TRACEY K. BROWN

Associate Professor
Department of Biological Sciences
California State University, San Marcos
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EDUCATION

University of California, Los Angeles, Ph.D. Biology 1999
Dissertation: The physiological ecology of the desert horned lizard, *Phrynosoma platyrhinos*.
Advisor: Dr. Ken Nagy

University of California, Berkeley, B.A. Integrative Biology 1991
Honors Thesis: The shrinking range of the coast horned lizard, (*Phrynosoma coronatum frontale*), in the Greater Bay Area.
Advisor: Dr. Harry Greene (now at Cornell)

PROFESSIONAL EXPERIENCE

Associate Professor, California State University, San Marcos 2007- present

Assistant Professor, California State University, San Marcos 2002-2007

Post-doctoral Researcher, Center for Research on Endangered Species, SD Zool. Society 2000-2002

Graduate Researcher and Teaching Fellow, University of California, Los Angeles 1992-1999

Teaching Assistant, Earthwatch Student Challenge Awards Program, Chiricahua Mnts., AZ 1999

COURSES TAUGHT AT CSUSM

Fall 2012		
Biol. 354	Principles of Ecology Lecture	48 students
Biol. 354	Principles of Ecology Lab	24 students
Biol. 354	Principles of Ecology Lab	24 students
Biol. 698	Thesis Supervision	1 student
Spring 2012		
Biol. 400	Vertebrate Biology Lecture	45 students
Biol. 400L	Vertebrate Biology Lab	19 students
Biol. 489	Intro. to Lab/Field Research	2 students
Fall 2011		
Biol. 211	Intro. Bio. Lecture	41 students
Biol. 211	Intro. Bio. Lab	21 students
Biol. 211	Intro. Bio. Lab	20 students
Biol. 489	Intro. to Lab/Field Research	1 student
Biol. 698	Thesis Supervision	1 student

Spring 2011

Biol. 354	Principles of Ecology Lecture	49 students
Biol. 354	Principles of Ecology Lab	22 students
Biol. 354	Principles of Ecology Lab	27 students
Biol. 489	Intro. to Lab/Field Research	1 student
Biol. 698	Thesis Supervision	3 students

Fall 2010

Biol. 211	Intro. Bio. Lecture	40 students
Biol. 211	Intro. Bio. Lab	23 students
Biol. 489	Intro. to Lab/Field Research	1 student
Biol. 698	Thesis Supervision	2 students

Spring 2010

Biol. 489	Intro. to Lab/Field Research	1 student
Biol. 495	Internship in Biology	1 student
Biol. 499	Senior Lab Thesis	2 students
Biol. 697	Directed Studies	2 students
Biol. 698	Directed Studies	2 students

Fall 2009

Biol. 685	Instr. Internship	2 students
Biol. 697	Directed Studies	1 student
Biol. 698	Thesis Supervision	2 students

Spring 2009

Biol. 338	Human Impact on Environ.	60 students
Biol. 400	Vertebrate Biology Lecture	20 students
Biol. 400L	Vertebrate Biology Lab	14 students
Biol. 489	Intro. to Lab/Field Research	1 student
Biol. 498	Senior Lib. Thesis	1 student
Biol. 499	Senior Lab Thesis	1 student
Biol. 685	Instr. Internship	2 students
Biol. 697	Directed Studies	1 student
Biol. 699	Thesis Extension	2 students

Fall 2008

Biol. 211	Intro. Bio. Lecture	35 students
Biol. 211	Intro. Bio. Lab	20 students
Biol. 211	Intro. Bio. Lab	15 students
Biol. 489	Intro. to Lab/Field Research	1 student
Biol. 499	Senior Lab Thesis	1 student
Biol. 685	Instr. Internship	2 students
Biol. 697	Directed Studies	3 students
Biol. 698	Thesis Supervision	1 student

Spring 2008

Biol. 354	Principles of Ecology Lecture	28 students
Biol. 354	Principles of Ecology Lab	12 students
Biol. 354	Principles of Ecology Lab	7 students
Biol. 495	Internship in Biology	1 student
Biol. 685	Instr. Internship	3 students
Biol. 697	Directed Studies	1 student
Biol. 698	Thesis Supervision	1 student

Fall 2007

Biol. 211	Intro. Bio. Lecture	23 students
Biol. 211	Intro. Bio. Lab	12 students
Biol. 211	Intro. Bio. Lab	11 students
Biol. 489	Intro. to Lab/Field Research	2 students
Biol. 496	Sup. lab. research	1 student
Biol. 685	Instr. Internship	1 student
Biol. 697	Directed Studies	1 student
Biol. 698	Thesis Supervision	2 students

Spring 2007

Biol. 400	Vertebrate Biology Lecture	29 students
Biol. 400L	Vertebrate Biology Lab	21 students
Biol. 354	Principles of Ecology Lab	19 students
Biol. 489	Intro. to Lab/Field Research	2 students
Biol. 697	Thesis	2 students

Fall 2006

Biol. 505	Physiological Ecology	26 students, New course
Biol. 338	Human Impact on the Environment	59 students
Biol. 565	Seminar in Ecology	12 students
Biol. 489	Intro. to Lab/Field Research	1 student
Biol. 698	Directed Studies	1 student

Spring 2006

Biol. 354	Principles of Ecology Lecture	50 students
Biol. 354	Principles of Ecology Lab	50 students, **2** lab sections taught
Biol. 697	Directed Studies	4 students
Biol. 698	Thesis Units	2 students

Fall 2005

Biol. 211	Intro. to Organ. & Pop. Biology	28 students, New prep, rewrite lab manual, **2** labs,
Biol. 489	Intro. to Lab./Field Research	1 student
Biol. 697	Directed Studies	5 students

Spring 2005

Biol. 211	Intro. to Organ. & Pop. Biology	72 students, co-taught with Dr. William Kristan
Biol. 400	Vertebrate Biology Lecture	28 students, New course
Biol. 400L	Vertebrate Biology Laboratory	20 students, New course
Biol. 489	Intro. to Lab./Field Research	2 students
Biol. 498	Senior Library Thesis	1 student
Biol. 685	Internship in Bio. Instruction	3 students
Biol. 697	Directed Studies	1 student

Fall 2004

Biol. 338	Human Impact on the Environment	194 students, all students in 1 section
Biol. 565	Seminar in Ecology	25 students
Biol. 697	Directed Studies	2 students
Biol. 698	Thesis	1 student

Summer 2004

Biol. 489	Intro. to Lab/Field Research	1 student

Spring 2004

Biol. 354	Principles of Ecology Lecture	51 students, New prep.
Biol. 354	Principles of Ecology Laboratory	51 students, **2** labs, New prep.
Biol. 697	Directed Studies	1 student

Fall 2003

Biol. 338 Human Impact on the Environment	136 students, **2** sections
Biol. 353 Animal Physiology Laboratory	22 students, New prep. Dr. Norris taught lecture
Biol. 489 Intro. to Lab./Field Research	1 student

Spring 2003

Biol. 211 Intro. to Organ. & Pop. Biology	54 students, New prep., co-taught with Dr. Norris
Biol. 396J (now 363) Conservation/Rest. Biol.	12 students, New course
Biol. 489 Intro. to Lab./Field Research	1 student
Biol. 565 Seminar in Ecology	20 students, New prep.

Fall 2002

Biol. 338 Human Impact on the Environment	132 students, New prep, **2** sections
Biol. 489 Intro. to Lab./Field Research	1 student
Biol. 495 Internship in Biology	1 student

Other CSUSM Teaching/Advising

Undergraduate Advising – Biology students are assigned alphabetically and juniors/seniors are required to meet with their advisor each semester. Actual number can vary each semester from 10-20 students.

Independent Study – As indicated above (Biol. 489, 495, 499). Typically these students are assisting me in the field or lab with projects and require both training and supervision. I also review their final write-ups. To date I have mentored 23 undergraduates with two currently working in my lab.

Chair Thesis Committee – As indicated above (Biol. 697/698/699). Three additional students began their M.S. with me but did not complete the program.

Ken Morgan (finishing) - Horned lizard foraging patterns and overwintering locations

Brian Greco (2011) – Social learning in captive adult African elephants.
In Ph.D. program at U.C. Davis

Jennifer Keating (2011) – Implications of vocalizations during giant panda breeding encounters.
Currently working for San Diego Zoo.

Justin Chuven (2009) – Behavioral responses of the Chinese dhole to vocalizations. Currently working at Al Ain Wildlife Park in United Arab Emirates.

Beth Principe (2009) – Overwintering habits of Southwestern Pond Turtles.
Currently working for Mission Resource Conservation District.

Janene Colby (2008) – Compared radio-telemetry methods on White-tailed Deer.
Currently works for CA Fish and Game tracking Desert Bighorn Sheep

Thesis Committee Member

In-process:

Erin Lane (Bearded Dragon behavior)
Samantha Lang (mouse physiology)
Kelcey Striker (wildlife corridors)
Brian Sodeman (ants)
Jeff Herman (camera-trapping sheep)
Robyn Coole (Shore Bird declines)

Completed:

Amanda Cornell. 2012. Using Stable Isotope Tracers and Remote Sensing Data to Explain Seasonal Trends in Evapotranspiration in Watersheds in Orange County, CA Associated with Anthropogenic Water.

Kari Coler. 2009. Population viability analysis of *Hazardia orcuttii*, a state-protected species, using a stage class model.

Wendy Acosta. 2008. Long-term calorie restriction does not predict susceptibility of laboratory mice (*Mus musculus*) to a secondary infection by the parasitic nematode *Heligmosomoides bakeri* .

Linnae DeCamp. 2008. Seasonal shifts in corvid abundance in relation to reproductive output by wading birds

Crystel Knight. 2008. Effects of spatial distribution of corvids on nest predation risk.

Julie Miller. 2008. Reproductive biology and germination requirements of the California state threatened species *Hazardia orcuttii* (Asteraceae).

Sarah Pasquini. 2008. Vegetation responses to anthropogenic nitrogen deposition and nitrogen fertilization in chaparral and coastal sage scrub of southern California.

Joanna Kroon. 2007. The physiology of the invasive grass, *Cortaderia selloana*, in response to variations in water table depth and soil nitrogen content.

William Porter. 2005. An evaluation of a passive infrared motion detector (PID) for biological applications

Terrence Wright. 2004. Neuromodulation in the medicinal leech, *Hirudo medicinalis*.

RESEARCH ACTIVITY

PEER-REVIEWED PUBLICATIONS

Greco, B.,Andrews, J.**Brown, T.K.,** Swaisgood, R.R. and N.G. Caine. 2012. Social learning in captive African Elephants (*Loxodonta africana africana*). *Animal Cognition*, Published Online 12/14/2012. DOI 10.1007/s10071-012-0586-7

Eifler, D. A., Eifler, M.A. and **T.K. Brown**. 2012. Habitat use and foraging patterns of Texas Horned Lizards, *Phrynosoma cornutum*. *Southwestern Naturalist*. 57:39-43

Brown, T.K. 2009. Blainville's Horned Lizard Species Account. In *Lizards of the American Southwest, A Photographic Field Guide*, ed. L.C. Jones and R.E. Lovich, pp. 162-165. Rio Nuevo Publishers, Tucson, Arizona.

Brown, T.K. 2009. Desert Horned Lizard Species Account. In *Lizards of the American Southwest, A Photographic Field Guide*, ed. L.C. Jones and R.E. Lovich, pp. 190-193. Rio Nuevo Publishers, Tucson, Arizona.

Brown, T.K. and K.A. Nagy. 2007. Lizard energetics and the sit-and-wait vs. wide-foraging paradigm. In *Lizard Ecology. The Evolutionary Consequences of Foraging Mode*, ed. S.M. Reilly, L.B. McBrayer and D.B. Miles, pp. 120-140. Cambridge University Press, New York.

Brown, T.K., J.M. Lemm, J. Montagne, J.A. Tracey and A.C. Alberts. 2005. Spatial ecology, habitat use, and survivorship of resident and translocated Red Diamond Rattlesnakes (*Crotalus ruber*) in Hayes, W. K.,K. R. Beaman, M. D. Cardwell, and S. P. Bush (Editors). The Biology of Rattlesnakes. Loma LindaUniversity Press, Loma Linda, California.

Brown, T.K., Nagy, K.A. and D.J. Morafka. 2005. Costs of growth in tortoises. *Journal of Herpetology*, Vol. 39:19-23.

Diffendorfer, J., Fisher, R.J. C. Rochester and **T.K. Brown**. 2005. Movement and space use by rosy boas (*Charina trivirgata*) in coastal Southern California. *Journal of Herpetology*, Vol. 39:24-36.

Bott, K., **Brown, T.K.** and D. Eifler. 2001. *Phrynosoma cornutum* (Texas horned lizard). Diet. *Herpetological Review* 32:41

Nagy, K.A., Girard, I.A., and **T.K. Brown**. 1999. Energetics of free-ranging mammals, reptiles and birds. *Annual Reviews of Nutrition*. 19:247-77

MANUSCRIPTS IN SUBMISSION/REVIEW/PREPARATION

Brown, T.K and K.A. Nagy**.** Field energetics of Desert Horned Lizards (*Phrynosoma platyrhinos*): the effects of environmental variation. Working with co-author on finalizing manuscript. To be submitted to *Journal of Animal Ecology* Fall 2012

Brown, T.K, Eifler, D. and K.A. Nagy**.** Field energetics of horned lizards (*Phrynosoma*): the effects of myrmecophagy and environmental variation. Presented results at August 2012 meeting of 7th World Congress of Herpetology. In discussion with co-authors and also in prep for *Journal of Animal Ecology* for submission in Fall 2012

Keating, J., **Brown, T.K**., Bowles, A. and R.R. Swaisgood. Implications of vocalizations in giant panda breeding encounters. In prep for *Animal Behaviour* – to be submitted Spring 2013

Brown, T.K. and K.A. Nagy. Water relations of a desert lizard, *Phrynosoma platyrhinos*. In prep for *Physiological and Biochemical Zoology*

Brown, T.K., J., Montagne, J.P. and A. Alberts. Ecological implications of habitat restoration for coast horned lizards, *Phrynosoma coronatum*. In prep for *Journal of Wildlife Management*

Brown, T.K., Nagy, K.A. and D. J. Morafka. Not so negative effects of habitat disturbance on desert horned lizards (*Phrynosoma platyrhinos*).

BOOK REVIEWS

Inouye, C.Y., Girard, I.A., **Brown, T.K**., Hayse, D., Hertel, F. and K.A. Nagy. 1997. Book review: Avian Energetics and Nutritional Ecology. *Auk* 114:663-664.

Brown, T.K., Henen, B.T., Myer, M., La Pierre, L. and K.A. Nagy. 1995. Book review: Lizard Ecology: historical and experimental perspectives, L.J. Vitt and E. Pianka, eds. *Ecology* 76:1687-1688.

REPORTS

Alberts, A.C., **Brown, T.K.**, Grant, T.D., Lemm, J.M., Montagne, J.P., Milroy III, L.G. and L.A. Jackintell. 2004. Conservation of the San Diego Horned Lizard on the Southwestern Riverside County Multi-Species Reserve. Final Project Report to Metropolitan Water District of So. Cal. for Agreement No. 1550. 61 pp.

Brown, T.K. and K.A. Nagy. 1997 & 1998. Biological monitoring and environmental impact assessment: Goldstone reptile surveys and physiological studies. Final report to U.S. Army – Fort Irwin. 45 pp.

Brown, T.K. and K.A. Nagy. 1995 & 1996. Herpetological surveys and physiological studies on the western portion of Fort Irwin, NTC. Final report to U.S. Army - Fort Irwin. 50 pp. (1995), 43 pp. (1996)

Nagy, K.A. and **T.K. Brown.** 1994. Ecology and Impact Sensitivity of Reptiles at Fort Irwin, CA. Final Report to U.S. Army - Fort Irwin. 28 pp.

GRANTS AND AWARDS

Internal

2012	**CSUSM UPD/RSC Grant**	**$2,682**
	Request for fund to present at 7th World Congress of Herpetology (Vancouver, B.C.) and Ecological Society of America (Portland, OR) meetings in August **$2,682**	
2011	**CSUSM UPD/RSC Grant**	**$11,906**
	A Collaborative Metabolic Equipment System to Measure Energy use by Reptiles and Mammals, CO-PIs Deborah Kristan and Bianca Mothe	
2011	**CSUSM Faculty Center Development Grant**	**$840**
	Funds for horned lizard blood sample analyses and supplies,	
2010	**COAS Professional Development Grant**	**$600**
	Funds for horned lizard blood sample analyses and supplies	
2007	**CSUSM UPD/RSC Grant**	**$4,856**
	Metabolic Ontogeny in Bearded Dragons: Is Reptilian Growth Cost-free	
2007	**CSUSM UPD/RSC Grant Supplemental**	**$1,570**
	Respirometry Training Course	
2007	**CSUSM Faculty Center Development Grant**	**$500**
	Travel funds to attend and present at a conference in Memphis, TN	
2005	**CSUSM IRA Fund Award**	**$9,091**
	Development of the CSUSM Wetland as a Living Laboratory, submitted along with Dr. Richard Bray and Dr. George Vourlitis	
2005	**CSUSM Faculty Development Award**	**$2,375**
	Development of Laboratory Exercises and Teaching Materials for Biol. 211	
2004	**CSUSM Lottery Funds**	**$4,800**
	Acquisition of vertebrate biology teaching equipment	
2004	**CSUSM Faculty Center Development Grant**	**$500**
	Travel funds to attend and present at a conference in South Africa,	
2004	**CSUSM UPD/RSC Grant**	**$3,400**
	Effects of Habitat Disturbance on the Physiological Ecology of Coast Horned Lizards	

External

2006 *Submitted* to NSF

Movement, space use, and survival of vertebrates in a heterogeneous urban landscape. CO PIs Douglas Bolger (Dartmouth), Jay Diffendorfer (Illinois Natural History Survey), Phil Unit and Scott Tremor (SDNHM). *Several positive reviews, re-submitted but eventually rejected.* Requested Individual Amount **$182,185**. Total Request Amount **$1,044,632**

2003 Favrot Fund **$30,000**

Effects of road design on native vertebrates, with Allison Alberts

2002 Favrot Fund **$35,000**

Habitat monitoring and adaptive management project, with Allison Alberts

2001 Bud Heller Fellowship **$30,000**

Ecological studies of native snakes at the Wild Animal Park, with Allison Alberts $**30,000**

2000 Joan Irvine Smith Foundation, Favrot Fund, Metropolitan Water District of So. Cal. **$53,910**

Partial support for coast horned lizard restoration ecology project, with Allison Alberts

93/98 U. S. Department of Defense **$374,673**

Physiological research and annual herpetological studies at Fort Irwin Army NTC and Comparative tortoise metabolism study

Other

University of California, Los Angeles

Graduate Division Travel Award **$800**	1998, 1999
UC President's Dissertation Year Fellowship **$24,000**	1997-1998
Departmental Quarter Fellowship **$4,500**	1996

PRESENTATIONS & MEETINGS

At Professional Conferences:

Contributed Paper – 7th World Congress of Herpetology, Vancouver, B.C. 2012

"Field energetics of horned lizards (*Phrynosoma* spp.), the effects of myrmecophagy"

Contributed Poster – Ecological Society of America Meeting, Portland, Oregon 2012

"Energetics of Blainville's Horned Lizards, *Phrynosoma blainvillii*, in disturbed and undisturbed habitat"

Contributed Paper – Ecological Society of Meeting, Memphis, Tennessee 2006

"Spatial ecology, habitat use, and survivorship of resident and translocated Red Diamond Rattlesnakes"

Invited Symposium Speaker – Fifth World Congress of Herpetology, Stellenbosch, South Africa 2005

"Lizard energetics and the sit-and-wait versus widely-foraging paradigm"

Invited Symposium Speaker – Biology of the Rattlesnakes Symposium, Loma Linda Univ., CA 2005

"Movement, Denning, and Relocations of Red Diamond Rattlesnakes (*Crotalus ruber ruber*)"

Contributed Poster – Ecological Society of America Meeting, Portland, Oregon 2004

"Ecological responses by San Diego Coast Horned Lizards, *Phrynosoma coronatum blainvillei* to habitat restoration efforts.

Contributed Poster – 2004 ESRI International User Conference, San Diego, CA 2004

"Ecological responses by San Diego Coast Horned Lizards, *Phrynosoma coronatum blainvillei* to habitat restoration efforts" *Note:* title same as ESA meeting, however different data given

Contributed Paper – Annual meeting of Society of Conservation Biology. Hilo, HI 2001

"Biological impacts of human disturbance on two horned lizard species (*Phrynosoma*) in southern California."

Invited Paper - Joint conference of the ASIH, SSAR, and HL. La Paz, Baja California Sur. 2000

"Biological impacts of human disturbance on two horned lizard species (Genus *Phrynosoma*) in southern California".

Contributed Paper - Joint conference of the ASIH, SSAR, and HL. University Park, PA 1999

"Physiological consequences of environmental variation in desert horned lizards, *Phrynosoma platyrhinos*."

Contributed Paper - Joint conference of the ASIH, SSAR, HL., Guelph, Ontario, Canada 1998

"Aspects of the physiological ecology of the desert lizard, *Phrynosoma platyrhinos*."

<u>To University, Scientific and Community Organizations:</u>

Invited Speaker – Lake Hodges Native Plant Club 2009

"Reptiles and Amphibians of San Diego County"

Invited Seminar Speaker – La Sierra University 2007

"Horny and thorny devils: Is the devil a sloth?"

Invited Seminar Speaker – Perspectives in Science, Point Loma Nazarene College 2004

"Reptile biodiversity in Southern California"

Invited Seminar Speaker – The Wildlife Society Western Section's Identification Workshop 2003

"Coast Horned Lizard, *Phrynosoma coronatum*"

Invited Seminar Speaker – Loma Linda University. Loma Linda, CA 2002

"The physiological ecology of Desert Horned Lizards, *Phrynosoma platyrhinos*.

Invited Banquet Speaker – CRES Summer Colloquium. San Diego, CA 2002

"Biodiversity in our backyard: ecology of native snakes at the Wild Animal Park."

SERVICE

DEPARTMENT

Director, Departmental Program Review	2010-2012
Director, Biology Graduate Program	2005-2009
Assisted with preparation of Academic Recruitment Plan for Biology Hire	2005
Assisted with preparation of Program Evaluation and Planning (PEP) document	2004

COLLEGE & UNIVERSITY

Chair, Institutional Animal Care and Use Committee	2012-present
Member, Institutional Animal Care and Use Committee	2008-2012
Chair, CSM Faculty Development Committee	2011-present
Chair, Faculty Grants Committee	2008-2009
Steering committee for Environmental Science major development	2002-present
Academic Senator	2006-2007
Member, Escondido Chamber of Commerce	2005-2006
Member, Faculty Affairs Committee	2004-2006
University Village Faculty Fellow at on-campus student dormitories	2003-2005

COMMUNITY

CSUSM Site Coordinator for Bridges Program	2013-present
Member, Technical Advisory Board for Nature Reserve of Orange County	2010-present
Board of Directors, Friends of Daley Ranch	2004-2010
Participation in Wild Animal Park Children's Program	2005
Participation in "Girls in Science" programs with Zoological Society of San Diego	2002
Expanding Your Horizons, UCSD hosted program to introduce girls to science and math	2002

PROFESSIONAL

Associate Editor, *Journal of Herpetology*	2012-present
Journal Reviewer for *Zoology* (1 manuscript), *The Biology of the Rattlesnakes II* (chapter)	2012
Journal Reviewer for *Herpetologica* and *J. of Fish and Wildlife Management*	2011
Journal Reviewer for *Copeia*	2006
Invited Member to California Partners in Amphibian and Reptile Conservation (PARC)	2005
Journal Reviewer for *Physiological and Biochemical Zoology* (1 manuscript)	2005
Book Reviewer for 2 chapters in *The Biology of Rattlesnakes* Symposium Volume	2005
Book Reviewer for 1 chapter in *Lizard Ecology: The Evol. Consequences of Foraging Mode*	2004
Journal Reviewer for *Herpetological Review* (1 manuscript)	2003
Journal Reviewer for *Oecologia* (5 manuscripts)	1998-2001

PROFESSIONAL TRAINING

GIS Resources and Instructional Development Workshop, Palomar College	October 21-22, 2011
Geospatial Technology Summer Workshop, Nat. GeoTech Center, SDSU	July 18-20, 2011

PROFESSIONAL AFFILIATIONS

Society for Conservation Biology (SCB)
Ecological Society of America (ESA)
San Diego Partners for Biodiversity
American Society of Ichthyologists and Herpetologists (ASIH)
Horned Lizard Conservation Society (HLCS)
Society for the Study of Amphibians and Reptiles (SSAR)