



PROGRAM

45th Annual Meeting and Symposium

Excalibur Hotel and Casino, Las Vegas, Nevada

February 20–23, 2020

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Requirements for Speakers and Presentations

The Desert Tortoise Council **does not permit inappropriate images** as part of presentations in the program or as any part of symposia. Inappropriate photos include, but are not limited to: vulgar, lewd, or suggestive images of people; people in awkward positions or scanty attire; and people engaged in personal and private activities. The Desert Tortoise Council expects all participants and speakers to maintain a high level of professionalism.

Guidelines for Asking and Answering Questions at the Symposium

Several years ago, several attendees approached members of the Board of Directors with concerns about the tone of questions to speakers. The concerned parties included members of the audience, as well as speakers. Some members of the audience noted that some questioners appeared to be vitriolic and angry; some questioners used the opportunities at the microphone to present their views in long winded soliloquies rather than to ask questions. Furthermore, some speakers were irritated with the questions asked of them. To avoid a similar occurrence at future meetings, the Board of Directors developed guidelines for asking and answering questions at Symposia. These guidelines offer an opportunity to review the purpose for holding annual symposia and to reiterate our long-standing policy of professionalism and civility to all participants.

The Desert Tortoise Council promotes conservation of the desert tortoise in a variety of ways, including annual symposia. One purpose of the Symposia is to bring together scientists, wildlife biologists, managers, representatives of non-government organizations, and other interested parties to share the latest information on tortoises and their management. The speakers vary in their interests and areas of expertise, as well as in experience in giving presentations. Some speakers are giving their very first public presentations; others have presented hundreds of lectures and power point programs. All are welcome. The symposium is a learning experience and learning is facilitated by respect and courtesy. All speakers should receive courteous and professional treatment and, in turn, all speakers should treat the audience with respect.

To assist with the policy of professional and civil behavior, the Board requests that questioners follow the guidelines listed below:

1. Go to the microphone to ask the questions. Make sure that you speak into the microphone so that the audience and the person to whom the question is being directed can hear you.
2. Ask one question at a time. If you have two questions, do not ask both at once. Allow the speaker to answer the first question before proceeding to the second question.
3. If there is more than one person waiting to ask questions and the line is long, then ask only one question and move to the back of the line of questioners.
4. All questions are legitimate. However, the way the question is framed is usually the issue. Each question can be framed in a professional and courteous manner. If you do not know

how to frame your question courteously, one of the meeting chairs or the session chairs will be there to assist you. They will be willing to ask the question for you.

Speakers, too, can draw on the following guidelines when answering questions.

1. Speakers should consider that all questions are legitimate and fair. However, some may be poorly worded because the questioner may not fully understand the subject or may need some assistance in framing the question in a professional manner. The speaker may need to clarify the question and should then repeat the question to the audience so that the audience will hear it clearly.

2. Some questions are not easily answered for a variety of reasons: no data, insufficient data, topic cannot be discussed because court proceedings are underway, etc. The speakers should state why the question cannot be answered or can only be addressed in part. The speaker may need to think at length about an appropriate answer and, in such cases, may need to say just that. The speaker may need to obtain an answer at the office or by reviewing data and then follow up with the questioner after the meeting.

By following the simple guidelines outlined above, the Board hopes to have a collegial atmosphere and productive meeting.

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FORTY-FIFTH ANNUAL MEETING AND SYMPOSIUM OF THE DESERT TORTOISE COUNCIL

Excalibur Hotel and Casino, Las Vegas, Nevada
February 20–23, 2020

**Speaker order: First person listed is the speaker, unless an asterisk indicates another author*
NOTE: Time is specific to each speaker

FEBRUARY 20, 2020

Field Trip to the Ivanpah Head-start Facility, led by Tracey Tuberville, Kurt Buhlmann and/or Brian Todd

7:00–9:00 PM

Mixer with hors d'oeuvres hosted by Southern Nevada Environmental, Inc. at the Excalibur Ballroom

FEBRUARY 21, 2020

ANNUAL BUSINESS MEETING AND SYMPOSIUM IN THE EXCALIBUR BALLROOM E, F, G, AND H

7:30 AM–5:00 PM

Registration in the Foyer to the Excalibur Ballrooms; also on February 21 and 22 and until the morning of February 23

8:00-9:00 AM

Annual Business Meeting of the Desert Tortoise Council

9:30 AM

Welcome Address and Report on Desert Tortoise Council's Activities in 2019

Michael W. Tuma: Chair, Board of Directors, Desert Tortoise Council

9:45 AM

Introduction of Meeting Chairs: Bruce Palmer^{1,2} and Ed LaRue,^{1,3}: ¹Member, Board of Directors, Desert Tortoise Council; ²Jacobs Engineering Corporation, AZ; and ^{1,2}Circle Mountain Biological Consultants, CA

9:55 AM

Auction and Other Announcements

Mari Quillman: Member, Board of Directors, Desert Tortoise Council, and ECORP Consulting Inc., CA

Session 1. Plenary Addresses and Annual Award

Chair: Kristin H. Berry: U.S. Geological Survey, CA; Member, Board of Directors, Desert Tortoise Council

Plenary Address 1. Kristin H. Berry Annual Award: Richard Spotts

- 10:00 AM **Political expediency, career security, and status quo management greatly contribute to rapid declines of desert tortoise populations**
Richard Spotts: St. George, UT
- Plenary Address 2. **Ranavirus, research, and rehabilitation: The interconnectedness of conservation strategies**
- 10:35 AM *Sue J. Carstairs¹, C. Davy^{2,3}, J. Paterson², and S. Vilaca²:
¹Ontario Turtle Conservation Centre, ²Trent University, ³Ontario Ministry of Natural Resources and Forestry, Ontario, Canada*
- Plenary Address 3. **On the right track: Understanding and reducing the impact of railways on *Gopherus***
- 11:10 AM *Rhett M. Rautsaw¹, S.A. Martin², B.A. Vincent³, K. Lanctor⁴, M.R. Bolt⁵, R.A. Seigel⁶, and C.L. Parkinson¹: ¹Clemson University, SC; ²Ohio State University; ³University of California, Santa Barbara; ⁴University of Florida, Gainesville; ⁵Kennedy Space Center, FL; ⁶Towson University, MD*
- 11:45 AM Panel Discussion with Plenary Speakers
- 12:00–1:20 PM Lunch

Session 2. Representatives from the Department of Interior Present Recovery Efforts of their Agencies

Chairs: Rebecca Jones¹ and Michael Vamstad¹—¹Members, Board of Directors, Desert Tortoise Council; ²Joshua Tree National Park, CA

- 1:20 PM **Desert tortoise management and research in Joshua Tree National Park**
Michael Vamstad: Joshua Tree National Park, CA
- 1:30 PM **BLM: Tortoise management**
Amy L. Fesnock: Bureau of Land Management, Washington, DC
- 1:40 PM **Management of desert tortoise habitat on Bureau of Land Management lands in California**
Mark Massar: U.S. Bureau of Land Management, California Desert District
- 1:50 PM **Washington County Habitat Conservation Plan—A recent and ongoing project summary**
Mike Schijf and Cameron Rognan: Washington County HCP, UT

- 2:00 PM **Recovery progress at Mojave National Preserve**
Matt Bristol, N. Darby, and D. Hughson: Mojave National Preserve, CA
- 2:10 PM **Monitoring use of underpasses by Mojave desert tortoises (*Gopherus agassizii*) to inform culvert design and function**
Florence M. Deffner¹, P.E. Myers², K. Holcomb³, and M. Slaughter²: U.S. Fish and Wildlife Service, NV¹ and CA³; and ²Bureau of Land Management, NV
- 2:20 PM **U.S. Fish and Wildlife Service Update on desert tortoise recovery activities**
Vincent James: U.S. Fish and Wildlife Service, CA
- 2:35 PM **Toward a coherent, range-wide Mojave desert tortoise management strategy for the Bureau of Land Management**
Bryan P. Wallace^{1,2}, A. Kissel¹, J. Anderson¹, J. Belak¹, S. Stortz¹, B.G. Dickson¹, and A. Fesnock³: ¹Conservation Science Partners, CA; ²Ecolibrium, Inc., CO; and ³Bureau of Land Management, CA
- 2:50 PM Panel Discussion
- 3:05–3:25 PM Refreshments in the Excalibur Ballrooms A, B, C, and D

Session 3. Health, Diseases, and New Findings for Infectious Diseases

Chair: Jerry Simecka, University of Texas, Health Science Center

- 3:25 PM **Revisiting health and disease at sites in the Ivanpah and Fenner valleys, California, after 18 to 23 years**
Kristin H. Berry: U.S. Geological Survey, CA
- 3:40 PM **Mycoplasma in review: ELISA interpretation and 10-year seroprevalence in free-ranging and captive tortoise populations (Student Paper)**
Alexandra M. Burne and M.B. Brown: University of Florida, Gainesville
- 3:55 PM **URTD: Lessons learned at individual and population levels and future approaches**
Mary B. Brown, University of Florida, Gainesville
- 4:05 PM **The genome of Testudinid herpesvirus 2: Preliminary data**
Frances C. Origgi¹, J. Braun², and B.A. Rideout²: ¹University of Bern, Switzerland; and ²San Diego Zoo Global, CA
- 4:15 PM Panel Discussion

Session 4. Invited and Featured Speaker and Book Author: Joan Berish

Chair: Judy Hohman: Member, Board of Directors, Desert Tortoise Council

- 4:30 PM **Fire and fauna, tales of a life untamed: Reflections and reading from my memoir**
Joan E. Berish; Sandia Park, NM
- 5:00 PM Adjourn to Book Signing, Poster Session, and Mixer
- 5:30 PM Mixer: Greet Special Guests, Award Winners, and Featured Speakers—Richard Spotts, Sue Carstairs, Rhett Rautsaw, and Joan Berish; Book signing with Joan Berish
- 6:30 PM Mixer and Buffet Dinner: Excalibur Ballrooms A, B, C, and D

SATURDAY, FEBRUARY 22, 2020 PRESENTATIONS IN THE EXCALIBUR BALLROOMS E, F, G, AND H

- 7:00–8:00 AM Breakfast: Excalibur Ballrooms A, B, C, and D

Session 5. Featured Session and Speakers on Illegal Trade in Turtles at Regional, National, and International Levels

Chair: Cristina Jones: Member, Board of Directors, Desert Tortoise Council; and Arizona Game and Fish Department, Phoenix

- 8:00 AM **Introduction to the Session**
Cristina Jones: Arizona Game and Fish Department, Phoenix
- 8:05 AM **Current trends in the global turtle trade: Food, pets and the rise of investment trading**
Brian D. Horne¹ and C. A. Jones²: ¹Wildlife Conservation Society, NY; and ²Arizona Game and Fish Department, Phoenix
- 8:35 AM **Illegal live reptile trade in the United States: An overview of topics and trends**
Bruce J. Weissgold: Fairfax, VA
- 9:05 AM **An overview of the illicit turtle trade in Florida and enforcement efforts**
James V. Barrow, Florida Fish and Wildlife Conservation Commission, FL
- 9:35 AM **Recent turtle confiscations in the United States**
Joseph A. Ventura¹ and Kim Gray²: ¹U.S. Fish and Wildlife Service, CA; and ²San Diego Zoo Global, CA
- 10:05 AM Panel Discussion

10:20–10:45 Refreshments: Excalibur Ballrooms A, B, C, and D

Session 6. The Common Raven: Data Summaries, Methods, and Recovery Efforts

Chair: Larry LaPré, Member, Board of Directors, Desert Tortoise Council

10:45 AM **Common raven nesting density and success in California's desert tortoise critical habitat units (Student Paper)**
Ally P. Xiong and K.E. Nussear: University of Nevada, Reno

11:00 AM **Recent applications of technology to desert tortoise conservation: Projects underway**
Tim Shields: Joshua Tree, CA

11:15 A.M. **Novel management tools for subsidized avian predators and a case study in the conservation of a threatened species**
*Tim Shields¹, *Andrea Currylow^{2,3}, B. Hanley^{4,5}, S. Boland⁶, W. Boarman¹, and M. Vaughn⁶: ¹Hardshell Lays, AK; ²ACEcological Research & Consulting, CA; ³University of Southern California; ⁵Cornell University, NY; and ⁶Sundance Biology Inc., CA*

11:30 AM **Addressing the raven food subsidy problem by engaging restaurants to cover their trash**
James Danoff-Burg, K. Mulroe, and A. Ocañas: The Living Desert Zoo and Gardens, CA

11:45 AM Panel Discussion

12:00–1:30 PM Lunch

Session 7. Augmentation of Desert Tortoise Populations by Translocation and Head-starting

Chair: Bryan Wallace, Conservation Partners, Inc.

1:30 PM **Survivorship of resident and translocated tortoises from 2013-2018 in the Greater Trout Canyon Area, Nevada**
Linda J. Allison: U.S. Fish and Wildlife Service, Reno

1:45 PM **The 2017-2019 tortoise translocation by the Marine Corps Air Ground Combat Center**
Brian T. Henen: Marine Air Ground Task Force Training Command, CA

2:00 PM **Head-starting *Gopherus agassizii*: Some lessons from the Twentynine Palms Marine Base Project**
Kenneth A. Nagy, B.T. Henen, and L. Scott Hillard: University of California, Los Angeles; and Marine Corps Air Ground Combat Center, CA

2:15 PM **Evaluating techniques for optimal head-starting of the Mojave desert tortoise (*Gopherus agassizii*)**
Brian Todd¹, P. McGovern², J.M. Peadar¹, J.A. Daly², K.A. Buhlmann², and T.D. Tuberville²: ¹University of California, Davis; and ²University of Georgia

2:30 PM Panel Discussion

Special Announcement

2:50 PM **Zulu Nyala – A South African Wonderland!**
Ed LaRue: Wrightwood, CA

3:00–3:30 PM Refreshments: Excalibur Ballrooms A, B, C, and D

Session 8. Conservation and Management of Desert Tortoises by Non-profit Organizations

Chair: Ron Berger, President, Desert Tortoise Preserve Committee, CA

3:30 PM **Captive tortoise management in the Mojave Desert**
Sarah A. Mortimer and K.D. Shaw: Tortoise Group, NV

3:45 PM **Update of activities and concerns at the Desert Tortoise Research Natural Area**
Robert W. Wood: Desert Tortoise Preserve Committee, Inc., CA

4:00 PM **Protecting the iconic desert tortoise**
Ileene Anderson¹, L. Belenky¹, and P. Donnelly²: Center for Biological Diversity. ¹CA and ²NV

4:15 PM Panel Discussion

Session 9. From Africa: A Special Report on the Imperiled Pancake Tortoise

Chair: Ken MacDonald, Member, Board of Directors, Desert Tortoise Council; and NewFields, NV

4:30 PM **The discovery of a new population of pancake tortoises on a Black Rhino Conservancy in Kenya**
Marc Dupuis-Desormeaux^{1,2}, V. Wasonga³, F. Awuor³, D. Kimiti⁴, G. Chege⁴, T. Kaaria⁴, F. Kobia⁴, and B.D. Horne^{5,6}: ¹York University, Ontario, CA; Lewa Wildlife Conservancy, ²Canada and ⁴Kenya; ³National Museums of Kenya; ⁵Wildlife Conservation Society, NY; and ⁶Turtle Survival Alliance, SC

Session 10. Inexpensive Methods for Studying Turtles

Chair: Peter Woodman, Member, Board of Directors, Desert Tortoise Council; and Kiva Biological Consulting, CA

- 4:45 PM **Utilizing do-it-yourself open-source technologies to make easier the life of the turtle biologist**
Patrick W. Cain, Georgia Gwinnett College
- 5:00 PM Announcements and Adjournment
- 5:30 PM Mixer and Review of Student and Other Posters, and Photos: Aisle between Excalibur Ballrooms E, F, G, and H
Book signing with Joan Berish. Meet Plenary Speakers (Richard Spotts, Sue Carstairs, and Rhett Rautsaw) and featured speakers on illegal trade (Brian Horne, Bruce Weissgold, James Barrow, and Joseph Ventura)
- 6:30 PM Dinner, Excalibur Ballrooms A, B, C, D
- 7:30 PM Awards
- 8:00 PM **Banquet Address: Look how far we have come: Success stories of conserving the world's rarest turtles**
Brian D. Horne: Wildlife Conservation Society, NY; and Turtle Survival Alliance, SC
- 8:30 PM Raffle and Auction

SUNDAY, FEBRUARY 23, 2020. PRESENTATIONS IN THE EXCALIBUR BALLROOMS E, F, G, AND H

- 7:00–8:00 AM Breakfast, Excalibur Ballrooms A, B, C, and D

Session 12. Genetics of Agassiz's and Sonoran Desert Tortoises

Chair: Halle Kohn, Member, Board of Directors, Desert Tortoise Council, and Joshua Tree, CA

- 8:00 AM **Using whole genome data to understand speciation of desert tortoises in western Arizona**
Greer Dolby¹, T.H Webster^{1,2}, T. Edwards³, D.F. DeNardo¹, M.A. Wilson¹, and Kenro Kusumi¹: ¹Arizona State University; ²University of Utah; and ³University of Arizona

8:15 AM **Does the Coachella Valley in southern California influence gene flow in Agassiz's desert tortoise (*Gopherus agassizii*) populations?**
Jeffrey E. Lovich¹, T. Edwards², K.H. Berry³, Shellie Puffer¹, K. Cummings¹, J. Ennen⁴, M. Agha⁵, R. Woodard⁶, K. Brundige⁷, and R.W. Murphy⁸: U.S. Geological Survey, ¹AZ and ³CA; ²University of Arizona; ⁴Tennessee Aquarium, TN; ⁵Washington Dept. of Fish and Wildlife; ⁶Ridgecrest, CA; ⁷Coachella Valley Conservation Commission; and ⁸Royal Ontario Museum, Canada

8:30 AM Panel Discussion

Session 13. Connectivity between Remaining Desert Tortoise Populations

Chair: Todd Esque, U.S. Geological Survey, NV

8:45 AM **Connectivity and the framework for recovery of the Mojave desert tortoise**
Linda J. Allison: U.S. Fish and Wildlife Service, NV

9:00 AM **Existing desert tortoise spatial models as a foundation toward understanding connectivity**
Todd C. Esque¹, K.E. Nussear², R.C. Averill-Murray³, S.K. Carter⁴, R.D. Inman¹, M.E. Gray⁵, and B.G. Dickson⁵: U.S. Geological Survey, ¹NV and ⁴CO; ²University of Nevada; ³U.S. Fish and Wildlife Service, NV; and ⁵Conservation Science Partners

9:15 AM **Making decisions today: Putting together existing information on connectivity**
Roy C. Averill-Murray: U.S. Fish and Wildlife Service, NV

9:30 AM **Connecting the plots: The relationship between linear barriers, disturbance, and habitat linkages to Mojave desert tortoise genetic connectivity**
Kirsten E. Dutcher¹, A.G. Vandergast², T.E. Esque³, M.D. Matocq¹, J.S. Heaton¹, and K.E. Nussear¹: ¹University of Nevada; U.S. Geological Survey, ²CA and ³NV

9:45 AM **Progress toward understanding the impacts of land use and climate change on desert tortoise structural genetics and corridor functionality**
Ken. E. Nussear, J.S. Heaton¹, S.D. Bassett¹, D.P. Boyle¹, M. Matocq¹, A. Parandhaman¹, D. Friend¹, S. Wright¹, K. Dutcher¹, S. Hromada¹, C. Mitchel, A. Vandergast², and T. Esque³: ¹University of Nevada; U.S. Geological Survey, ²CA and ³NV

- 10:00–10:30 AM Refreshments, Excalibur Ballrooms E, F, G, and H
- 10:30 AM **Using movement to inform conservation corridors for Mojave desert tortoises (Student Paper)**
Steven J. Hromada¹, T.C. Esque², A.G. Vandergast³, C.I. Mitchell¹, K.E. Dutcher¹, M. E. Gray⁴, T. Chang⁴, B.G. Dickson^{4,5}, and K.E. Nussear¹: University of Nevada¹, U.S. Geological Survey, ²NV and ³CA, Conservation Science Partners, CA; and ⁵Northern Arizona University
- 10:45 AM **Assessing critical habitat breadth for the Mojave desert tortoise**
Kevin T. Shoemaker¹, M. Walden¹, E. Hunter², T.C. Esque³, and K.E. Nussear¹: ¹University of Nevada; ²Georgia Southern University, ³U.S. Geological Survey, NV
- 11:00 AM **Land use futures for the Mojave Desert, USA: Implications for the Mojave desert tortoise**
Scott D. Bassett¹, D.A. Friend¹, S.A. Wright¹, K.E. Nussear¹, T.C. Esque², D.P. Boyle¹, and J. S. Heaton¹: ¹University of Nevada; and ²U.S. Geological Survey, NV
- 11:15 AM Panel Discussion

Session 14. Research on populations of two species of desert tortoise: *Gopherus agassizii* and *G.morafkai*

Chair: Maggie Fusari, Member, Board of Directors, Desert Tortoise Council

- 11:30 AM **Using spatial information to improve methods for estimating density for the desert tortoise (Student Paper)**
Corey I. Mitchell¹, K.T. Shoemaker¹, T.C. Esque², A.G. Vandergast³, J.S. Heaton¹, K.E. Dutcher¹, S.J Hromada¹, and K.E. Nussear¹: ¹University of Nevada; and U.S. Geological Survey, ²NV and ³CA
- 11:45 **A novel application of the USFWS line distance sampling data: Estimating range-wide trends in occupancy for Mojave Desert Tortoises**
Amanda M. Kissel¹, B. Wallace¹, B.G. Dickson¹, J. Belak¹, L. Allison², and R. Averill-Murray¹: ¹Conservation Science Partners, CA; and ²U.S. Fish and Wildlife Service, NV
- 12:00–1:15 Lunch

1:15 PM **Announcements of Student Awards**
Michael Tuma: Chair, Student Awards Committee and Chair, Board of Directors, Desert Tortoise Council

Session 14, continued

Chair: Maggie Fusari, Member, Board of Directors, Desert Tortoise Council

1:30 PM **Spatially explicit population viability analysis for Mojave desert tortoises in the northeastern portion of their range**
Seth M. Harju¹, S.M. Cambrin², and Roy C. Averill-Murray³:
¹Heron Ecological, LLC, ID; ²Clark County Desert Conservation Program, NV; and ³U.S. Fish and Wildlife Service, NV

1:45 PM **The Eagletail Mountains: Returning to a Sonoran desert tortoise long-term monitoring plot**
Chad A. Rubke¹, R. P. O'Donnell¹, C.A. Jones¹, and E. H. Masters²: *¹Arizona Game and Fish Department; and ²Bureau of Land Management, AZ*

2:00 PM **Space use of Sonoran desert tortoises (*Gopherus morafkai*)**
Roy C. Averill-Murray¹, C.H. Fleming^{2,3}, and J. D. Riedle⁴: *¹U.S. Fish and Wildlife Service, NV; ²National Zoological Park, VA; ³University of Maryland; and ⁴Kansas Dept. of Wildlife, Parks, and Tourism*

2:15 PM Panel Discussion

2:30 PM Adjourn

POSTERS: Excalibur Ballroom

Listed in order by first author's name and name identified with an asterisk if speaker is not the first author

Road warriors: Citizen scientist monitoring for Mojave desert tortoise road mortality and live encounters to identify priority areas for fence installation

Florence M. Deffner¹, Jennifer Wilkening¹, Sarah Mortimer², Kobbe Shaw², Kristi Holcomb³, Kerry Holcomb⁴, and Cathy Wilson¹: *U.S. Fish and Wildlife Service, ¹NV and ⁴CA; ²Tortoise Group, NV; and ³NV Department of Transportation, NV*

Ecologically founded intelligent and aversive decoy device to protect vulnerable species (e.g., Mojave desert tortoise) from targeted predation and provide data-driven insights

Caroline A. Kingsley¹, Kenneth E. Nussear², Danny C. Reinke³, and Michael P. Jenkins¹:
¹Charles River Analytics Inc., MA; ²University of Nevada-Reno, NV; and ³Edwards Air Force Base, CA

Development of a genotyping protocol for Mojave desert tortoise scat

*Anna Mitelberg¹, *Amy G. Vandergast¹, Ken E. Nussear², Kirsten Dutcher²,
and Todd C. Esque³: U.S. Geological Survey, ¹CA and ³NV; and ²University of Nevada*

Progress towards a new *Gopherus morafkai* reference genome to identify structural genetic differences underlying physiological adaptations of Mojave and Sonoran desert tortoises

*Joseph P. Orton, Raul Araya Donoso, Dale F. DeNardo, Kenro Kusumi, and Greer A. Dolby:
Arizona State University*

Understanding the role of the adaptive edge for the desert tortoise in a changing climate

*Anjana Parandhaman¹, M.D. Matocq², D.P. Boyle¹, S.D. Bassett¹, A.G. Vandergast³, T.C.
Esque³, Jill S. Heaton¹, and Kenneth E. Nussear¹:¹University of Nevada; and U.S. Geological
Survey, ²CA and ³NV*

VENDORS AND EXHIBITS: Excalibur Ballrooms A, B, C, and D

Nonprofit Organizations

Basin and Range Watch. Kevin Emmerich, Laura Cunningham. PO Box 70, Beatty NV 89003. Phone: (775) 553-2806, Website: www.basnandrangewatch.org, Email: bluerockiguana@gmail.com

Center for Biological Diversity. Ileen Anderson, 660 S Figueroa St, Suite 1000, Los Angeles CA 90017, Phone: (323) 490-0223, Website: www.biologicaldiversity.org, Email: ianderson@biologicaldiversity.org

Desert Tortoise Preserve Committee. Dr. Brittany Slabach, 4067 Mission Inn AV, Riverside CA, 92501, Phone: (951) 683-3872, Website: www.tortoise-tracks.org, Email: dtpc@pachel.net

The Living Desert Zoo and Gardens. Sarah Greely, 47900 Portola AV, Palm Desert CA 92203, Phone: (760) 346-5694, Website www.LivingDesert.org, Email: sgreely@livingdesert.org

Tortoise Group. Kobbe Shaw, Sarah Mortimer, 2000 East Flamingo, Las Vegas NV 89119. Phone: (702) 739-7113. Website: tortoisegroupl.org, Email: kobbeshaw@tortoisegroup.org

Western Watersheds Project. Laura Cunningham, PO Box 70, Beatty NV 89003, Phone: (775) 513-1280, Website: <https://www.westernwatersheds.org>, Email: lcunningham@westernwatersheds.org

Art, Books, and Other Products

Bio Logical, LLC/DIRT. Alana Wise, 1400 Colorado ST. Suite C, Boulder City, NV 89005, Phone: (702) 596-4353 Email: awise@getbiological.com, Website: getbiological.com AND dirtnv.org, Email: awise@getbiological.com (DIRT is non-profit focused on STEM education).

Greenheart Gifts. Terry Christopher, 5883 Stoneborough St. Las Vegas NV 89113, Phone: (702) 378-0388, Email: tectort@gmail.com

Willow Creek Environmental Consulting LLC. Julie Alpert, 15857 E Silver Springs Rd. Kingman AZ 86401, Phone: (928) 692-6501, Email: jalpert@willowcreekenviro.com (selling specialty items).

Environmental Consulting, Field and Laboratory Equipment

Cornerstone Research Group, Inc. Trang Young, 510 Earl Blvd, Ste 250, Miamisburg, OH 45342, Phone: (937) 320-1877 ext. 1385, Website: <http://www.crgrp.com/>, Email: youngtt@crgrp.com

ERTEC Environmental Systems. Vince Morris, 1150 Ballena Blvd, Ste 250, Alameda, CA 94501 Phone: (510) 524-0724, Website: www.ertecsystems.com, Email: vmorris@ertecsystems.com

Hardshell Labs, Inc. Tim Shields, PO Box 963, Joshua Tree, CA 92252. Phone: (909) 556-4264, Website: www.HardshellLabs.com, Email: t.shields@hardshelllabs.com

Holohill. John Edwards, 112 John Cavanaugh Dr, CARP, Ontario, K0A1L0, Canada, Phone: (613) 839-0676, Website: www.holohil.com, Email: info@holohil.com