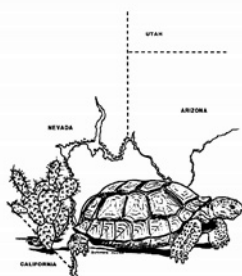


The Desert Tortoise Council Newsletter

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The BLM-Bundy Debacle

by Michael Tuma and Wendy Turner

Over the past several weeks the American people have witnessed the rise to infamy of the Bunkerville, Nevada cattle rancher Cliven Bundy, who challenged the legitimacy of the federal government and organized an armed militia to intimidate federal agents in a recent stand-off. For more than 20 years, Bundy has illegally grazed his estimated herd of 500 – 900 cattle on public lands managed by the Bureau of Land Management (BLM). He has refused to pay the required grazing fees and penalty fines over the past 20 years, and now owes the American taxpayers approximately \$1 million. He has ignored the BLM's eviction orders, resort-

ing to irrational claims such as the lands are owned by the State of Nevada and the federal government does not exist. After obtaining two federal court orders to evict Bundy's cattle from the Gold Butte Area of Critical Environmental Concern, an area that includes more than 185,000 acres of Critical Habitat for the federally-listed (Threatened) Agassiz's desert tortoise, the BLM initiated the roundup on April 5, 2014. In the weeks leading up to the roundup, Bundy promised a "range war" with the BLM and its contracted cowboys, and issued rally cries requesting the assistance of like-minded folks to come to his aid. As the BLM initiated the

cattle roundup in early April, Bundy's supporters, which included a contingent of gun-toting militiamen, flocked to Bunkerville to join his cause. After a group of pro-Bundy protestors blocked a BLM convoy on April 10, several physical confrontations broke out between BLM agents and the protestors. The so-called 'Battle of Bunkerville' culminated in a confrontation on Saturday, April 12, when armed protestors rallied a stand against the roundup operation as BLM crews and contractors were transporting cattle from federal lands to a holding corral. Pro-Bundy protestors surrounded the area, some aiming

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39th Annual DTC Symposium Recap

The DTC's 39th Annual Symposium at the DoubleTree by Hilton Hotel in Ontario, California, reached a new peak in attendance with 275 registered participants and 53 presentations and posters. There were many highlights throughout the Symposium, starting with the Keynote Address by Dr. Barry Sinervo from the University of California, Santa Cruz. Dr. Sinervo's address, titled

"Prospects for *Gopherus*: Demographic and Physiological Models of Climate Change from 65 Million Years Ago to the Future" and based on modeling, offered a bleak future for *Gopherus agassizii* and *G. morafkai* in the American Southwest. His address was followed by a series of government presentations on energy development and the status of the Desert Renewable Energy

Conservation Plan in California, recovery actions and planning for *G. agassizii*, and research. The government papers were countered and balanced by presentations on legal and other conservation efforts by the Center for Biological Diversity, Desert Tortoise Council, Desert Tortoise Preserve Committee, and Mojave Land Trust.

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39th Annual DTC Symposium Recap (continued)

Laura Cunningham gave a moving presentation about her book, "Forgotten Landscapes of California: Historical Ecology, Changing Deserts, and the Adventures of Publishing a Book." Copies of her book available at the meeting sold out quickly, leaving some people wishing that the Council had acquired more. Phil Medica, the winner of the Robert C. Stebbins Research Award, reviewed his life in herpetology

golden eagles (a tortoise predator), chaired by Todd Katzner of West Virginia University. Dr. Katzner put together a sterling team of scientists who spoke on topics ranging from migration and movements of golden eagles and other raptors to distribution and densities of nesting eagles in the California and Nevada deserts. The effects of wind farms on golden eagles and other raptors (by Douglas Bell and others) pro-

outstanding service as Treasurer and a member of the Board of Directors. Philip Medica was honored with the Robert C. Stebbins Research Award for his 50 years as a professional herpetologist in the Southwestern U.S., where much of his research was devoted to long-term studies of desert tortoises and lizards on the Nevada Nuclear Test Site. There were several recipients of the Glenn R. Stewart Service Award, including the Mojave Desert Land Trust, honored for its acquisition of more than 45,000 acres of land in the Mojave Desert since 2006, much of which contains habitat for desert tortoises; Shelton Douthit was honored for his 28 years as a consultant assisting public agencies and non-profit land trusts, including the Mojave Desert Land Trust, in acquiring and protecting lands with conservation value; Nancy Karl was honored for her work with the Mojave Desert Land Trust; Sean Daily was honored for his more than five years as the creative editor of the Desert Tortoise Council Newsletter; and Dan Pearson was honored for his more than 20 years of outstanding service as a member of the Council's Board of Directors, including a record four terms as Co-Chair. The Desert Tortoise Preserve Committee was honored with the James A. St. Amant Special Award for its 40 years of as manager of the Desert Tortoise Research Natural Area (DTRNA), its research and educational outreach associated with the DTRNA, and for its acquisitions of important areas of known desert tortoise habi-

tat in California. David Lamfrom was honored with the Pat Von Helf Recognition Award for his "Tortoises Through the Lens" project, which has enriched the lives of Mojave Desert students and provided outreach to millions of southern Californians through a media campaign and his book of the same title. Finally, Sara Valenzuela from the Laboratory of Herpetology at the State University of Juarez, Mexico, with her proposal entitled "Bolson Tortoise Burrows and their Role as Refuges for the Vertebrate Community at the Biosphere Reserve of Mapimi," was awarded the David J. Morafka Memorial Research Award.

On Sunday, the sessions were packed with interesting papers on a wide variety of subjects useful to recovery and management. There were several robust and interesting papers on *G. morafkai* in the Sonoran Desert of Arizona and in the different vegetation types in Mexico. The session on translocation and release of head-started tortoises summarized both long-term and short-term studies. Kathy Simon chaired a session on Connectivity of Desert Tortoise Populations and Michael Tuma chaired the closing session on management, restoration efforts, and potential impacts to tortoises of invasive plant and animal species.

Abstracts of papers from the Symposium are available at the Desert Tortoise Council's website, www.deserttortoise.org/symposia.html.



Panel discussion following Saturday afternoon's Session 6: *Mycoplasmosis, Herpesvirus, and Other Diseases and their Potential Impacts on Tortoise Populations*. Photo by Chris Noddings.

and the arid Southwest—a significant summary of accomplishments and team efforts. Roger Repp, the Saturday evening dinner speaker, was a source of enjoyment with his "Burrow Buddies—Or Not?" His photographs of rattlesnakes and gila monsters with tortoises could only have been acquired by a superb naturalist with thousands of hours in the field. Roger signed copies of the children's book that featured him as one of the book's characters (Katie the Rattlesnake).

Another highlight of the meeting was the special session on

vided critical information for managers and wildlife biologists alike.

Scientists and veterinarians from the University of Florida and San Diego Zoo gave papers on new diseases (a new *Mycoplasma* and new herpesvirus), comparison of sampling techniques, and evaluation of histologic findings.

Following the banquet on Saturday night, the annual awards were presented. Mike Bailey was honored with the Kristin H. Berry Annual Award for his nearly 14 years of work for the Council, and seven years of

The BLM-Bundy Debacle (continued)

AK-47s and sniper rifles at the federal agents, while other armed protestors approached the corral containing nearly 400 head of gathered cattle.

Jewell promised to bring Mr. Bundy to justice for organizing the militia and putting DOI employees in “grave danger,” and the FBI is currently inves-

by the BLM with the release of the 1998 Las Vegas Field Office Resource Management Plan. Closure of the allotments was facilitated by the Southern Nevada Public Land Management Act (SNPLMA) and the Clark County Multiple Species Habitat Conservation Plan (MSHCP). The SNPLMA allowed the BLM to sell public land within a specific boundary around Las Vegas, and purchase land inholdings and grazing leases within management areas. The MSHCP was designed to allow developers to take tortoises and their habitat in the Las Vegas Valley, with the condition that fees collected from project proponents would be directed to the BLM for implementation of numerous desert tortoise recovery actions and mitigation measures. One of those measures included purchasing and closing grazing leases in desert tortoise Critical Habitat; more than \$375,000 of MSHCP funds were used to terminate leases in the Gold Butte ACEC in 1998. While

most ranchers have complied with the BLM’s orders to remove their cattle from these retired allotments, Mr. Bundy remains committed to defiance, and his cattle continue to graze within Critical Habitat.

Until Mr. Bundy’s cattle are removed from Gold Butte and adjacent lands containing desert tortoise Critical Habitat, his livestock will continue to destroy cryptogamic crusts and compact desert soils, causing erosion and reducing water infiltration. His livestock will continue to introduce and spread non-native, invasive plant species, altering forage availability to desert tortoises in unfavorable ways, contributing to fuel accumulation and fire risk, and potentially fragmenting desert tortoise habitat. They will continue to trample perennial shrubs and graze on native annual plants, causing considerable and important changes in the character of Mojave Desert vegetation communities in the Gold Butte region.



Eric Parker, who lives in central Idaho, aims his weapon from a bridge as protestors gather by the BLM’s base camp in Bunkerville.

Photo by Jim Urquhart, Reuters

The BLM feared the worst and backed away from the situation to prevent the conflict from escalating into violence and bloodshed. This allowed the protestors to release the cows, drive them back onto the federal lands, and claim victory. Immediately after the incident, BLM Director Neil Kornze stated that “the BLM will con-

tigating the case to determine whether charges will be brought against pro-Bundy protestors who pointed weapons at federal officers, taunted them, and told them they should be ready to die.

Though most of the attention surrounding the case has focused on the human drama, at the core of the issue is protection of the desert tortoise and its habitat. When BLM officials asked Cliven Bundy to remove his cattle from grazing in the Gold Butte ACEC, they were implementing land use policies designed around the protection of tortoises and other special-status species. Over decades of monitoring and research, BLM biologists and non-affiliated scientists have determined that livestock grazing is detrimental to desert tortoise habitat, which spurred the drive for changing land use policies pertaining to grazing. Removal of livestock grazing was promised

“While most ranchers have complied with the BLM’s orders to remove their cattle from these retired allotments, Mr. Bundy remains committed to defiance, and his cattle continue to graze within Critical Habitat.”

tinue to work to resolve the matter administratively and judicially.” Department of the Interior (DOI) Secretary Sally



A group of Cliven Bundy’s cattle in the Gold Butte Area of Critical Environmental Concern that has been designated Critical Habitat for Agassiz’s desert tortoise.

Photo by John Locher, AP/Las Vegas Review-Journal.

Event Announcements

2014 Desert Tortoise Council Workshop: Introduction to Desert Tortoises and Field Techniques

The 24th Annual DTC Workshop, Introduction to Desert Tortoises and Field Techniques, will be held in Ridgecrest, California with two identical sessions to choose from—the first on November 1 and 2 (Sat-Sun) and the second on November 3 and 4 (Mon-Tue), 2014. Enrollment for the



Photo by Matt McMillan

workshop will open in early July, and specific information (workshop venue, registration fees, etc.) will be available on the DTC website (<http://www.deserttortoise.org/workshop.html>).

The workshop is designed especially for beginners with a solid understanding of vertebrate biology and ecology, and is structured to provide information on the biology of desert tortoises and the field techniques of monitoring and surveying, including:

- ◆ hands-on exercises in monitoring and surveying techniques for desert tortoises;
- ◆ authorized demonstrations of egg handling and burrow construction; and
- ◆ classroom overviews of the desert tortoise and threats to its survival.

The workshop consists of morning lectures by experienced desert tortoise biologists and field workers and afternoons of field experience locating tortoises.

This DTC Workshop is recognized as valuable training course by the U.S. Fish and Wildlife Service, but a letter certifying course completion (including attendance and completing the on line test), does not guarantee that the Service or any other agency will permit or authorize you to handle tortoises, move eggs, construct burrows, collect survey data, etc. However, completion of the workshop may be an important aspect in gaining agency permission/authorization.

2014 Joint Meeting of Ichthyologists and Herpetologists

The 2014 Joint Meeting of Ichthyologists and Herpetologists (JMIH) will be held in in Chattanooga, Tennessee at the Chattanooga Convention Center, July 30 – August 3. The 2014 JMIH includes the 30th

annual meeting of the American Elasmobranch Society, the 57th annual meeting of the Society for the Study of Amphibians and Reptiles, the 72nd annual meeting of the Herpetologists' League, and the 94th

annual meeting of the American Society of Ichthyologists and Herpetologists. For more information, go to <http://www.dce.k-state.edu/conf/jointmeeting/welcome>.



12th Annual Symposium on the Conservation and Biology of Tortoises and Freshwater Turtles

The 12th Annual Symposium on the Conservation and Biology of Tortoises and Freshwater Turtles will be hosted August 4-7, 2014 in Orlando, Florida. The Symposium, sponsored by Zoo Med Laboratories, Inc., is co-hosted by the Turtle Survival Alliance and the IUCN Tortoise and Freshwater Turtle Specialist Group (TFTSG), and repre-

sents the largest gathering of non-marine turtle biologists in the world.

The symposium will include a wide variety of presentations from around the world, ranging in topic from captive husbandry to field techniques to conservation. During its ten-year history, symposia have included special sessions cover-

ing China, Madagascar, India, Australia, and South America, Long-term Chelonian Studies, Ranavirus in Turtles, and Nesting Ecology, to name a few. Past workshops have dealt with egg incubation, filtration, and translocation.

For more information, go to <http://www.turtlesurvival.org/get-involved/conference>.



Event Announcements

California Turtle & Tortoise Club's 50th Anniversary Celebration

The California Turtle & Tortoise Club (CTTC) is celebrating its golden anniversary on Saturday, July 12, 2014, between 10:00 am and 4:00 pm at the Los Angeles County Arboretum in Arcadia, California. It is rare that a non-profit organization such as the CTTC reaches the 50-year milestone, and it's one definitely worth celebrating. CTTC was founded in 1964 and has over 1,500 members worldwide. The

CTTC has planned an amazing agenda for their celebration. The event will include a catered luncheon buffet, and multiple speakers on a selection of turtle/tortoise topics, including a presentation on the history and the activities of the club by Jim Misiak, Chino Chapter President. The celebration will also feature a special CTTC 50th Anniversary Song, awards, a silent auction and raffle drawing with some

very exciting prizes, and a great opportunity to meet members from the 14 chapters around the state and to make some new friends and contacts.

The event will feature three noted speakers:

Michael Connor, PhD - "A Brief History of the California Turtle and Tortoise Club"

Fred Caporaso, PhD - "Galapagos Tortoise Update: Lonesome George is Gone but

Sound Science and Serendipity May Spell Recovery for These Gentle Giants!"

Michael Tuma, PhD Candidate - "Tortoises Through the Eyes of a Biologist: What can Wild Tortoises Tell Us About Our Pets?"



Recovery Action Plans Released; Comments Sought

The U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office has recently released draft Recovery Action Plans produced by each of three regional Recovery Implementation Teams. The draft plans, which are intended to be living documents, are available online at http://www.fws.gov/nevada/desert_tortoise/dtro/dtro_rits.html. The plans, which were

approved by the Desert Tortoise Management Oversight Group prior to their public release, contain recommendations for prioritized recovery actions for Agassiz's desert tortoise populations both within and outside of conservation areas, and guidelines for monitoring their implementation. The Service is seeking comments for these Version 1 documents,

particularly from non-agency stakeholders. Comments submitted prior to October 31, 2014 will be considered by the Recovery Implementation Teams, and addressed and included in Version 2 of each plan. The teams will also consider project proposals that address high-priority actions identified in the plans, address formal dissensions contained in the Version 1 documents, and

consider ways to broaden stakeholder involvement.

Comments to Version 1 of the plans should be emailed to Cat Darst at cat_darst@fws.gov with the subject line "Recovery Action Plan Comments for (specify which plan)."

Recent Publications

Peer-reviewed articles:

Lovich, Jeffrey E., Charles B. Yackulic, Jerry Freilich, Mickey Agha, Meaghan Austin, Katherine P. Meyer, Terence R. Arundel, Jered Hansen, Michael S. Vamstad, and Stephanie A. Root. 2013. Climatic variation and tortoise survival: Has a desert species met its match?

Biological Conservation 169:214–224.

Berry, Kristin H., Julie L. Yee, Ashley A. Coble, William M. Perry, and Timothy A. Shields. 2013. Multiple Factors Affect a Population of Agassiz's Desert Tortoise (*Gopherus agassizii*) in the Northwestern Mojave Desert. Herpetological Monographs 27(1):87–109.

Zylstra, Erin R., Robert J. Steidl, Cristina A. Jones, and Roy C. Averill-Murray. 2013. Spatial and temporal variation in survival of a rare reptile: a 22-year study of Sonoran desert tortoises. *Oecologia* 173:107–116.

Books:

Rose, Francis L. and Frank W. Judd. 2014. The Texas

Tortoise: A Natural History. University of Oklahoma Press, Norman, Oklahoma.

Rostal, David C., Earl D. McCoy, and Henry R. Mushinsky (eds.) 2014. Biology and Conservation of North American Tortoises. Johns-Hopkins University Press, Baltimore, Maryland.

Study Finds Turtles are Closer Kin to Birds, Crocodiles than to Lizards, Snakes

by Eric Gershon, Yale University



Chelonians like Agassiz's desert tortoise are more closely related to birds and crocodilians than to lizards and snakes.

Photo by Tim Smith.

What are turtles, and where did they come from?

Precise answers to these questions have long eluded scientists. But new research led by Daniel Field of Yale University and the Smithsonian Institution recasts the turtle's disputed evolutionary history, providing fresh evidence that the familiar reptiles are more closely related to birds and crocodiles than to lizards and snakes.

"These observations address one of the defining biological questions of the past decade, helping us illuminate the murkier reaches of reptile evolution," said Field, a doctoral candidate in geology and geophysics at Yale and a pre-doctoral fellow at the Smithsonian Institution's National Museum of Natural History. "We show that turtles share a more recent common ancestor with birds and crocodilians —

a group known as archosaurs — than with lizards and snakes."

Field and collaborators reported their findings May 5 in the journal *Evolution and Development*.

Reptiles comprise a vast animal group of more than 20,000 species. The interrelationships of some subgroups are well understood, the scientists said. Birds are most closely related to crocodilians among living reptiles, for example, while snakes, lizards, and New Zealand's tuatara form a natural group. But turtles' precise place has been unclear, in part due to conflicting research results.

For example, although a growing number of DNA sequence studies show a close evolutionary kinship between turtles and archosaurs (birds, crocodilians), these studies have sometimes been contradicted by

anatomical studies and other research involving small bio-molecules called microRNAs that indicate a closer relationship between turtles and lizards and snakes.

MicroRNAs are viewed by some scientists as especially good evolutionary markers.

Field and collaborators revisited a foundational microRNA study, applied updated criteria for microRNA identification, and came to a different conclusion.

"Several studies purporting to investigate microRNAs misidentified other small RNA molecules as microRNAs," said Field. "In our study, we collected new microRNA data from a variety of vertebrate animals and adhered to strict new guidelines for microRNA identification. When the experiment was redone, support for turtles as closer relatives of lizards and snakes turned out to be spurious, while support for turtles as closer relatives of birds and crocodilians was very strong."

In short, he said, microRNAs and DNA sequences now yield a common signal uniting turtles and archosaurs (birds and crocodilians).

"These results are exciting because, for the first time, we obtain a consistent evolutionary signal from different sources of molecular data regarding the evolutionary position of turtles," Field said.

The paper is "Toward consili-

ence in reptile phylogeny: microRNAs support an archosaur, not lepidosaur, affinity for turtles."

Other authors on the paper are Jacques Gauthier, also of Yale, Ben King of the Mount Desert Island Biological Laboratory, Davide Pisani of the University of Bristol, Tyler Lyson of the Smithsonian Institution, and Kevin Peterson of Dartmouth College.

"For the first time, we obtain a consistent evolutionary signal from different sources of molecular data regarding the evolutionary position of turtles."

Support for the research came from the Yale Peabody Museum, the Government of Alberta, the Canadian Natural Sciences and Engineering Research Council, and NASA.



Lotosaurus adentus, a middle Triassic archosaur from China. Drawing by Nobu Tamura.

This article was reprinted with the author's permission. The original story may be found at <http://news.yale.edu/2014/05/05/study-finds-turtles-are-closer-kin-birds-crocodiles-lizards-snakes>

Struggle for Survival: Some Animals Moving, Vanishing as Deserts Grow Hotter

by Ian James, The Desert Sun

Scientists recently surveyed one patch of U.S. desert and found more desert tortoises dead than alive. Some types of lizards and insects have been vanishing from areas where they once thrived. And on mountainsides that have grown hotter and drier, birds have been shifting to higher elevations. Years of drought and rising temperatures influenced by climate change are posing new threats for desert animals in the Southwest, compounding the pressures on species already decimated by decades of expanding development and destruction of habitat.

For desert tortoises, the prolonged drought has withered much of the vegetation on which they depend. But on one cool morning this spring, tortoises emerged from their burrows on rocky hillsides beneath an array of windmills to feed on clumps of grass and rare desert dandelions. “Despite the drought, desert tortoises that did survive are taking advantage of this bloom,” said Mickey Agha, a researcher studying tortoises at the Mesa Wind Farm in the hills along the San Geronio Pass. The views of tortoises foraging among wildflowers were a stark contrast to what Agha saw two years ago in Joshua Tree National Park, where a square-mile research plot was largely stripped of vegetation by drought. The landscape

reminded Agha of the surface of Mars. Hiking through that plot, he and other researchers found only 14 living tortoises, down from an average of 43 animals found in previous surveys since 1978. What was particularly astonishing was the number of tortoises they found dead: 64. Their lifeless shells turned up beneath creosote bushes or baking in the sun. Some bore scars from being gnawed by predators such as coyotes. Many appeared to have died from dehydration or starvation. Researchers concluded that the die-off was linked to successive years of drought, and said the findings point to potential trouble for the Agassiz’s desert tortoise, which is listed as a threatened species. “The question is: Is the tortoise going to be able to survive under a warming climate in those low California desert habitats?” said Jeff Lovich, a research ecologist with the U.S. Geological Survey (USGS) who led the study.

That same question is increasingly being asked by scientists about a wide variety of animals across the desert Southwest. Many desert creatures have survived for millennia by withstanding long periods without water, and some have adapted to extreme heat by spending much of their lives underground in burrows. Hotter temperatures and multiyear droughts, though, could push



Agassiz’s desert tortoise, just one of many desert organisms facing the threat of anthropogenic climate change. Photo by Omar Ornelas and Richard Lui, The Desert Sun.

some animals to their limits. Tortoises have survived natural shifts in climate over the ages, and theoretically could relocate again — if they are able to respond quickly enough and if they aren’t stopped by roads and other human-built barriers. Tortoises also face other threats such as diseases and off-road vehicles. “They’re ancient, and they were able to survive whatever devastation wiped out the dinosaurs, but it remains to be seen if they’ll survive us,” Lovich said. “This is a species that’s probably already on the physiological edge of survival.”

For many desert creatures, biologists don’t know exactly where that edge of survival lies. Predicting how animals will fare in hotter deserts is difficult, and researchers say distinguishing the effects of global warming from other influences can be particularly challenging given the complexity of ecosys-

“Predicting how animals will fare in hotter deserts is difficult, and researchers say distinguishing the effects of global warming from other influences can be particularly challenging given the complexity of ecosystems.”

tems. What scientists have been able to document, though, is that some desert animals are vulnerable to shifts in climate and have suffered declines as the Southwest has become hotter and drier. Scientists predict those trends will intensify as average global temperatures climb in response to rising levels of greenhouse gases in the atmosphere. Some animals could become extinct, while others are likely to be driven into smaller pockets.

Continued on next page

Struggle for Survival (continued)

In the newly released National Climate Assessment report, scientists estimate that annual average temperatures in the Southwest could rise by 5.5-9.5 degrees Fahrenheit by the end of the century if carbon emissions continue to grow. Winter and spring rains are predicted to diminish in the southern portion of the Southwest, with smaller changes in the northern part of the region. Those shifts

the bigger takeaway, that if it's already extreme there, it's likely to be one of the first areas to be concerned about."

In April, the USGS released a study that assessed where seven species of birds and five species of reptiles are likely to be able to live in the future. Using multiple climate models, the researchers found that some species could gain suita-

that desert tortoises were among the few species likely to expand their range. "It's one of the few that looks like it's going to have a positive response," van Riper said. Some scientists disagree and say they expect populations of desert tortoises to continue to decline. How the tortoises fare, said Cameron Barrows, an associate research ecologist at UC Riverside's Center for Conservation Biology, will likely depend to a large degree on rainfall. Based on current trends and a predicted rise of more than 5 degrees in summertime temperatures, Barrows has projected that desert tortoises could lose 72 percent of their suitable habitat in Joshua Tree National Park and surrounding areas by the end of the century.

Other species of reptiles also appear to be particularly vulnerable. "The desert Southwest is really an area of great, great, rapid change," said Barry Sinervo, a professor of ecology and evolutionary biology at UC Santa Cruz who is studying extinctions of lizards and frogs linked to climate change. "It's driving extinctions rapidly. We expect that in the next decade, we'll actually see the very first vertebrate extinctions from climate change, and these will be in many things, but mainly lizards, amphibians." In a 2010 study, Sinervo and other researchers assessed 48 species of Mexican lizards and found that 12 percent of local populations had gone extinct since 1975. The scientists estimated

that based on current trends, 6 percent of the world's lizard species could become extinct by 2050, and 20 percent of the world's lizard species could disappear by 2080. Those vanishing reptiles are part of what biologist predict will be the world's sixth mass extinction, the biggest and most rapid loss of animal and plant species since the dinosaurs disappeared.

"The desert Southwest is really an area of great, great, rapid change. It's driving extinctions rapidly. We expect that in the next decade, we'll actually see the very first vertebrate extinctions from climate change, and these will be in many things, but mainly lizards, amphibians."

This article was reprinted with the author's permission. The full, original story may be found at <http://www.desertsun.com/longform/news/environment/2014/06/07/climate-change-california-desert-animals/10035779/>



Cameron Barrows, a UC Riverside ecologist, takes notes while surveying Joshua trees and other plants at Joshua Tree National Park on April 13, 2014. The national park and UC Riverside's Center for Conservation Biology recently began a long-term effort to monitor changes in plants and animals in order to track the effects of climate change. Photo by Ian James, The Desert Sun.

will affect different animals in different ways. "The Southwestern deserts are going to be hotter and drier, with more episodic and unreliable climate," said Ken Nussear, a research wildlife biologist with the U.S. Geological Survey. "The most extreme areas that we can think of as far as high temperatures and low precipitation are likely to be the first areas where we expect things to change the most. So that's

ble habitat based on predicted climate changes, while others will likely see their ranges shrink. "Certain species benefit from changes, some do not benefit, and a few of them basically will probably stay the same," said Charles van Riper III, USGS emeritus scientist and a professor at the University of Arizona in Tucson. The research, which also involved scientists from the University of New Mexico and Northern Arizona University, concluded



Photo by Ken Nagy

Member Spotlight

Three DTC Board Members Step Down in 2014

After many of service to the Desert Tortoise Council, three of our long-standing board members—Dan Pearson, Tracy Bailey, and Mike Bailey—stepped down from their positions recently. Mr. Pearson served on the DTC Board for 21 years in total, and served as Board Chairperson four times. He was instrumental in developing the first DTC Workshop in 1990.

Ms. Bailey served on the DTC

Board for 17 years, and served twice as DTC Chairperson, and many years as Corresponding Secretary and coordinator of the DTC Workshops. Mr. Bailey served on the Board for 14 years, including 7 years as Treasurer, and assisted in running the DTC Workshops.

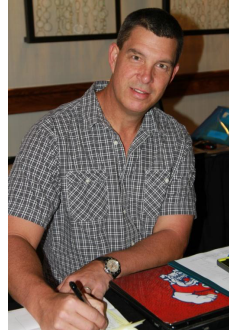
We thank them for their many contributions to the DTC over the years, and wish them the best in their future endeavors!



Dan Pearson



Tracy Bailey



Mike Bailey

Photos by Bruce Palmer.

Symposium Auction Winner Enjoys Wintery Retreat

DTC member Danna Hinderle recently returned from her trip to Big Sky Mountain Resort, in Big Sky, Montana, a travel package she won at the 39th Annual DTC Symposium in February. She thanked the DTC for an excellent time:

“Thank you to the Desert Tortoise Council and our Montana hosts for an amazing spring-time getaway at Big Sky Mountain Resort’s slope-side condominium. We had fantastic weather, and great spring ski-

ing and boarding conditions. The view from the top of the mountain was stunning, with snow capped mountains in every direction. The condominium was beautiful and cozy - we enjoyed wine by the fireplace after skiing right to our door, and soaked in the hot tub every day. The desert and its tortoises seemed very far away! We really appreciate the opportunity to explore Montana, and look forward to a return visit soon. In short, it was awesome, and thank you!”



Photo by Danna Hinderle

Letter from the Editor

Welcome to my inaugural issue of the Desert Tortoise Council Newsletter! I’m proud to have accepted the role as Newsletter Editor, and I look forward to providing our DTC membership with timely, interesting, and inspiring stories about desert tortoises and our efforts to protect their populations and habitats.

I could not have produced this newsletter without help, and I will most certainly need help from our membership for producing future newsletters. If you’re interested in contributing in any way, please contact me! I’m especially looking for help from authors who want to contribute stories, and photographers who want to see their

tortoise photos published. I’m looking forward to future issues of the Desert Tortoise Council Newsletter and I hope you are, too!

- Michael Tuma

mtuma@ecorpconsulting.com



Photo by Heather Parks

The DTC Board in Action

DTC Ecosystems Advisory Committee Actions

The Desert Tortoise Council's Ecosystems Advisory Committee, chaired by Ed LaRue, ensures that the DTC participates as an active stakeholder for planned projects and actions throughout the Mojave Desert. In 2014, the DTC participated in public meetings, submitted comment letters, and provided presentations for numerous actions, including the following:

- ◆ Provided comment letter to the BLM on the Soda Mountain Solar Draft EIS
- ◆ Notified San Bernardino County of desert tortoise fence damage along Harper Lake Road
- ◆ Provided comment letter to Kern County, regulatory agencies, and pertinent environmental groups on the Springbok & Oryx Solar Power Projects, which are proposed expansions of the Beacon Solar Project
- ◆ Provided comment letter to the BLM on the planned release of Desert Tortoise Conservation Center tortoises into the Eldorado Valley by the BLM
- ◆ Provided comment letter to Kern County on the Fremont Valley Preservation Project Draft EIR
- ◆ Joined stakeholder's list for the proposed Interstate 11 and Intermountain West Corridor Study
- ◆ Provided comment letter to the Bureau of Indian Affairs on the Moapa Solar Energy Final EIS
- ◆ Provided position paper to Department of Interior agencies on the proposed Desert Tortoise Conservation Center
- ◆ Provided endorsement letter to BLM in support of the proposed designation of National Conservation Lands
- ◆ Provided comment letter to the BLM on the proposed release of desert tortoises into Hidden Valley
- ◆ Provided comment letter to the BLM on the proposed Silurian Valley Solar Variance Consideration



Photo by Michael Tuma

DTC Board Retreat

On June 7-8, 2014, the Board of Directors participated in a retreat to discuss plans for the future of the DTC. The meeting was facilitated by Linda Mitrovich and Heidi Brannon of Solutions Strategies International, Inc., who provided their services *pro bono*. Over the course of the two-day event,

the Board developed a vision for the future of the DTC, discussed roles and responsibilities of the various Board positions and ways that work could be more efficiently distributed, considered novel fundraising opportunities, and strategized ways that the DTC could more effectively achieve its goals of

ensuring the long-term viability of desert tortoise populations. Additionally, the Board inducted two new members to the Board—Cristina Jones of the Arizona Game & Fish Department and Jason Jones of the Nevada Department of Wildlife. The meeting was a huge success, and all Board mem-

bers left the retreat feeling energized and ready to take on their responsibilities with renewed vigor and purpose. Many thanks to Ms. Mitrovich and Ms. Brannon for facilitating an excellent meeting!

Upgrade Planned for DTC Membership Database

The DTC is currently in the process of revamping the membership database in order to make it more user-friendly and up-to-date. This will allow us to contact our members more quickly and efficiently when newsletters are published or when we want to let our members know about im-

portant announcements, reminders, or happenings. We have approximately 470 current members, and recently discovered that email addresses on file for 220 of our members (both current and lapsed) are incorrect. We are requesting assistance from all of our members as we move through

this transition with the database so we can make it as accurate and as useful as possible. If you have changed emails and/or your contact information has changed, please send an email with the correct information to Mari Quillman at mquillman@ecorpcconsulting.com.

Also, if your membership has lapsed, now is the time to renew! You can renew by going to the following link on the DTC website: www.deserttortoise.org/app_form.php

Special Announcements

Sponsors Sought for DTC Newsletter

Interested in getting more exposure for your organization by sponsoring a non-profit? Consider advertising in the next issue of the Desert Tortoise Council Newsletter! The Council is currently seeking sponsors for upcoming issues of the Newsletter, which is published quarterly, distributed via email to more than 500 of our members and past mem-

bers, and available for free download from our website (www.deserttortoise.org/newsletter.html).

We are offering the following sponsorship levels:

Silver: Your organization's name mentioned in the sponsorship section of the Newsletter for 4 issues (\$100).

Gold: Your organization's logo presented in the sponsorship section of the Newsletter for 4 issues (\$250).

For more information on becoming a sponsor of the Desert Tortoise Council Newsletter, please contact Michael Tuma at mtuma@ecorpconsulting.com.

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LOGO
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Photo Gallery



Agassiz's Desert Tortoise

Photo by Stacy Manson



Morafka's Desert Tortoise

Photo by USFWS



Bolson Tortoise

Photo by Myles B. Traphagen



Texas Tortoise

Photo by Clinton and Charles Robertson



Agassiz's Desert Tortoise

Photo by Beth Jackson



Gopher Tortoise

Photo by Gary Foster

DTC Board of Directors

Officers

Bruce Palmer, *Chairperson*

Ed LaRue, *Recording Secretary*

Joe Probst, *Treasurer*

Mari Quillman, *Membership Coordinator*

Board Members at Large

Kristin Berry

Margaret Fusari

Becky Jones

Chris Noddings

Ken MacDonald

Glenn Stewart

Peter Woodman

Michael Tuma

Scott Abella

Cristina Jones

Jason Jones



Photo: Shelley Ellis

*The Desert Tortoise Council was established in 1976 to promote conservation of the desert tortoise in the deserts of the southwestern United States and Mexico. The Council is a private, non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for desert tortoises in the wild and a commitment to advancing the public's understanding of the species. For the purposes of the Council, desert tortoise includes the species complex in the southwestern United States and in Mexico, currently referred to as *Gopherus agassizii* and *Gopherus morafkai*.*

Desert Tortoise Council Membership Application

APPLICATION TYPE: _____ New Membership _____ Renewal _____ Change of Address

NAME: _____ DATE: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____

PHONE: (_____) _____ EMAIL: _____

MEMBERSHIP LEVEL: _____ Regular (\$30.00 per year) _____ Organization (\$125.00 per year)

_____ Lifetime (\$500.00 or more) _____ Student (\$20.00 per year*)

*Student memberships require validation of registered student status (best obtained through the college or registrar's office but a letter from an adviser will also be accepted).

Make check or money order payable to Desert Tortoise Council and send with this application to:

Desert Tortoise Council
4654 East Avenue S #257B
Palmdale, CA 93552

Or go to <http://www.deserttortoise.org/app.html> and join/renew via PayPal.

The Desert Tortoise Council does not release its membership list