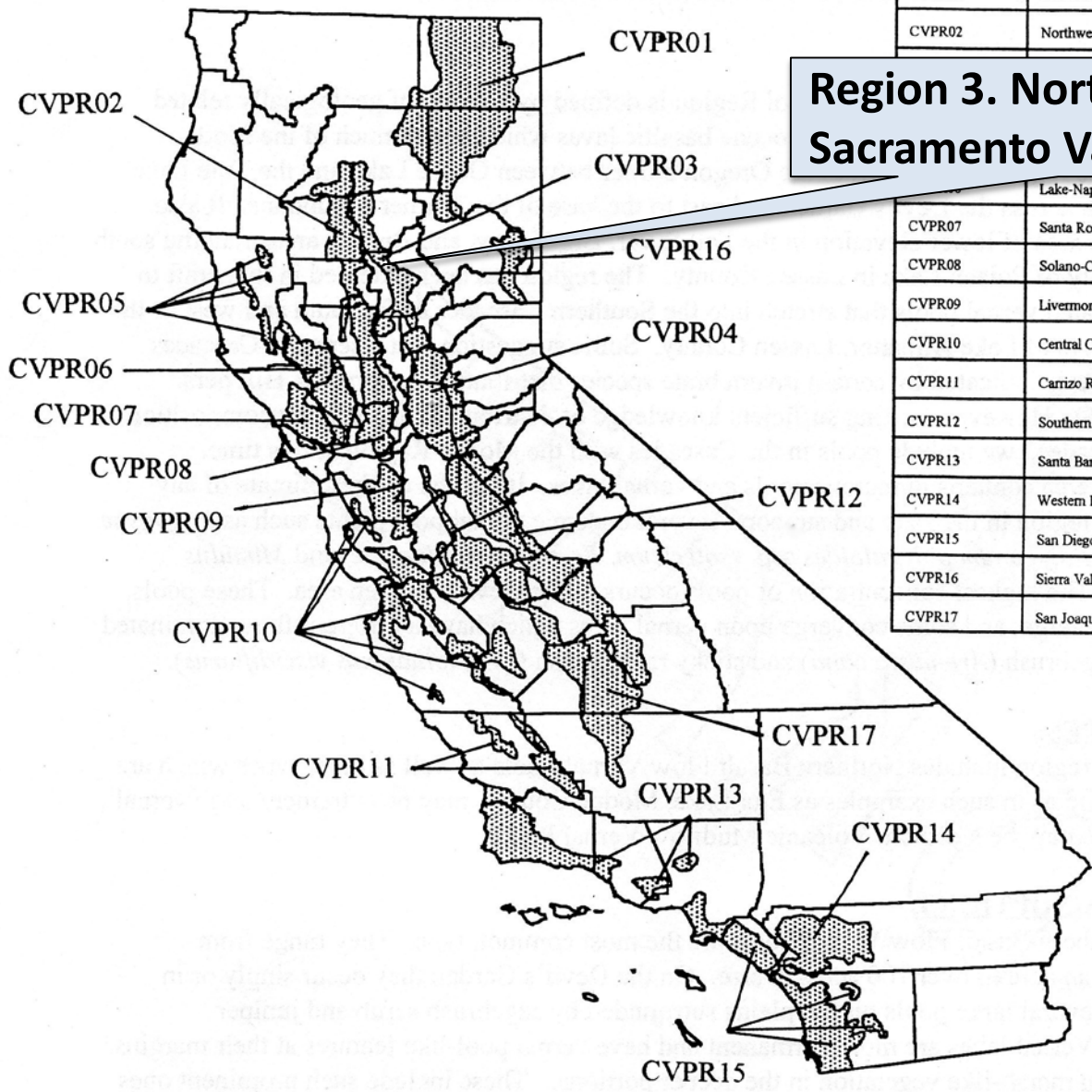
III ...and the U.S. Fish and Wildlife Service's Vernal Pool Recovery Plan

**U.S. FISH AND WILDLIFE SERVICE. 2005.
Recovery Plan for Vernal Pool Ecosystems of
California and Southern Oregon. Portland, OR**

An ecosystem-based GUIDANCE document

**Outlines actions necessary to “recover” listed vernal pool species
so they can be delisted or downlisted.**

California Vernal Pool Regions

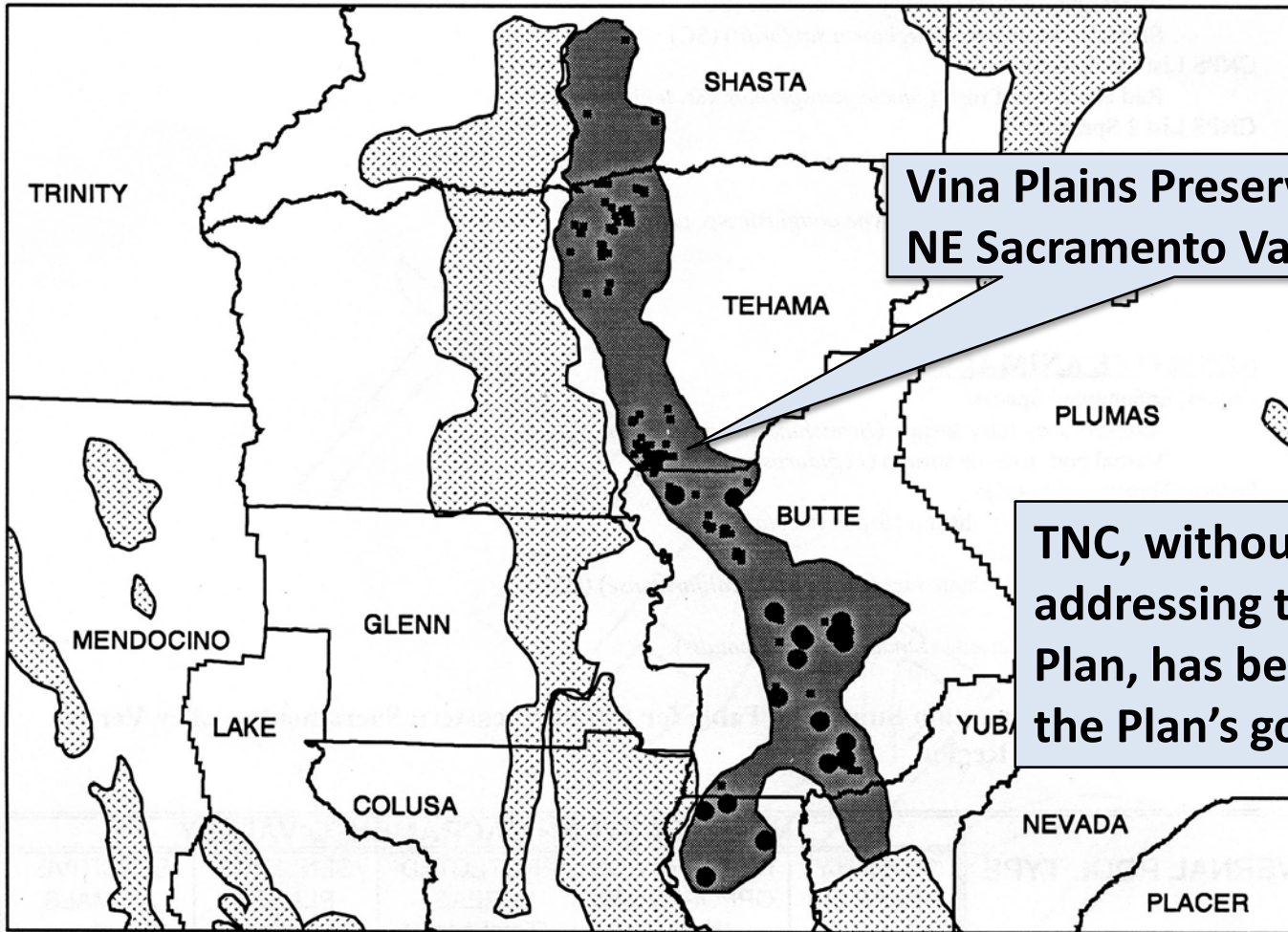


Region ID	Region Name
CVPR01	Modoc Plateau Region
CVPR02	Northwestern Sacramento Valley Region

Region 3. Northeastern Sacramento Valley Region

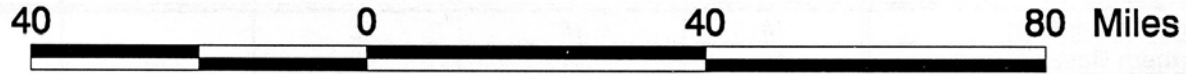
	Lake-Napa Region
CVPR07	Santa Rosa Region
CVPR08	Solano-Colusa Region
CVPR09	Livermore Region
CVPR10	Central Coast Region
CVPR11	Carrizo Region
CVPR12	Southern Sierra Foothills Region
CVPR13	Santa Barbara Region
CVPR14	Western Riverside County Region
CVPR15	San Diego Region
CVPR16	Sierra Valley Region
CVPR17	San Joaquin Valley Region

Northeastern Sacramento Valley Vernal Pool Region



**Vina Plains Preserve is within
NE Sacramento Valley Region**

**TNC, without specifically
addressing the Recovery
Plan, has been achieving
the Plan's goals!**





Take-home thoughts

**The Vina Plains Preserve is extremely important
in preserving vernal pool landscapes**

helping the public appreciate vernal pool landscapes

fostering research on vernal pool landscapes

**Results of that research are now a major resource
—especially in times of climate change**

**Everyone, including those who study, conserve, or
teach about vernal pool landscapes
should be grateful to The Nature Conservancy!**