JAMES H THORNE PhD

Curriculum Vitae

Office Address

Department of Environmental Science and Policy
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Academic Training

2003 Ph.D. in Ecology, University California, Davis
Advisors: Drs. James F. Quinn and Michael Barbour
1997 M. A. Geography, University of California, Santa Barbara
Advisor: Dr. Frank Davis
1985 B.A. Environmental Studies, University of California, Santa Cruz

Areas of Interest

Climate change
Conservation Planning
Urban Growth Modeling
Historical Ecology
Species Distribution Modeling
Landscape Ecology
Phenology
Environmental Policy
Informatics
Biogeography

Languages

English, French, Spanish

Current Projects

CABS Fellow, Conservation International, Climate Change Studies.
I am a Fellow with the Center for Applied Biodiversity Science, Conservation International (CABS), working with Dr. Lee Hannah, PI. We are modeling plant response to climate change in California. We have assembled climate surfaces and vegetation plot data (some 25,000) to parameterize species range models, and project current and future species' climate envelopes for California trees. These modeled species ranges are then used to run a spatially explicit, stage-based demographic model of dispersal called BioMove under climate change scenarios. The goal is to evaluate the chances different species have of keeping up with their shifting suitable environments under rapid climate change. Test versions of the final models are anticipated for Fall, 2006.

Wieslander Historical Vegetation Studies.
I run a $353,000 program to digitize 70-year old vegetation maps in California (the Wieslander Vegetation Type Maps). These 70-year old maps cover about 1/3 of California. My research group has digitized maps covering 30,000 km^2 of the central Sierra Nevada. This project is on its third year. We have developed change detection techniques, and are examining relative differences in change between private lands, and lands managed by the US Forest Service and National Parks. There is particular focus on the large shifts in conifer forest along the lower edge of the Sierra Nevada. This trailing edge of the forest has shifted uphill 180 meters since the 1930s. There are currently three manuscripts in review from this project. This academic year we will finish the maps for the entire Sierra Nevada, and digitize those surrounding the San Francisco Bay Area. Funds come from a variety of sources including: the California Energy Commission, the US Forest Service, the US National Park Service, and the Bay Area Open Space Council.

California Department of Transportation (CalTrans), Regional Mitigation Assessment Methods Development & Urban Growth Modeling
I am Lead Ecologist on a project assisting CalTrans to develop regional biological and ecological assessment capabilities. For this purpose, we are assembling a state-wide, district, county, and site specific data for GIS contextualizing. The multiple scales of GIS information provide the information structure to explore various trends relating to planned growth of the transportation infrastructure, and whether there are efficiencies to be gained by identifying species that require mitigation efforts at multiple sites. This permits either the most effective mitigation of all, avoidance, or permits regional planning for those species, at a benefit to both the projects and to the species. The group is currently focused on developing the methods in a pilot watershed in Monterey County, and is involved with a 2.5 million dollar mitigation land acquisition exercise.

Butterfly Phenology 30 Year Study.
I oversaw development and analysis of a database of butterfly phenology, records recorded by Dr. Art Shapiro, UC Davis. We obtained a NSF grant ($217,000) under the Informatics and Databases division, to register his 30 year study of butterfly phenology into a database and analyze the contents. We have over 80,000 species observation events from 10 sites forming a transect from San Francisco to the east side of the Sierra Nevada. Two papers are currently in review, and three others are in process. I developed daily probability values for observing butterfly species at each site. These are used for comparative phenology, to examine potential daily species richness, and as a way to measure species decline. We have developed a website and will post the database in 2007.

Oak Restoration Long-Term Field Experiment
I serve as lead ecologist on a 5 year, $125,000 grant from the California Integrated Hardwood Range Management Program to study oak restoration practices in degraded California woodlands and grasslands. We have installed two, 5-year planting experiments aimed at determining effective and cost effective restoration techniques for private land owners (predominantly ranchers) interested in restoration of Coast Live Oak (*Quercus agrifolia*), Blue Oak (*Quercus douglasii*), and Valley Oak (*Quercus lobata*) on their properties. Planting locations are in the Coast Range in Solano and Yolo Counties. We involved some 30 volunteers to install the field trials.

National Biological Information Infrastructure, California Node.
I co-direct the National Biological Information Infrastructure's California Information Node, a website (http://cain.nbii.gov/). The site, based at the UC Davis, Information Center for the Environment is tasked with delivering biological information on-line. I participate the group's vegetation mapping and data components. We recently posted digital range maps for 7887 California vascular plant taxa. These are derived from a plant geo-database I developed by crossing the names and spatial extents of the two major California Flora. Analysis of biogeographic components of this database has led to two articles in press, two submitted, and several more under development.

Publications

Refereed Archival Journals:

Thorne, J. H., J. M. O'Brien, M. L. Forister, and A. M. Shapiro. 2006. Building Phenological Models from Presence/Absence Data for a Butterfly Fauna. *Ecological Applications* 16(5) 1730-1743.

Thorne, J.H., S. Gao, A. D. Hollander, J. A. Kennedy, M. McCoy, R. A. Johnston, J. F. Quinn. 2006. Modeling potential species richness and urban buildout to identify mitigation sites along a California highway. *Journal of Transportation Research D* 11(4) 233-314.

Thorne, J.H., D. Cameron, and J.F. Quinn. 2006. A conservation design for the central coast of California and the evaluation of mountain lion as an umbrella species. *Natural Areas Journal* 26:137-148.

Schwartz, M. W., J. **Thorne**, and J.H. Viers. 2006 Biotic homogenization of the California flora in urban and urbanizing regions. *Biological Conservation* 127(3): 282-291.

Viers, J. H., J. H. **Thorne**, and J. F. Quinn. 2006. CalJep: A spatial distribution database of CalFlora and Jepson plant species. *San Francisco Estuary and Watershed Science*. Vol. 4, Issue 1 (February 2006), Article 1. http://repositories.cdlib.org/jmie/sfews/vol4/iss1/art1

Stubblefield, A., S. Chandra, S. Eagan, T. Dampil, G. Davaadorzh, D. Gilroy, J. Sampson, R. Allen, J. **Thorne**, Z. Hogan. 2005. Impacts of gold mining and land use alterations on the water quality of central Mongolian rivers. *Integrated Environmental Assessment and Management* 1(3) 1-7.

Thorne, J.H., J. A. Kennedy, T. Keeler-Wolf J. F. Quinn, M. McCoy, J. Menke. 2004. A new vegetation map of Napa County using the Manual of California Vegetation Classification and its comparison to other digital vegetation maps. *Madroño* 51(4) 343-363.

Vander Zanden, J., J.D. Olden, J.H. **Thorne**, N.E. Mandrake. 2004. Predicting occurrences and impacts of smallmouth bass introductions in north temperate lakes. *Ecological Applications* 14(1) 132-148.

Thorne, J.H. 2003. Development and Interpretation of Ecological Datasets for Conservation Planning and Natural Resources Management. **PhD Dissertation**, UC, Davis.

Recently Accepted Manuscripts:

Thorne, J., J. Bjorkman, S. Thrasher, R. Kelsey, and B. J. Morgan. 1930s extent of oak species in the central Sierra Nevada. *US Forest Service General Technical Report* 2006. *In Press*

O'Brien, J. M., J. H. **Thorne**, and A. M. Shapiro. A Cryptic Decline of Butterfly Species Diversity near Davis, California. *Diversity and Distributions. In Revision*

Manuscripts in Review:

Thorne, J. H., B. J. Morgan, and J. A, Kennedy. Vegetation Change over 60 Years in the Central Sierra Nevada. *Madroño***.** In Review

Thorne, J.H., J. H, Viers, L. Hannah, and D. Stoms. Spatial patterns of endemic plants in California. *Ecological Applications.* In Review

Viers, J. H., M. G. Vaghti, J. H. **Thorne**, and J. F. Quinn. Patterns of regional and local riparian plant diversity in the California Sacramento – San Joaquin Valley. *Restoration Ecology*

Peer Reviewed Technical Reports:

In Press **Thorne**, J. H. 2006. The development of 70-year old Wieslander Vegetation maps and an assessment of landscape change in the central Sierra Nevada. *Technical Report for California Energy Commission, Public Interest Energy Research*, Sacramento, CA. 115 p.

Thorne, J.H., B. J. Morgan, T. R. Kelsey, and J. A. Kennedy. 2006. Wieslander Vegetation Type Maps: A Digitizing Process Manual. *Technical Report prepared for the Pacific Northwest Research Station, US Forest Service*. University of California, Davis.

Thorne, James, M. McCoy, A. Hollander, N. Roth, and J. Quinn. 2005. *Environmental Analysis for Transportation Corridor Planning*. **Proceedings of the International Conference on Environment and Transportation**, San Diego, CA.

Thorne, J.H., D. Cameron, V. Jigour. 2002. A Guide to Wildlands Conservation in the Central Coast Region of California. *California Wilderness Coalition,* Davis CA.

Davis F. W., D. M Stoms, A. D. Hollander, K.A. Thomas, P.A. Stine, D. Odion, M. I. Borchert, J. H. **Thorne**, M. V. Gray, K. Warner, and J. Graae. 1998. The California Gap Analysis Project – Final Report. June 30, 1998. *University of California, Santa Barbara*.

Thorne, J.H. 1997. GAP Analysis: the vegetation of northwest California. ***Master's thesis***. *University of California*, Santa Barbara.

Manuscripts in Preparation:

Thorne, J.H. and J.F. Quinn. High resolution land cover and land use data: necessary tools for conservation assessment.

Thorne, J. H, T. R. Kelsey, B. J. Morgan. Sensitivity of Montane Coniferous Forests to Compound Effects from Disturbance and Climate Change.

Seo, C., J. H. **Thorne**, L. Hannah. Model sensitivity to scale and data intensity in species range modeling.

Thorne, J. H., S. Gao. Modeling the compound impacts of urban growth and viticulture on biodiversity in Napa, California.

Thorne, J.H., J. H, Viers. Testing biogeographic boundaries with species turnover in the California Floristic Province.

Thorne, J. H, C. Seo, L. Hannah, S. Stoms. Potential impacts of climate change to California's endemic tree species.

Published Conference Proceedings

Invited talk. **Thorne,** J.H. and T.R. Kelsey. 2006. 140 Dynamics of a Forest Ecotone under climate and environmental change. American Geophysical Union Meeting, San Francisco.

Thorne, James. 2006. Forest Change over 140 Years in the Central Sierra Nevada. Ecological Society of America Meeting.

Hannah, L., J.H. **Thorne**, C. Seo, D. Stoms, I. Davies, G. Midgley, W. Thullier and F. Davis. 2005. Modeling climate change impacts on biodiversity. California Energy Commission's Second Annual Climate Change Conference, Sacramento, CA.

Thorne, J.H. and B.J. Morgan. 2005. Developing historical vegetation maps to support modeling in California. California Energy Commission's Second Annual Climate Change Conference, Sacramento, CA.

Thorne, James, Joshua Obrien, Mathew Forister, Arthur Shapiro. 2005. Butterfly community phenology across an altitudinal transect. Ecological Society of America Meeting.

O'Brien, Joshua, Forister, Matthew, **Thorne**, J., Shapiro, Arthur. 2005. Detection of long-term changes in an alpine butterfly community using non-parametric bootstrap methods. Ecological Society of America Meeting.

Quinn, James, Hollander, Allan, **Thorne**, James, Viers, Joshua. 2005. SPIRE: Semantic Web applications for biodiversity and invasive species. Ecological Society of America Meeting

Anderson, Kayce, Forister, Matthew, Shapiro, Arthur, O'Brien, J, **Thorne**, J. 2005. Urban boundaries in a biodiversity hotspot: Declining butterfly diversity in California's modified

Central Valley. Ecological Society of America Meeting.

Viers, Joshua, **Thorne**, James, Vaghti, Mehrey, Quinn, James. 2005. Patterns of regional and local diversity in the California Bay-Delta ecoregion and its watersheds: Lessons for riparian restoration and monitoring. Ecological Society of America Meeting.

Thorne, James. 2003. A Conservation Design for the Central Coast of California using modeled cores and corridors for mountain lion (*Felis concolor*). –Society for Conservation Biology, UC Davis. 2004.

Grants

2006 United State Fish and Wildlife Agency, to map the Vegetation of San Pablo Bay NWR ($31,000)

Bay Area Open Space Council, to develop Bay Area Wieslander Vegetation Maps ($50,000)

United States Forest Service, Tahoe National Forest CESU support to develop Wieslander Vegetation Maps for the Forest ($28,000)

United States Forest Service, Lassen National Forest CESU support to develop Wieslander Vegetation Maps for the forest ($15,000)

United States Forest Service, Plumas National Forest CESU support to develop Wieslander Vegetation Maps for the Forest ($15,000)

National Park Service, Sequoia Kings Canyon National Park CESU support to develop Wieslander Vegetation Maps for the Park ($30,000)

2005

National Biological Information Infrastructure, development of California Information Node of the US NBII ($60,000)

Integrate Hardwood Rangeland Project, to conduct 5 year study on planting of native oaks on private ranchlands ($125,000)

2004 California Energy Commission, Development of historical vegetation maps in the Sierra Nevada for use in Climate Change Modeling ($75,000)

National Biological Information Infrastructure, development of California Information Node of the US NBII ($60,000)

2003 National Science Foundation, Databases and Informatics Division, to develop a database of 30 years of butterfly observations and put it online, ($217,000)

National Biological Information Infrastructure, development of California Information Node of the US NBII ($60,000)

2002 National Biological Information Infrastructure, development of California Information Node of the US NBII ($60,000)

Review and Editorial Activities

Reviewer for International Scientific Journals

Ecology (since 2006)
Biogeography (since 2005)
Oikos (since 2006)

Academic Positions

Professional Activities

2005-present Advisor to ecosystem connectivity initiatives in the Santa Cruz Mountains area.

2004-present Advisor to oak conservation program in Yolo County

Dissertations and Theses Supervised

Ph. D. Dissertations: Committee member (3)

Masters Theses: Committee member (2)

Classes Taught at Graduate and Undergraduate Level

As Instructor:

1. Week-Long Training Course in English and French for Park Rangers from 15 countries in Africa. Dec. 2003- Dec. 2004. Instruction in how to set up the computational data entry for the MIKE (Monitoring Illegal Killing of Elephants) program. I helped design, then teach two levels of computer orientation, database use and GIS orientation. Courses were taught in Kenya, Cameroon and Niger. Contact Karen Beardsley– University of California, Davis coordinator for education component of the MIKE program. 530-752-5678
2. Conservation and GIS. I taught an upper division course on the uses of GIS in conservation projects at UC Santa Barbara. Contact Ethan Inlander 479-973-9110, co-presenter.
3. Ran an internship program at UCSB for students to help register 25 years of bird observation records stored at the Vertebrate Natural History Museum. Contact John Gallo gallo@geog.ucsb.edu.

As Teaching Assistant

1. Ecological Field Methods – Dr. Jim Quinn, UC Davis 2002, 2003
2. Vegetation of California- Dr. Michael Barbour, UC Davis 2002
3. Biogeography, upper division, undergraduate- Dr. Frank Davis, UCSB 1996
4. Physical Geography- Dr. Jeff Dozier UCSB 1996
5. Introduction to Environmental Studies- Social Systems- Dr. Robert Hatherill, UCSB 1995, 1996
6. Introduction to Environmental Studies- Physical Systems- UCSB 1995.

Graduate Students Advised

Patrick Huber- working on conservation assessment and network design.
Karen Willet- working on incorporation of bio-assessment to agency planning processes.
Ethan Inlander, MA Geography, UCSB. 2004. Now GIS specialist for TNC, Arkansas.

Selected Lectures

30 years of butterfly phenology. Museum of Vertebrate Zoology, UC Berkeley, 2005.

70 years of vegetation change. Museum of Vertebrate Zoology, UC Berkeley, 2005.

Conservation Biogeography. Conservation Biology Course, Sierra City College, 2005.

Impact of urban growth and agriculture on native vegetation, Napa County. Seminar on Viticulture Impacts, UC Davis, 2005.

Applications of GIS in Ecology.- to introductory graduate ecology class, UC Davis 2004.

CalJep- a geospatial version of CalFlora and the Jepson manual. – To Dr. Michael Barbour's lab group. UC Davis 2004.

Parcel level GAP Analysis of the vegetation of Napa County. – Society of Conservation Biology, Davis chapter. 2004.

Hucho taimen, the largest salmonid in the world and Gold Mine Operations in Mongolia. – To The Tahoe Baikal Institute. 2004.

California GAP Analysis. Presented in Spanish to Chilean and Argentine scientists, 1998-1999.

Conservation conditions of the southern temperate rainforests of Chile and Argentina. Slide show presented to multiple audiences in the United States 1999.

Conservation Issues on the Tatshinshini River, British Columbia.

Professional Memberships

Ecological Society of America
American Geophysical Union
California Botanical Society
Society for Conservation Biology, UC Davis Chapter

Selected Extra Curricular

Survey of old-growth forest plots, Mid-Coast, British Columbia, Canada. Summer 2003. I installed over 20 vegetation plots in remote locations accessed through the fjords near Bella Coola, British Columbia. Access was by boat, with targeted areas those slated for future logging.

Head of restoration committee of the UC Davis chapter of the Society for Conservation Biology, 2002-2006. We have a valley oak growing program, and have sprouted over 600 valley oak acorns. About 300 of those acorns were adopted into 15 grade school classrooms in Davis. We coordinate with Andrew Fulks, Reserve Manager for the Putah Creek Riparian Reserve, and conduct planting parties there (over 400 trees along the creek in the past 3 years). Other destinations for seedlings include a project to plant valley oaks along the highway 113 corridor from Davis to Woodland and local greenways. We conducted four public plantings winter of 2006.

Participant- TNC workshops to identify conservation priorities on Central Coast of California.

President, UC Davis Chapter of Society of Conservation Biology, 2002-2003. Helped organize the UC Davis chapter into the group voted by the National Society of Conservation Biology as best chapter in the country. Activities included educational outreach to schools, restoration efforts, and lecture series, as well as preparation for hosting the 6th annual Bay Area SCB student conference.

Co-founded the Conception Coast Project 1994-1996. This is a successful non-profit organization that provides GIS support and analysis for conservation projects in the Santa Barbara region. http://conceptioncoast.org/Conception_Coast_Project.html. This group has now been in existence for 10 years, and have supplied maps used in delineation of the Marine Reserve recently designated around the Channel Islands. Group was founded through use of UCSB interns.

Mandolin Player in local bluegrass band, Chicken Tractor.

References

Dr. James Quinn
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Dr. Lee Hannah
Conservation International
Bren School of the Environment
University of California
Santa Barbara, CA.
(805) 893.7067
l.hannah@conservation.org

Short Work History

Center for Applied Biodiversity Studies Post-Doctoral Fellow January 2004-

PHD Student 1999-December 2003 PhD student in the Ecology Graduate Group, UC Davis. Advisors: James Quinn and Michael Barbour.

November 1998- May 1999 Southern Temperate Rainforest Research

Received a travel grant and conducted a research expedition to southern Chile, to investigate the extent of various vegetation types in the southern temperate rainforests and the levels of threat to each. I conducted over 30 interviews (including Dr. Jerry Franklin, on Tierra Del Fuego Island), went in the field with numerous scientists, and participated at a WWF organized conference at the Universidad Austral de Valdivia to identify critical conservation areas. I presented the California GAP Analysis Project to groups of Chilean and Argentine researchers, in Spanish and helped establish a conservation GIS shop in Punta Arenas, southern Chile.

Sept 1997- November 1998 GS 11 Biologist, Western Ecological Research Center, Biological Resource Division, US Geological Survey.

Coordinated collection of geo-referenced biogeographic data across 12 million acres in the Mojave Desert. We surveyed over 1100 vegetation plots. I supervised three crews in field data collection and facilitated dataflow to the GIS lab. I coordinated activities of the crews across four military bases, three national parks and BLM lands in southern California. I helped develop the databases for the GIS, advised on aerial photo interpretation at the GIS lab (SDSU), and developed positive working relationships between the Sacramento based research branch of the US Geological Survey and the resource managers working on the ground in the various administrative units in the Mojave Desert. I initiated the adoption of our vegetation plot technique by working with resource management in the national parks, which allows locally collected data to be usable in regional evaluations.

I visited all Department of Interior offices (BLM and Park Service), and numerous research facilities in the region to review and rank all reports available (digital and hard copy) to determine what other sources of data might be used for the project.

Consulted with the staff of the Mojave National Preserve on the use of geographic data in long-term ecological monitoring study design.

Summer 1997: GS 7, Biological Technician, Denali National Park, National Park Service. Coordinated all aspects of the long-term ecological monitoring project dealing with vegetation; including vegetation phenology plot monitoring at various elevations; assessment of berry productivity on wildlife; and evaluation of the park-wide vegetation mapping program for use in ecological monitoring.

1993-1997: Master's program at University of California, Santa Barbara, in Geography.

Advisor was Dr. Frank Davis. I participated in Gap analysis mapping projects for three major ecoregions of the state: Sierra Nevada, East side of the Sierra Nevada, and the Northwest ecoregion.

Thesis project: Gap analysis (vegetation and habitat GIS) of Northwest California, a 57,000-km² area. The end product is a risk assessment for 83 habitat types according to types of human activity occurring on the landscape. During the course of this research I served as a botanist for the Klamath National Forest (summer 1995).

Summer 1994: Research Associate, Dept. of Geography, UCSB. Designed and led the field work for the Sierra Nevada Ecosystem Project (SNEP) conducted by the Biogeography Lab. Conducted landscape level vegetation surveys throughout the region. The region includes 4 National Parks and 7 National Forests.

1993: Research Associate, Marine Sciences Institute, UCSB.
Conducted snow melt-out chemistry studies at Emerald Lake, Sequoia National Park.
1992: Extension student, University of Washington, Seattle.
Courses included Zoogeography, Conservation Biology, Forest Ecology, Statistics. Conducted field research (campsite inventories, bird counts, sediment transport, bear observations) on and presented slide shows about the Tatshinshini river, Canada, which eventually became a provincial park.
1991-1992: Field research on conservation projects in Guatemala, Costa Rica, Ecuador.
Spent three months in each country. The goal was to see if there were common patterns between conservation projects identified as successful. Projects originated in any manner, but were identified as successful if: A) They were actually protecting a feature and; b) they had the support of local people. Developed a series of radio documentaries about successful projects.
1991: Biological Technician (GS6), Wrangell-St. Elias National Park & Preserve, Alaska.
Monitored the effects of gold mining operations on various ecosystems including high altitude tundra and marine. Studies included site assessments, plant transects, and stream monitoring for water quality.
1990: Biological Technician (GS6), USGS. Biogeochemical study of Mono Lake, CA.
Investigated the biogeochemistry of the lake. Was responsible for gathering equipment for 10-day field trips that included an 18-foot Boston Whaler rigged for sampling, a large mobile lab truck, and two field laboratories. Collected, analyzed samples, and entered data.
1985-1989: Biological Technician (GS5), Sequoia National Park, and University of California, Riverside, Department of soils. Worked on a study of the effects of acid rain on high altitude lakes in Sequoia National Park. Performed a variety of research including: forest stand inventories; biomass accumulation; biomass decomposition; acid precipitation monitoring including dry deposition, rain, and snow events; spring melt-out studies; fish and stream invertebrate monitoring and manipulations; soil moisture and chemistry; operated and maintained data loggers and field meteorological stations. I volunteered on field plant and animal inventories conducted as part of the Park's GIS development.
1985: BA in Environmental Studies, University of California, Santa Cruz.