

**From:** John Kessler  
**To:** Docket Optical System  
**Date:** 1/12/2010 9:37 AM  
**Subject:** Fwd: ISEGS avoidance plan  
**Attachments:** CV2007fws.doc; avoidance plan.doc

<b>DOCKET</b>	
<b>07-AFC-5</b>	
DATE	JAN 11 2010
RECD.	JAN 12 2010

Dear Docket Staff

Please docket the attached to Ivanpah (07-AFC-5) and include in the file name, "Tasha La Doux's comments on BSE's Plant Avoidance Plan".

Thank you,

John

John S. Kessler  
CEC - Project Manager  
Office: 916-654-4679  
Cell: 530-306-5920  
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>>> Tasha La Doux <[ladouxtash@earthlink.net](mailto:ladouxtash@earthlink.net)> 1/11/2010 3:42 PM >>>

Dear Mr. Kessler -

Please find attached a letter with my general comments about the proposed Avoidance Plan for ISEGS, as well as my CV. The comments provided are my own and do not represent my employers.

Please don't hesitate to contact me if you have any questions.

Thank you,  
Tasha

Tasha La Doux, Ph.D.  
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## **Tasha La Doux, Ph.D.**

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### **Education**

Ph.D., Botany, Claremont Graduate University, Claremont, CA, 2004

M.A., Botany, Claremont Graduate University, Claremont, CA, 1999

B.S., Ecology, Behavior, and Evolution (major),  
Environmental Studies (minor), UC San Diego, CA, 1995

### **Professional Experience**

- 2007 – present**      **Administrative Director**, Sweeney Granite Mountains Desert Research Center (GMDRC), University of California Natural Reserve System  
**Supervisor:** John Rotenberry, (951) 827-3953  
**Duties/Job description:** Assist with all aspects of operating and managing the GMDRC, including: visitor activities (research and class use); museum collections (e.g. library, herbarium); information databases (e.g. GIS, weather, museum collections, library); website administration; inventory and monitoring program; restoration and landscape program; general administration and facilities maintenance. Responsible for writing reports, grant proposals, public outreach, educational materials, and participating in local/regional management issues. Assist with budgets and supervising employees and volunteers.
- 2007 – present**      **Botanist**, Joshua Tree National Park (intermittent status)  
**Supervisor:** Paul DePrey, (760) 367-5560  
**Duties/Job description:** Provide technical and professional assistance to the botanical aspects of vegetation management, which includes the following programs: inventory of vascular plants, herbarium curation, and rare plant management. Responsible for writing project reports, annual accomplishment reports, work plans, grant proposals, contracts/agreements, and management plans relating to these programs, as well as maintaining associated databases (ArcGIS, FileMaker Pro, Access). Assist with budgets and supervise employees and volunteers related to assigned botany projects.
- 2000 – present**      **Independent Biological Consultant**, La Doux Biological Consulting  
**Self-employed**  
**Duties/Job description:** Conduct biological surveys as an independent consultant throughout southern California and southern Nevada. Primary focus is vegetation and rare plant surveys, however I have intermediate birding skills and limited experience with tortoise surveys.
- 2003 – 2007**      **Chief of Vegetation Branch (GS-11)**, Joshua Tree National Park  
**Supervisor:** Paul DePrey, (760) 367-5560  
**Duties/Job description:** Administer all aspects of vegetation management, which includes the following programs: restoration, exotic plant management, inventory of vascular plants, herbarium curation, rare plant management, and the native plant nursery. Responsible for writing project reports, annual accomplishment reports, work plans, grant proposals, contracts/agreements, and management plans relating to Vegetation Branch. Oversee research applications

**Professional Experience (cont.)**

pertaining to vegetation management, ensure they are in compliance with Park policies and NEPA requirements, as well as provide logistical assistance as needed. Maintain and update databases (ArcGIS, FileMaker Pro, Access) associated with Vegetation programs. Manage multiple accounts, credit card purchasing, personnel programming, and contracts associated with an annual budget averaging \$600,000. Supervise 20 employees/interns and large volunteer groups.

**2002 – 2003**

**Forest Botanist (GS-9)**, US Forest Service, Angeles National Forest

**Supervisor:** W. J. Brown, retired

**Duties/Job description:** Administer all aspects of botany program, including field surveys for compliance documentation, BE/BA reports, rare plant surveys and management plans, Burned Area Emergency Rehabilitation team Botanist, invasive weed inventory and abatement, supervise two employees.

**1998 – 2001**

**Research Assistantships**, Rancho Santa Ana Botanic Garden

**Supervisor:** Elizabeth Friar, (909) 625-8767 x223

**Duties/Job description:** Molecular and Anatomy lab assistant for a variety research projects; experimental design, data collection and analysis, troubleshooting molecular techniques, DNA extraction and sequencing, PCR amplification, gel electrophoresis, microsatellite data collection and analysis, scanning electron microscopy, tissue embedding, fluorescent microscopy.

**1999 – 2001**

**Lead Surveyor**, Rancho Santa Ana Botanic Garden

**Supervisor:** Bart O'Brien, (909) 625-8767 x238

**Duties/Job description:** Inventory and map plants, supervise 2 – 3 employees, vegetation sampling, plant identification, running and troubleshooting Topcon survey equipment, data management.

**1998**

**Field Botanist**, Rancho Santa Ana Botanic Garden

**Supervisor:** Steve Boyd, (909) 625-8767 x248

**Duties/Job description:** Rare plant surveys in the San Bernardino Mountains; plant identification, data management, strenuous hiking, orienteering.

**1998**

**Herbarium Assistant**, Rancho Santa Ana Botanic Garden

**Supervisor:** Steve Boyd, (909) 625-8767 x248

**Duties/Job description:** Database and collections management.

**1996 – 1997**

**Biological Technician (GS-5)**, USFS, Riverside Fire Laboratory

**Supervisor:** Arlee Montalvo, no longer at Fire Lab

**Duties/Job description:** Design and implementation of pollination experiment, greenhouse maintenance, vegetation surveys, data collection and analysis.

**Teaching Experience**

**1997 – 2002**

**Lecturer**, Rancho Santa Ana Botanic Garden

**Supervisor:** Lorrae Fuentes, (909) 625-8767 x243

**Duties/Job description:** Preparation and design of lecture and lab materials for plant identification classes, lead and organize field trips.

**Teaching Experience (cont.)**

**Spring 2002**

**Adjunct Faculty**, Mt. San Antonio College

**Supervisor:** William Waggener, retired

**Duties/Job description:** General Botany Laboratory instructor. Preparation and design of lab exercises, quizzes, and exams; student evaluations, grading, lead and organize field trips.

**Spring 2001**

**Teaching Assistantship**, Rancho Santa Ana Botanic Garden

**Supervisor:** Elizabeth Friar, (909) 625-8767 x223

**Duties/Job description:** Population Genetics class for graduate students at Claremont Graduate University. Preparation and design of test material, review questions, and weekly quizzes; grading, student evaluations.

**Current research projects**

- Flora of Joshua Tree National Park
- Flora of Big Pine Canyon watershed, eastern Sierra Nevada
- Spatial assessment of microbiotic soil crust in high vs. low recreational use areas within Joshua Tree National Park
- Assessment of the effectiveness of closure methods for social trails at Joshua Tree National Park
- Demographic study of *Pinus monophylla* in Joshua Tree National Park
- Effectiveness monitoring of “vertical mulch” at Joshua Tree National Park

**Relevant Work Experience/Training**

*Regional expertise:* I have been living and working in southern California since 1990 and have been developing my knowledge of the various habitats and ecosystems throughout this area ever since. I first became familiar with coastal sage scrub and coastal wetlands of San Diego county, and then expanded my interests to include the various montane and chaparral ecosystems of the peninsular and transverse ranges. However, my love for the desert slowly began to dominate my interests and I am now intimately familiar with the plants, animals, and geologic resources of the California deserts. I have been a desert botanist for over 10 years and feel that my expertise in this region is of great value to desert land management and conservation efforts.

*Rare plant management:* I have worked in a variety of capacities for the purpose of rare plant management, including field surveys, report writing, seed collection, herbarium searches, and using molecular genetics as a management tool.

*Field Skills:* I am familiar with most field equipment (compass, altimeter, soil moisture probe, soil crust stability kit, Malaise traps), a variety of field sampling techniques (Modified Whitaker plots, belt and line transects, cover and frequency methods), and vegetation classification (quantitative and standardized qualitative methods).

*NEPA training:* I have attended several workshops and trainings on NEPA, in addition to serving on NEPA committees, writing BE/BA and EIS reports, and reviewing projects for NEPA compliance.

### **Published Manuscripts**

- La Doux, T. and E. A. Friar. 2006. Late-acting self-incompatibility in *Ipomopsis tenuifolia* (Gray) V. Grant (Polemoniaceae). *Int. J. Plant Sci.* 167(3):463-471.
- Knudsen, K. and T. La Doux. 2006. Lichen flora of the southwestern Mojave Desert: Eureka Peak, Joshua Tree National Park, Riverside and San Bernardino County, California, USA. *Evansia.* 23(2):24–27.
- Knudsen, K. and T. La Doux. 2005. Lichen flora of the southwestern Mojave Desert: Key's Ranch, Joshua Tree National Park, San Bernardino County, California, USA. *Evansia.* 22(3):103–109.
- La Doux, T. 2004. Self-incompatibility in Polemoniaceae. Dissertation, Claremont Graduate University.
- Friar, E. A., T. La Doux, E. H. Roalson, and R. H. Robichaux. 2000. "Microsatellite analysis of a population crash and bottleneck in the Mauna Kea silversword, *Argyroxiphium sandwicense* ssp. *sandwicense* (Asteraceae), and its implications for reintroduction". *Mol. Ecol.* 9:2027–2034.
- Friar, E. A. and T. La Doux. 2002. Genetic control of self-incompatibility in *Centromadia (Hemizonia) pungens* subsp. *laevis* (Madiinea; Asteraceae). *Aliso* 21:1–6.
- Friar, E. A., D. L. Boose, T. La Doux, E. H. Roalson, and R. H. Robichaux. 2001. Population structure in the endangered Mauna Loa silversword, *Argyroxiphium kauense* (Asteraceae), and its bearing on reintroduction. *Mol. Ecol.* 10:1657–1664.
- La Doux, T. 2000. Self-incompatibility in *Ipomopsis tenuifolia* (Polemoniaceae). Master's Thesis. Claremont Graduate University.

### **Publications in Preparation**

- La Doux, T., E. A. Friar, and J. M. Porter. In prep. "A phylogenetic approach to self-incompatibility in Polemoniaceae".
- La Doux, T. and E. A. Friar. In prep. "An overview of self-incompatibility in angiosperms". *Aliso*.
- Pietrasiak, N., T. La Doux, and J. Johansen. In prep. "Spatial assessment of microbiotic soil crust in high vs. low recreational use areas within Joshua Tree National Park, California". *Am. Midland Nat.*
- Bell, M. D., and T. La Doux. In prep. "Noteworthy Collections: *Hulsea vestita* var. *parryi* and *Calochortus striatus* in Joshua Tree National Park". *Crossosoma*.
- Bell, M. D., N. Fraga, and T. La Doux. In prep. "Noteworthy Collections: *Erigeron parishii* and *Astragalus tricarinatus* in Joshua Tree National Park". *Crossosoma*.
- Rahman, R. and T. La Doux. In prep. "Effectiveness of social trail closure methods in Joshua Tree National Park". *Park Science*.

### **Unpublished Reports & Management Plans**

- Joshua Tree National Park Herbarium Protocols and Guidelines, 2007
- Effectiveness of social trail closure methods in Joshua Tree National Park report, 2007
- Closed Road Restoration report, 2006
- Research Permit Application programmatic guidelines for NEPA, 2004
- Joshua Tree National Park Rare Plant Management Plan, in progress

### **Presentations and Posters**

- La Doux, T. "Restoration practices at Joshua Tree National Park: a case study of the effectiveness of "Vertical Mulch"." January 2007, Victor Valley College Restoration Symposium, Victorville, CA.
- La Doux, T. "Hazardous Plants & Animals of Joshua Tree National Park." 2003 to present, annual staff training program, Joshua Tree National Park.
- La Doux, T. "Self-incompatibility in Polemoniaceae." June 2003, CNPS Mojave Chapter seminar, Victorville, CA.
- La Doux, T., and E. A. Friar. "Self-incompatibility in Polemoniaceae." August 2001, ASPT meeting, Albuquerque, NM.
- La Doux, T., and E. A. Friar. "Self-incompatibility in *Ipomopsis tenuifolia* (Polemoniaceae)." February 1998, California Botanical Society graduate student meeting, Berkeley, CA.
- La Doux, T., and A. Montalvo. "Fitness consequences of non-local transplantation in *Lotus scoparius*: preliminary test of the outbreeding depression hypothesis." November 1997, California Population and Evolutionary Genetics meeting, Berkeley, CA.
- Pietrasiak, N., J. R. Johansen, and T. La Doux. *Poster*: "Biogeography of Microbiotic Crusts in Joshua Tree National Park." August 2007, Ecological Society of America/Society of Ecological Restoration Joint Meeting, San Jose, California.
- LaDoux, T., and E. A. Friar. *Poster*: "Self-incompatibility in *Ipomopsis tenuifolia* (Polemoniaceae)." July 1999, Pollen-Stigma Interactions Conference, Oxford, England.

### **Committees, volunteer positions**

- California Desert Research Symposium organizing committee, 2007 to present
- CNPS Mojave Chapter program organizer, 2005 to present
- Adjunct Faculty, Rancho Santa Ana Botanic Garden, 2004 to present.
- Southern California Botanists, director at large & editorial committee, 2002 to present
- Joshua Tree National Park: Wilderness Committee, NEPA Committee, Safety Committee Chairperson, and Research Permit Review Committee, 2003–2007
- Monocots III International Symposium organizing committee, 2001–2003
- RSABG graduate program seminar series organizer, 1997–2003
- San Elijo Lagoon Conservancy volunteer, 1993–1995

### **Funding**

- NPS Natural Resource Cyclic Maintenance funding: **\$87,585; 2006–2010**. "Tamarisk Eradication at Joshua Tree National Park."
- NPS Natural Resource Cyclic Maintenance funding: **\$27,260; 2006**. "Repair and replace fencing to protect sensitive areas in Joshua Tree National Park."
- Burned Area Emergency Rehabilitation funding: **\$23,385; 2005–2006**. "Restoration of closed roads in Mojave National Preserve after the Hackberry Complex Fires."
- Burned Area Emergency Rehabilitation funding: **\$9,000; 2005–2006**. "Rare plant surveys in Mojave National Preserve after the Hackberry Complex Fires."
- NPS Natural Resource Disturbed Lands funding: **\$20,000; 2005**. "Indian Cove gravel pit restoration (Joshua Tree National Park)."
- NPS Fee Program funding: **\$33,900; 2004–2005**. "Assessment of soil crust cover and frequency in high-use Wilderness area."
- Challenge Cost Share Initiative Award: **\$52,357; 2004–2005**. "Arid Lands Restoration in Joshua Tree National Park."
- Federal Lands Highway Program: **\$640,665; 2004–2007**. "Restoration of disturbed lands along Key's View Road, Joshua Tree National Park."

Federal Lands Highway Program: **\$725,935; 2003–2006**. “Restoration of disturbed lands along Rt. 12, Geo Tour to Key’s View Road, Joshua Tree National Park.”

**Funding (cont.)**

Federal Lands Highway Program: **\$85,225; 2003–2005**. “Restoration of disturbed lands along Rt. 12, Geo Tour to Barker Dam, Joshua Tree National Park.”

NPS Repair and Rehabilitation funding: **\$378,000; 2003–2005**. “Closed road restoration in Joshua Tree National Park.”

Andrew W. Mellon Research and Travel Scholarship Award: **\$22,500; 1997–2000**. “Self-incompatibility in Polemoniaceae.”

Andrew W. Mellon Foundation Summer Research Award: **\$12,000; 1998–2000**. “Self-incompatibility in Polemoniaceae.”

Cynthia Lee Smith Award: **\$3,000; 2000**. “Self-incompatibility in Polemoniaceae.”

**Membership in Scientific Organizations**

California Botanical Society  
California Native Plant Society  
Southern California Botanists  
California Invasive Plant Council  
Botanical Society of America  
Society for Ecological Restoration

**References**

**Elizabeth Friar, Ph.D.**

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**Steve Boyd, M.S.**

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January 11, 2010

John Kessler  
Biological Resources Unit  
California Energy Commission  
Siting, Transmission, and Environmental Protection Division  
1516 9th Street, Mail Stop #40  
Sacramento, CA 95814

Re: Ivanpah SEGS Special-Status Plant Avoidance and Protection Plan

To Whom It May Concern:

I am writing to give my professional opinion on the viability of the proposed plant avoidance and protection plan submitted by BrightSource Energy, Inc. for the Ivanpah SEGS.

Based on my experience with transplanting and growing desert plant species, the probability of successfully maintaining rare plant populations, as stated in this plan, is zero. To allow an experimental plan of this nature pass as mitigation would be an enormous mistake. The applicant has presented what, to the untrained eye, looks like a good effort to avoid rare plants, but keep in mind that the *attempt to avoid* plants is not the same as maintaining rare plant habitat and providing for the long-term viability of the species.

Mowing down vegetation will eliminate the existing community structure that is required for a fully functional ecosystem. If the idea is to maintain rare plant populations at the levels they were at (or near) before the project, then habitat must be maintained to sustain those plants as well as the pollinators and seed dispersers (such as ants and rodents) the plants rely upon. There are many studies showing the link between vegetation community structure (different heights and ages of plants) and diversity (species richness) to the invertebrate and vertebrate communities. Without one you can't have the other. The negative cascade effect of shading the soils, mowing the vegetation, fencing the property, grading and altering overland flow of water will mean certain death for the long-term viability of the entire ecosystem, including the rare plants.

In my experience with restoration in the desert I have learned that transplanting is an extremely labor and water intensive proposition, and is minimally successful. Further, the species of concern under this project have not been shown to be easily transplanted or propagated, highlighting the experimental nature of the proposal. My estimate is that greater than 90% of all transplants will die within the first year. Mitigation plans should not be speculative, certainly not at the cost of extinction scenarios for rare species.

In addition, I would like to emphasize that numbers of individuals (and therefore % avoided) can be a very misleading parameter to use without further information about the ecology and reproductive biology of the plant. The effective population size can be much smaller than the actual number of individuals present in the population; in other words, the number of individuals that can successfully reproduce is generally much smaller than the actual number of individuals.

The fragmentation of individuals within the project site will reduce the effective population size; this combined with the loss of unsuccessful transplants will greatly impair long-term viability through much reduced reproductive success. The numbers provided in this plan falsely inflate the success rates by not accounting for effective population sizes and more importantly, by not accounting for a failure rate. Again, the *attempt to avoid* plants does not equal success.

The take home message is simply that even those plants that are "avoided" in the short-term, are highly likely to die in the long-term due to direct and indirect negative impacts from the project. This proposal is not an avoidance plan but rather a poorly thought out experiment. It should not be considered a viable plan for protecting rare plant species in the project area.

I would be happy to provide additional comments or discuss in greater detail my thoughts, please let me know if I can be of any help.

Thank you,



Tasha La Doux, Ph.D.