

DRAFT PROGRAM

48th ANNUAL DESERT TORTOISE COUNCIL SYMPOSIUM (Hybrid)

Held February 23rd, 24th, and 25th, 2023

Dixie Convention Center, St. George, Utah

All sessions and presentations are in Pacific Standard Time

Note: Speakers are the first person noted for each presentation unless *denotes otherwise
Raffles and announcements shall be held at the end of each break and day

FEBRUARY 23, THURSDAY MORNING

- 8:00 a.m. **Annual Meeting of the Desert Tortoise Council**
Mari Quillman, Chair, Desert Tortoise Council, and ECORP Consulting, CA
- 9:30 a.m. **Introduction of Meeting Chairs and Opening Remarks**
Mari Quillman, Chair, Ed LaRue, Bruce Palmer, and Michael Vamstad, Meeting Chairs: Members, Board of Directors of the Desert Tortoise Council, Palmdale, CA, and Chairs of the Meeting
- 9:40 a.m. **Passings in 2022–2023**
Kristin H. Berry and Maggie Fusari, Desert Tortoise Council, Palmdale, CA
- 9:50 a.m. **The year—2022—in review for the Desert Tortoise Council**
Mari Quillman, Chair, Desert Tortoise Council, and ECORP Consulting, Redlands, CA

Session 1. Celebrating Advances in Genetic Research on Southwestern *Gopherus* Species

- 10:05 a.m. **Winners of the 2023 Robert C. Stebbins Research Award**
- Genomic approaches for chelonian conservation in a changing world**
Kenro Kusumi¹ and Greer Dolby²: ¹Arizona State University, Tempe, AZ; and ²University of Alabama at Birmingham, AL
- 10:30 a.m. Questions for the speaker and discussion
- 10:40 a.m. **Genome comparison of Sonoran and Mojave desert tortoises (*Gopherus morafkai* and *G. agassizii*) and analysis of immunological gene evolution**
Student Paper
*Sarah Baty¹, Avery Paulsen¹, Kenro Kusumi¹, and Greer A. Dolby²
¹Arizona State University, Tempe, AZ; and ²University of Alabama at Birmingham, AL*
- 10:55 a.m. **Living on the edge: Landscape genetics of Mojave desert tortoises near the transition zone of the Mojave and Sonoran deserts**
Kirsten E. Dutcher¹, Nathan W. Byer², Anjana Parandhaman¹, Marjorie D. Matocq², and Ken E. Nussear¹: ¹University of Nevada-Reno, NV; and ²Cleveland Metroparks, OH

11:10 a.m. Panel Discussion

Session 2. Progress and Thoughts on Managing Predation by the Common Raven on Desert Tortoises.

11:20 a.m. **2020-2022 Common raven density trends throughout California's Tortoise Conservation Areas: Signs of initial success in five of six intensively treated areas**
Kerry L. Holcomb, U.S. Fish and Wildlife Service, Palm Springs, CA

11:35 a.m. **Restaurants helping ravens return to natural population sizes: Gold Star restaurants**
James Danoff-Burg and Katie Shaw: The Living Desert Zoo and Gardens, Palm Desert, CA

11:50 a.m. Panel: Questions and Discussion

12:00 p.m. Lunch

February 23, Thursday Afternoon

Session 3. Restoration of Habitat

1:15 p.m. **A system-wide habitat restoration approach to benefit desert tortoises**
Luis Ramirez, James Danoff-Burg, Emily Thomas, Lexi Beaty, and Cassandra Strizak: The Living Desert Zoo and Gardens, Palm Desert, CA

1:30 p.m. **Effects of herbicide and drought on desert tortoise habitat restoration. Student Paper**
Ranae Zauner¹, Beth Newingham²: ¹University of Nevada, Reno, NV; and ²USDA - Agricultural Research Service, Great Basin Rangelands Research, Reno, NV

1:45 p.m. Panel: Questions and Discussion

Session 4. The Power of Persistence: 2023 Award Winners

2:00 p.m. **50 Years of Desert Tortoise Conservation at the Desert Tortoise Research Natural Area**
Jun Y. Lee, Esq.: Desert Tortoise Preserve Committee, Ridgecrest, CA

2:30 p.m. **Where are we now? 32 years of desert tortoise recovery in southwest Utah**
Ann M. McLuckie and Richard A. Fridell: Utah Division of Wildlife Resources, Hurricane, UT

3:00 p.m. Break

3:20 p.m. **Collaborative partnerships: The key to conservation planning in the nation's fastest growing and Utah's most biologically diverse county**
Richard A. Fridell and Ann M. McLuckie: Utah Division of Wildlife Resources, Hurricane, UT

3:35 p.m. **Highways and desert tortoise habitat in Mojave National Preserve: Recommendations for barrier fencing**
Debra Hughson: Mojave National Preserve, National Park Service, Barstow, CA

4:05 p.m. Panel: Questions and Discussion

Session 5. The Implicit and Explicit Values of Nonprofits and Legal Challenges in Protection

4:20 p.m. **Desert tortoise protection and recovery in a changing climate**
Ileene Anderson,¹ Lisa Belenky,² and Patrick Donnelly³: Center for Biological Diversity, Oakland, ¹CA and ²Las Vegas, NV

Session 6. Formation of a New Non-profit for an Inhabitant of the Western Mojave Desert

4:40 p.m. **Formation of a New Nonprofit for Mohave Ground Squirrel Conservation**
Kathryn Simon¹, Phillip Leitner², and Ed LaRue³: ¹Sunrise Consulting, Redlands, CA; ²St. Mary's College, Moraga, CA; and ³Circle Mountain Biological Consultants, Inc., Wrightwood, CA

4:55 p.m. Questions and Discussion

February 24, Friday Morning

Session 7. Plenary Address:

8:00 a.m. Opening Remarks

8:10 a.m. **Dust storms ahead: Climate change, green energy development and endangered species in the Mojave Desert**
Christopher I. Smith: Willamette University, Salem, OR

8:40 a.m. Discussion and Questions

Session 8. Cannabis Invasion: What We Need to Know and Do About It

9:00 a.m. Introduction to the Session and Moderator
Heidi Brannon, Solutions Strategies

- Fiona Ma, Treasurer, State of California
- Louis Sahagun, Journalist and Pulitzer Prize Winner, *Los Angeles Times*
- Eric Weiss, Senior Environmental Scientist, California Department of Fish and Wildlife, Habitat Conservation—Cannabis Unit
- Breton Peace, Attorney, Peace and Shea, LLP
- Representative from the San Bernardino County Sheriff's Department

10:15 a.m. Break

10:30 a.m. Continue Cannabis session to 11:00 a.m.

Session 9. Behavior and Movements of Texas, Sonoran, and Mojave Desert Tortoises

- 11:00 a.m. **Comparative thermal ecology and activity patterns of three species of *Gopherus* tortoises. Student Paper**
Julia Joos and Donald B. Miles: Ohio University, Athens, OH
- 11:15 a.m. **Selection on the move: Landscape characteristics influence resource selection and movement behavior of Sonoran desert tortoises**
Sean Sutor, Nancy E. McIntyre, and Kerry Griffiths-Kyle: Texas Tech University, Lubbock, TX
- 11:30 a.m. **Examining variation in environmental variables within Texas tortoise (*Gopherus berlandieri*) utilization distributions in Cameron County, Texas**
Daniel A. Guerra¹, Joseph A. Veech¹, and Todd C. Esque²: ¹Texas State University, San Marcos, TX; and ²U.S. Geological Survey, Henderson, NV
- 11:45 a.m. Panel: Questions and Discussion
- 12:00 Noon Lunch

February 24, Friday Afternoon

Session 10. Augmentation of Tortoise Populations: Head-starting and Translocation

- 1:30 p.m. **Desert tortoise translocation of the Marine Corps Air Ground Combat Center (Combat Center) in 2022**
Brian T. Henen: Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center, Twentynine Palms, CA
- 1:45 p.m. **Limits of burrows to buffer against climate extremes—insight for headstarting as a tool to bolster Mojave desert tortoise populations**
Melissa Merrick, Talisin Hammond, Tom Radzio, Daniel Essary, Reed Newman, and Ron Swaisgood: San Diego Zoo Wildlife Alliance, Escondido, CA
- 2:00 p.m. **Settling, movements, home range sizes, and growth of small head-started tortoises after release during the megadrought**
Kristin H. Berry¹, Jeremy S. Mack², and Kemp Anderson³: ¹U.S. Geological Survey, Reno, NV; ²Lehigh University, Bethlehem, PA; and ³Baja Ecology, Seal Beach, CA
- 2:15 p.m. **Application of thermography and time-lapse thermal imaging in studies of juvenile desert tortoise ecology**
Thomas A. Radzio, Talisin T. Hammond, Daniel Essary, Reed Q. Newman, Melissa J. Merrick, and Ronald R. Swaisgood: San Diego Zoo Wildlife Alliance, Escondido, CA
- 2:30 p.m. **Synthesis of efforts to optimize desert tortoise head-starting in Mojave National Preserve: 2011 – 2022 results and future directions**
Tracey D. Tuberville¹, Brian D. Todd², and Kurt A. Buhlmann¹: ¹Savannah River Ecology Laboratory, University of Georgia, Aiken, SC; and ²University of California, Davis, CA
- 2:45 p.m. Panel: Questions and Discussion

3:00 p.m. Break

Session 11. Demography and Connectivity and Effects of Climate Change

- 3:15 p.m. **Climatic variables drive past and future Mojave desert tortoise dispersal: implications for connectivity**
Steven J. Hromada^{1,2}, Derek Friend², Kirsten Dutcher², Anjana Parandhaman², Scott Bassett², Doug Boyle², Amy G. Vandergast³, Todd C. Esque³ and Kenneth E. Nussear²: ¹Conservation Science Partners, Truckee, CA, ²University of Nevada, Reno, NV; ³U.S. Geological Survey, Boulder City, NV, and San Diego, CA
- 3:30 p.m. **Understanding the regional adaptive potential for the Mojave desert tortoise using an integrated approach. Student Paper**
Anjana Parandhaman¹, Nathan Byer^{1,2}, Kirsten Dutcher¹, Thomas Dilts¹, Alexander Audet¹, Derek Friend¹, Doug P. Boyle¹, Scott D. Bassett¹, Amy G. Vandergast³, Todd C. Esque⁴, Jill S. Heaton¹, Marjorie D. Matocq¹, and Kenneth E. Nussear¹: ¹University of Nevada, Reno, NV; ²Cleveland Metroparks, OH; and U.S. Geological Survey, ³San Diego, CA and ⁴Henderson, NV
- 3:45 p.m. **Fill in the blanks: Modelling juvenile Mojave desert tortoise rates past and future. Student Paper**
Jacqueline L. Dougherty¹, Kenneth E. Nussear¹, Steven J. Hromad², and Amy Collins²: ¹University of Nevada, Reno, NV; and ²Conservation Science Partners, Truckee, CA
- 4:0 p.m. **West Mojave desert tortoise hotspots: Management options and implications**
Timothy A. Shields¹, Kathryn Holmes² and Samuel Easley³: ¹Hardshell Labs, Inc., Joshua Tree, CA; ²Calliandra Biological, CA; and ³Transition Habitat Conservancy, Pinyon Hills, CA
- 4:15 p.m. **Applications of near remote sensing imagery obtained with unmanned aerial vehicles on evaluating desert tortoise densities at local scales. Student Paper**
Justice R. Best¹, ¹Kenneth E. Nussear¹, K. Kristina Drake³, Todd C. Esque²: ¹University of Nevada, Reno, NV; and ²U.S. Geological Survey, Henderson, NV; and ³U.S. Fish and Wildlife Service, Las Vegas, NV
- 4:30 p.m. **A full-scale test of AI-assisted drone surveys for the Mojave desert tortoise (*Gopherus agassizii*)**
Matthew S. Bandy¹ and Cameron Rognan²: ¹Resi Solutions, Albuquerque, NM; ²Washington County HCP, St. George, UT
- 4:45 p.m. **Evaluating barriers to connectivity among desert tortoise populations using agent based modeling**
Ken Nussear, Kirsten Dutcher, Scott Bassett, and Derek Friend: University of Nevada, Reno, NV
- 5:00 p.m. Panel: Questions and Discussion
- 6:00 p.m. Dinner

- 7:00 p.m. Winners: Photography Contest
- 7:30 p.m. Student Awards
- 7:45 p.m. Awards Presented by the Desert Tortoise Council

Banquet Address: **Through the lens – A closer look at reptile behavior in southwest Utah**
Cameron Rognan: Washington County Habitat Conservation Plan, St. George, UT

February 25, Saturday Morning

Session 12. Government Activities and Management Actions to Enhance Tortoise Recovery

- 8:00 a.m. **Citizen science and indigenous partners expand tortoise outreach in southern Utah**
*Ammon Teare¹, Cameron Rognan¹, Mike Schijf¹, *Carmen Clark², Tina Gonzales², Sabrina Redfoot², Sarah Thomas-Clayburn³, Patrick Barickman³ and Ann McLuckie⁴: ¹Washington County HCP, St. George, UT; ²Shivwits Band of Paiutes, Ivins, UT; ³Conserve Southwest Utah, St. George, UT; and ⁴Utah Division of Wildlife Resources, Hurricane, UT*
- 8:20 a.m. **Mojave desert tortoise week 2022: Making outreach count**
Kent M. Kowalski: U.S. Fish and Wildlife Service, Palm Springs, CA
- 8:35 a.m. **Management of desert tortoise habitat on Bureau of Land Management lands in California**
Mark Massar; Bureau of Land Management, California Desert District Palm Springs, CA
- 8:50 a.m. **Clark County Connectivity Management Plan**
Scott Cambrin: Clark County Desert Conservation Program Las Vegas, NV
- 9:05 a.m. **Recovery progress at Mojave National Preserve**
Michael Burchett, Neal Darby, Debra Hughson, and Mike Gauthier: Mojave National Preserve, Barstow, CA
- 9:20 a.m. **Clark County Multiple Species Habitat Conservation Plan update**
Scott Cambrin: Clark County Desert Conservation Program, Las Vegas, NV
- 9:35 a.m. **Updates on the Desert Tortoise Recovery Office staffing and range-wide monitoring program for Mojave desert tortoises**
Kristina Drake and Kimberleigh Field: U.S. Fish and Wildlife Service, Desert Tortoise Recovery Office, Las Vegas, NV
- 9: 45 a.m. **Status review of the Mojave desert tortoise 2012–2022**
*Roy C. Averill-Murray (retired) and *Kimberleigh J. Field: Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, NV*

- 10:00 a.m. Break
- 10:15 a.m. **U.S. Fish and Wildlife Service update on desert tortoise recovery activities**
Stephanie Menjivar: U.S. Fish and Wildlife Service, Palm Springs, CA
- 10:30 a.m. **Desert tortoise management and research in Joshua Tree National Park**
Michael S. Vamstad: Joshua Tree National Park, Twentynine Palms, CA
- 10:45 a.m. Panel: Questions and Discussion

Session 13. Roads, Culverts, Camera Traps, and Remote Evaluations of Off-Highway Vehicle Routes

- 11:05 a.m. **Living along unfenced, moderately trafficked roads on the Nevada National Security Site**
Jeanette A. Perry¹, Derek B. Hall¹, W. Kent Ostler¹, Jonathan Drescher-Lehman², and Tom S.B. Akre²: ¹Mission Support and Test Services, LLC, contractor for DOE, Mercury, NV; and ²Smithsonian's National Zoo and Conservation Biology Institute, Front Royal, VA
- 11:20 a.m. **Camera traps at road crossing structures and other updates from the Upper Virgin River Recovery Unit**
Mike Schiif and Cameron Rognan: Washington County HCP, St. George, UT
- 11:35 a.m. **Application of computer vision for OHV route detection in Mojave desert tortoise habitat**
Alexander Robillard, Mark Spangler, Amy Collins, Brett Dickson: Conservation Science Partners, Inc., Truckee, CA
- 11:50 a.m. **The "Road Warriors" project: Partnering with non-governmental organizations to implement citizen scientist monitoring of road effects on the Mojave desert tortoise (*Gopherus agassizii*)**
Sarah Mortimer¹ and Florence M. Deffner²: ¹Tortoise Group, Las Vegas, NV; and ²Gulf Shores, AL
- 12:05 p.m. Panel: Questions and Discussion

POSTERS

Keep the wild wild, and pets as pets: A history of collaborating to keep pet tortoises as pets
Emily Thomas, Lexi Beaty, Cassandra Strizak, Luis Ramirez, James Danoff-Burg: The Living Desert Zoo and Gardens, Palm Desert, CA

Texas Tortoise Task Force: Collaborative networks to increase surveillance of disease in tortoises.
Student Poster
Jacquelyn Tleimat¹, Paul Crump², Greer Dolby³, Kenro Kusumi⁴, and Shawn F. McCracken¹: ¹Texas A&M University – Corpus Christi, TX; ²Texas Parks and Wildlife Department, Austin, TX; ³University of Alabama at Birmingham, AL; and ⁴Arizona State University, Tempe, AZ