

Naomi Suzanne Fraga

Rancho Santa Ana Botanic Garden, 1500 North College Avenue, Claremont, CA 91711-3157
nfraga@rsabg.org • (909) 625-8767 x231 (office) • (626) 674-6746 (cell)
monkeyflower.org

Education

- May 2015** PhD Botany, Claremont Graduate University; Dissertation: Diversity, Endemism, and Conservation of California monkeyflowers: a case study in *Erythranthe* section *Paradantha* (Phrymaceae). Advisor: Dr. Lucinda McDade
- May 2005** MS Botany, Claremont Graduate University; Thesis: A Vascular Flora of the Owens Peak Eastern Watershed, southern Sierra, Kern County, California. Advisor: Dr. J. Travis Columbus
- June 2002** BS Botany, California State Polytechnic University, Pomona; Senior Thesis: A Short Flora of Short Canyon, Kern County, California. Advisor: Dr. Curtis Clark.

Professional Experience

- 2015-Present** *Director of Conservation Programs, Rancho Santa Ana Botanic Garden (RSABG)* – Provide programmatic leadership and management to the plant conservation programs at RSABG; responsible for preparation of contract and grant proposals, planning and conduction of fieldwork, report preparation, budget management, training and supervision of staff and interns, dissemination of research through publishing of scientific papers and presentations at professional meetings, coordination and collaboration with complementary activities of other RSABG programs.
- 2016-Present** *Research Assistant Professor, Claremont Graduate University.*
- 2008-2014** *Conservation Botanist, RSABG*– Serves as lead field botanist and directs field research activities in collaboration with federal agencies and other partners.
- 2003-2008** *Botanical Field Studies Coordinator, RSABG* – Title changed to Conservation Botanist in 2008.
- 2005-2006.** *Lecturer, UCLA Extension*– Taught General Botany for Gardeners and Plant Identification and Taxonomy for the Certificate in Gardening and Horticulture Program.
- 2000-2003** *Herbarium Curatorial Assistant, RSABG* - Data entry, maintenance, and development of the RSA–POM specimen database, as well as day-to-day operations of the RSA–POM Herbarium.
- 2001** *J. Paul Getty Multicultural Internship, RSABG* – Assisted with curatorial and of the herbarium at Rancho Santa Ana Botanic Garden.

Awards And Fellowships

- American Public Gardens Association Kittleman Scholarship for Aspiring Garden Leaders (2018)
Robert and Patricia Switzer Foundation Fellow (2010)
California Botanical Society Graduate Student Meeting: *Best Student Presentation* (2010)
U.S. Fish and Wildlife Service Certificate of Appreciation (2008)

Graduate School Research Grants and Fellowships

- Southern California Botanists Graduate Student Award (2002, 2003, 2004, 2012) \$2000 total
American Society of Plant Taxonomists Graduate Student Research Grant (2010) \$600
Nevada Native Plant Society Margaret Williams Research Grant (2010) \$800
Robert and Patricia Switzer Foundation Fellowship (2010) \$15,000
California Desert Research Fund, The Community Foundation (2009) \$2240
Torrey Botanical Society Student Fellowship Award (2008) \$2500
California Native Plant Society (CNPS) Education Grant (2007) \$700
CNPS Bristlecone Chapter, Mary DeDecker Botanical Grant Program (2003, 2008) \$1300 total
Native Plant Conservation Initiative, National Fish and Wildlife Foundation (2006) \$15,000
CNPS Helen Sharsmith Grant (2004) \$500

Selected Conservation Contracts and Grants

Angeles National Forest

Angeles National Forest. Invasive Species Management (2013-present) \$1,489,171.46

Angeles National Forest. Rare Plant Studies (2013-present) \$144,978.5

Bureau of Land Management

Award # L09AC15862. Southern California Botanical Projects (2019-2013) \$266,000.00

Award # L13AC00180. Southern California Botanical Projects (2013-Present) \$658,498.54

Center for Plant Conservation

Online Plant Profiles for Federally Listed Species on Forest Service Lands (2008) \$4,000

Seed Collection of Threatened and Endangered Species on National Park Lands (2005-2009) \$16,325

Los Padres National Forest

Floristic Inventories in Wilderness areas (2014) \$18,000

National Forest Foundation

Non-Native Species Inventory in the Sheep Mountain Wilderness. (June 2013-May 2014) \$18,369

Upper Big Tujunga Restoration on the Angeles National Forest (2014-2017) \$549,500

Chaparral Restoration on the Angeles National Forest (2015-2019) \$534,980.00

Region 5 Pacific Southwest Region.

Rare Plant Evaluations and Management Plans. 10-CS-11052007-111 (2010-Present) \$145,000

San Bernardino National Forest

Blue Cut and Pilot Fire Inventory (2017) \$50,324.00

Lake Fire Floristic Inventory (2016) \$28,000

Bighorn Mountain Wilderness Floristic Study (2014-2016) \$32,078.60

Quino checkerspot butterfly Habitat Suitability Surveys (2011) \$20,571

North Sugarloaf Mountain Floristic Surveys (2010) \$62,080

Santa Ana River Watershed Floristic Surveys (2008-2010) \$470,592

Baldwin Basin Floristic Surveys (2008) \$21,297

Fen Conservation (2007-2008) \$9,200

Sequoia National Forest

Floristic Inventories in Wilderness areas. (2012-2014) \$21,000

The Nature Conservancy

Floristic Inventory and Vegetation Mapping on the Santa Clara River Ventura County. (2015-2017) \$117,116.57

Floristic Surveys in Amargosa River, Inyo County California (2017) \$5,000

Rare Plant Surveys on the Castle Glen Preserve, San Bernardino County (2018) \$10,000

U.S. Fish and Wildlife Service

Conservation and Seed Banking for *Trichostema austromontana* subsp. *compactum* (2006-2010) \$24,584

U.S. Fish and Wildlife Service. Surveys of *Phacelia stellaris* (Boraginaceae). (2012-2013) \$20,100

Developing Species Specific Management Actions and Conservation Strategies for Three Federally Listed Plant Species in the Amargosa River Basin, Inyo County, California. (2018-2021) \$96,609

Publications

Parker, S.P., Pauly G.P., Moore, J., **Fraga N.S.**, Knapp J.J., Principe Z., Brown B.V., Randall J.M., Cohen B.S., Wake T.A. 2018. Adapting the bioblitz to meet conservation needs. *Conservation Biology*.
<https://doi.org/10.1111/cobi.13103>

Meyer E., N. Jensen, and **N.S. Fraga**. 2014. Seed banking California's rare plants. *California Department of Fish and Game*. 100: 79-85.

Soza, V.L., S.D. Boyd, L.J. Gross, and **N.S. Fraga**. 2013. Vascular Flora of the Verdugo Mountains and San Rafael Hills, Los Angeles County, California. *Crossosoma* 39: 1-140.

Fraga N.S. and D.S. Bell 2012. A new species of *Linanthus* (Polemoniaceae) from San Bernardino County, California. *Aliso* 30: 97-102. [pdf](#)

Fraga N.S. 2012. A Revision of *Erythranthe montioides* and *Erythranthe palmeri* (Phrymaceae), with descriptions of five species from California and Nevada, USA. *Aliso* 30: 49-68. [pdf](#)

Publications continued

- Fraga N.S.**, L.J. Gross, E.A. Kempton, and D.S. Bell. 2012. Reappearance of the vanishing buckwheat. A status review of *Eriogonum evanidum* (Polygonaceae). *Madroño* 59: 150-152.
- Barker, W.R., G.L. Nesom, P.M. Beardsley, and **N.S. Fraga**. 2012. A taxonomic conspectus of Phrymaceae: A narrowed circumscription for *Mimulus*, new and resurrected genera, and new names and combinations. *Phytoneuron* 2012-39: 1–60. [pdf](#)
- Fraga N.S.**, L.J. Gross., D.S. Bell, O. Mistretta , J. Wood and T.S. Stoughton. 2011. The Vascular Flora of the Upper Santa Ana River Watershed, San Bernardino Mountains, California. *Crossosoma*.37: 9-111
- Fraga N.S.** 2008. Conservation Status of *Mimulus shevockii* Heckard & Bacig. (Phrymaceae). *Crossosoma* 34: 50–56.
- Fraga N.S.** 2008. The Vascular Flora of the Owens Peak Eastern Watershed, southern Sierra Nevada., California. *Aliso*. 25: 1-26. [pdf](#)
- Fraga N.S.** 2007. A Conservation Plan for *Mimulus shevockii* Heckard & Bacig. (Phrymaceae). Rancho Santa Ana Occasional Publications #7. 22 p. [pdf](#)
- Fraga N.S.** 2006. A short flora of Short Canyon, Kern County, California. *Crossosoma* 32: 1–30. [pdf](#)
- Porter J.M. and **N.S. Fraga**. 2005. A Quantitative analysis of pollen variation in two southern California perennial *Helianthus* (Heliantheae: Asteraceae). *Crossosoma* 31: 1–12.

Selected technical Reports/Publications

- Fraga, N.S.**, T. La Doux, L. Prince, M. Harding, and J. Hoines. 2014. Conservation assessment for Parish’s daisy (*Erigeron parishii*, Asteraceae) in Joshua Tree National Park. Natural Resource Report NPS/JOTR/NRR—2014/887. National Park Service, Fort Collins, Colorado.
- Fraga, N.S.**, T. La Doux, L. Prince, M. Harding, and J. Hoines. 2015. Conservation assessment for triple-ribbed milkvetch (*Astragalus tricarinatus*, Fabaceae) in Joshua Tree National Park. Natural Resource Report NPS/JOTR/NRR—2015/999. National Park Service, Fort Collins, Colorado
- Fraga N.S.** and D.S. Bell. 2015. A floristic inventory of the Bighorn Mountain Wilderness, San Bernardino National Forest. Submitted to San Bernardino National Forest. 48p.
- O’Brien B. and **N.S. Fraga**. 2013. Surveys of *Phacelia stellaris* (Brand’s phacelis, Boraginaceae) across its historic range in the United States. submitted to USFWS. 43 p.

Invited Speaker (Last 10 years)

- 2018:** California Native Plant Society (CNPS), Channel Islands Chapter, Santa Barbara, CA.
CNPS Mojave Chapter, Yucca Valley, CA.
- 2017:** California Naturalist Class, Angeles National Forest;
CNPS Los Angeles Santa Monica Mountains Chapter;
Southern California Botanists Symposium, Claremont, CA;
California Invasive Plant Council, Palm Springs, CA
- 2016:** California Naturalist Class, Angeles National Forest;
CNPS Orange County Chapter, Fullerton, CA;
CNPS San Luis Obispo Chapter, San Luis Obispo, CA.
- 2015:** CNPS San Gabriel Mountains Chapter, Pasadena CA;
CNPS Shasta Chapter, Redding CA;
CNPS Mojave Chapter, Victorville, CA;
Maturago Museum, Ridgecrest, CA;
Theodore Payne Foundation, Sun Valley, CA;
Tilden Regional Park Botanic Garden Berkeley, CA,
Pritzlaff Conservation Symposium, Santa Barbara Botanic Garden, Santa Barbara CA,
Southern California Botanists Symposium, Claremont, CA.
- 2014:** Tilden Regional Park Botanic Garden;
CNPS San Gabriel Mountains Chapter

Invited Speaker (Last 10 years) continued

2013: Southern California Botanists Symposium, Claremont, CA;
Enhancing the Persistence of Narrow Endemic Plant Species: Symposium, Escondido, CA
2012: The California Desert Research Symposium, Redlands, CA;
CNPS Riverside-San Bernardino Chapter, Riverside, CA
2010: Southern California Botanists Symposium, Fullerton, CA;
CNPS Kern County Chapter;
CNPS San Gabriel Mountains Chapter
2009: University Club, Claremont, CA
2008: CNPS Bristlecone Chapter, Bishop, CA
2007: Maturago Museum, Ridgecrest, CA

Select Papers Presented at Meetings

Fraga, Naomi S. 2018. Flower color polymorphism in western North American monkeyflowers: investigating flower color variation across geographic space. Botany 2018, Rochester, MN, USA
Fraga, Naomi S. 2018. Cultivating Diversity in the Next Generation of Botanical Professionals: Botanical Training and Education for Urban and Underserved Populations. Botany APGA Conference 2018, Anaheim, CA
Fraga, Naomi S. 2017. Hidden Lake bluecurls *Trichostema austromontanum* subsp. *compactum* (Lamiaceae): conservation success for a diminutive annual. Botany 2017, Fort Worth, TX, USA
Fraga, N.S. 2016. Diversity, endemism and conservation of California monkeyflowers (Phrymaceae): a case study in *Erythranthe* section *Paradantha* Botany 2016, Savannah, GA
Fraga, N.S. 2014. Is self-pollination an evolutionary dead end? The evolution of mating systems in *Erythranthe* section *Paradantha* (Phrymaceae). Evolution 2014, Raleigh N.C.
Fraga N.S. 2013. Examining historical biogeography and rarity in *Erythranthe* section *Paradantha* (Phrymaceae). California Botanical Society Graduate Student Meeting, University of California, Berkeley, CA
Fraga, N.S. 2012. Small flowered plants travel farther: the evolution of mating systems in *Mimulus* section *Paradanthus* (Phrymaceae). Botany 2012, Columbus OH
Fraga N.S. 2012. The Importance of Systematics to Conserving Biodiversity: a case study in western North American *Mimulus* (Phrymaceae). Society for Conservation Biology Conference, Oakland, CA.

Training, Advising and Mentoring

Manage a department of over 20 staff as Director of Conservation Programs at Rancho Santa Ana Botanic Garden
Directly supervise the following staff:
Duncan Bell (Senior Field Botanist)
Cheryl Birker (Seed Conservation Program Manager)
Andrew Castro (Invasive Plant Team Lead)
Sarah De Groot PhD (SOS coordinator and GIS specialist)
Joy England M.S. (Rare Plant Botanist)
Billy Sale M.S. (Restoration Project Manager)
Rachel Wing (Invasive Plant Team Lead)

Advisor M.S. Students

Sophie Winitsky (2016-Present)
Maria Jesus (2018-Present)
Caroyn Mills (2018-Present)

News Articles

2018. Desert Sun. Once threatened, this rare plant is recovering in the San Jacinto Mountains. [Link](#)
2017. LA Times: Native flowers aren't the only plants in 'super-bloom' this spring — nasty weeds have also flourished. [Link](#)
2015. Efforts growing to preserve state's threatened plant species. [Link](#)

Research Interests

Floristics in western North America (especially California and Nevada)
Conservation of the native flora
Rarity and endemism in the California floristic province and Mojave Desert
Systematics of Phrymaceae
Pollination biology

Professional Service

Amargosa Conservancy, Board Member (2017-Present)
American Society of Plant Taxonomists, Council Member (2017-Present)
California Botanical Society, First Vice President (2017-Present).
CNPS Southwest Region Reviewer (2004-Present)
CNPS Rare Plant Program Committee, Alternate (2014-Present)
CNPS San Gabriel Mountains Program Chair (2015-Present)
Southern California Botanists; Board Member (2002-Present), Webmaster (2001-present), Secretary (2015- Present), Vice President (2004, 2007- 2009), President (2006, 2013-2014).

Intramural Service

Rancho Santa Ana Botanic Garden— Center for Plant Conservation, Conservation Officer (2006-Present)
Claremont Graduate University—Graduate Student Council Botany Representative (2008-2009).

Volunteer service to the community

2015-2018. Career day La Puente High School
2015-2016. Career day Citrus College
2012-2013, 2017. Girl Scouts, Interview with a flower scientist and lea wildflower walks
2003-Present. Led numerous field trips for California Native Plant Society and Southern California Botanists
2007-Present. Maturango Museum, Ridgecrest, CA— Annual Wildflower Show Plant Expert. Serves as primary plant expert, identifying plants and assisting with collecting

Manuscript Reviews

Aliso
Biological Conservation
Bulletin of the Southern California Academy of Sciences
Crossosoma
Journal of the Botanical Research Institute of Texas
Madroño

Professional Associations

American Society of Plant Taxonomists	<i>Eriogonum</i> Society
Botanical Society of America	Nevada Native Plant Society
California Botanical Society	Northern California Botanists
California Invasive Plant Council	Southern California Botanists
California Native Plant Society	