

**53<sup>rd</sup> JOINT ANNUAL MEETING**  
Arizona and New Mexico Chapters of  
The Wildlife Society  
&  
Arizona/New Mexico Chapter of  
The American Fisheries Society  
  
January 30 – February 1, 2020  
Prescott Resort and Conference Center  
Prescott, Arizona





# Prescott Resort and Conference Center

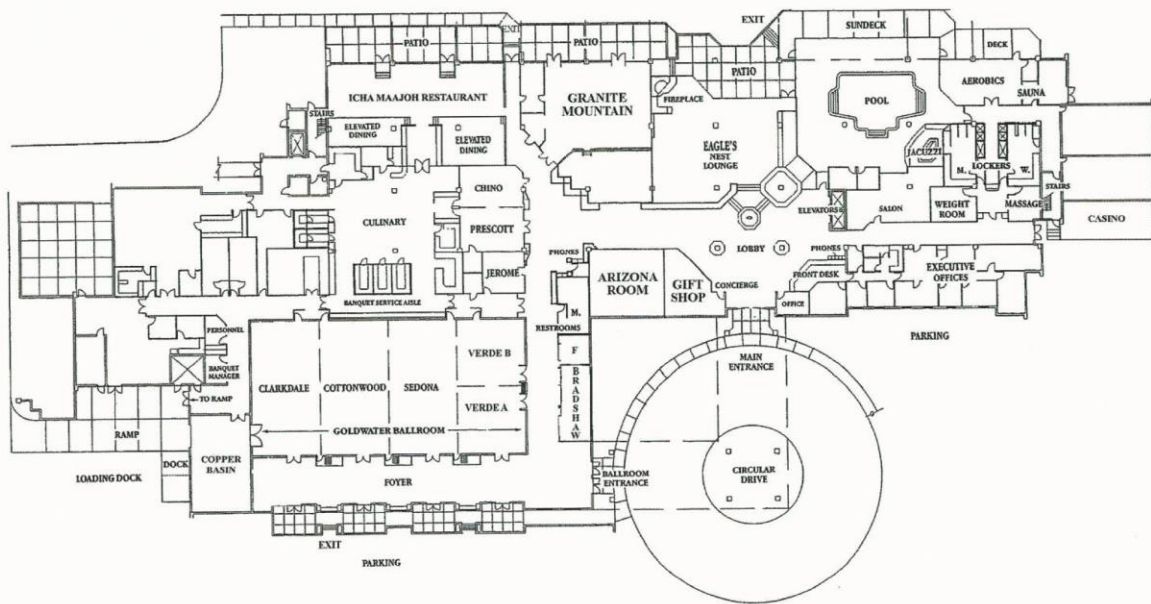
1500 AZ-69, Prescott, AZ 86301  
(928) 776-1666

**R**  
**Prescott Resort**  
and Conference Center

## MEETING & BANQUET SPACE

1.800.967.4637  
PrescottResort.com

1500 Highway 69  
Prescott, AZ 86301



# 2020 Committee Chairpersons & Meeting Organizers

## Arizona/New Mexico Chapter of the American Fisheries Society

President: David Stewart

President-Elect: Alton Livingston

Past-President: Kent Mosher

Treasurer: Brett Montgomery

Secretary: Tyler Wallin

Arrangements Coordinator: David Stewart

Program Coordinator: David Stewart, Kent Mosher, and Brett Montgomery

Program Layout and Printing: Kent Mosher and Brett Montgomery

Registration: Brett Montgomery

Workshops: David Stewart and James Dominguez

Plenary: David Stewart

Wildlife Presentations: Andrew Jones

Fisheries Presentations: Ryan Follmuth

Student Presentations: Pilar Wolters and Andrew Jones

AFS Student Posters: Pilar Wolters

TWS Student Poster: Tiffany Sprague and Andrew Jones

Student-Mentor Lunch: Kent Mosher

Photo Contest: Alton Livingston

Raffle: Tyler Wallin and David Stewart

Vendors: David Stewart

Quiz Bowl: Brett Montgomery, Audrey Owens, Tiffany Sprague, Scott Sprague,

Maddy Marsh, Kent Mosher, Ivana Mali

Spawning Run: Pilar Wolters

## Schedule at a Glance

Thursday – January 30, 2020

---

### *Verde A*

- 8:00 a.m. – 12:00 p.m. Bird and Land Animals: Turning Sound into Discovery Using Wildlife Audio Recorders as a Valuable Research Tool
- 1:00 p.m. – 5:00 p.m. Bat: Turning Sound into Discovery Using Wildlife Audio Recorders as a Valuable Research Tool

### *Cottonwood*

- 8:00 a.m. – 12:00 p.m. Distance Sampling for Abundance Estimation Workshop
- 1:00 p.m. – 5:00 p.m. Automatic Identification of Animals in Camera Trap Images Using Machine Learning

### *Verde B*

- 8:00 a.m. – 4:00 p.m. Student Resume/Interview Workshop

### *Clarkdale*

- 8:30 a.m. – 4:00 p.m. Piscicide Applications Workshop

- 
- |                        |                               |                          |
|------------------------|-------------------------------|--------------------------|
| 12:00 p.m. – 6:00 p.m. | Registration                  | <i>Prescott/Chino</i>    |
| 3:00 p.m. – 6:30 p.m.  | Presentation Loading          | <i>Jerome</i>            |
| 1:00 p.m. – 3:00 p.m.  | Bat Working Group Meeting     | <i>Sedona</i>            |
| 3:00 p.m. – 6:00 p.m.  | Poster/Photo Set-up           | <i>Granite Mountain</i>  |
| 4:00 p.m. – 6:00 p.m.  | Vendors Set-up                | <i>Foyer</i>             |
| 4:30 p.m. – 6:00 p.m.  | AZ TWS Business Meeting       | <i>Copper Basin</i>      |
| 4:30 p.m. – 6:00 p.m.  | NM TWS Business Meeting       | <i>Clarkdale</i>         |
| 4:30 p.m. – 6:00 p.m.  | AZ/NM AFS Business Meeting    | <i>Sedona</i>            |
| 6:30 p.m. – 9:00 p.m.  | Welcome Social and Appetizers | <i>Granite Mountain</i>  |
| 7:00 p.m. – 9:00 p.m.  | Student Quiz Bowl             | <i>Cottonwood/Sedona</i> |
-

# Schedule at a Glance

Friday – January 31, 2020

---

7:00 a.m. – 2:00 p.m.	Registration	<i>Prescott/Chino</i>
7:00 a.m. – 5:30 p.m.	Presentation Loading	<i>Jerome</i>
10:00 a.m.	Deadline to Submit for Photo Contest	<i>Granite Mountain</i>
8:00 a.m. – 5:00 p.m.	Vendors	<i>Foyer</i>
8:00 a.m. – 11:35 a.m.	Plenary Session	<i>Goldwater</i>
<b>10:00 a.m. – 10:15 a.m.</b>	<b>Coffee Break</b>	<b><i>Foyer</i></b>
<b>11:35 a.m. – 1:00 p.m.</b>	<b>Lunch</b>	
11:35 a.m. – 1:00 p.m.	Student Mentor Social	<i>Granite Mountain</i>
12:00 p.m. – 5:00 p.m.	Photo Contest Voting Open	<i>Granite Mountain</i>
1:00 p.m. – 3:00 p.m.	Concurrent Technical Sessions	Clarkdale Cottonwood Sedona Verde A&B
<b>3:00 p.m. – 3:20 p.m.</b>	<b>Afternoon Break</b>	<b><i>Foyer</i></b>
3:20 p.m. – 5:20 p.m.	Concurrent Technical Sessions	Clarkdale Cottonwood Sedona Verde A&B
4:30 p.m. – 6:30 p.m.	Poster Session	<i>Granite Mountain</i>
6:30 p.m.	Cash Bar & Banquet Doors Open	<i>Goldwater</i>
7:00 p.m. – 9:30 p.m.	Banquet and Awards Ceremony	<i>Goldwater</i>

---

## Schedule at a Glance

Saturday – February 1, 2020

---

7:00 a.m. – 9:00 a.m.	Spawning Run 5K	<i>Peavine Trailhead</i>
7:00 a.m. – 10:00 p.m.	Presentation Loading	<i>Jerome</i>
8:00 a.m. – 11:00 a.m.	Poster/Photo Contest Take Down	<i>Granite Mountain</i>
8:00 a.m. – 12:00 p.m.	Concurrent Technical Sessions	Clarkdale Cottonwood Sedona Verde A&B
12:00 p.m. – 1:00 p.m.	AFS/TWS Officers Meeting	<i>Eagle Crest</i>

---

# Plenary Schedule

Friday, January 31, 2020 | 8am – 11:15am

Located in the Goldwater (Clarkdale, Cottonwood, Sedona, Verde) Meeting Room

- 8:00 – 8:15 a.m.**      **Welcome and Opening Remarks**  
David Stewart  
*President, AZ/NM Chapter of the American Fisheries Society*
- 8:15 – 9:15 a.m.**      **Community Based Conservation: Creating a Shared Vision for Valle de Oro National Wildlife Refuge**  
Ariel Elliott and Jennifer Owen-White  
*Valle de Oro National Wildlife Refuge, Albuquerque, NM*
- 9:15 – 9:45 a.m.**      **Native Fish in the Classroom**  
Angela Palacios  
*New Mexico Fish and Wildlife Conservation Office, Albuquerque, NM*
- 9:45 – 10:00 a.m.**      **Breaking Down the Walls of the Ivory Tower: Engaging New Audiences with Stories of Science**  
Samantha Dwinnell  
*Haub School of Environment and Natural Resources, University of Wyoming*
- 10:00 – 10:15 a.m.**      **Break**
- 10:15 – 11:15 a.m.**      **Screening of *Deer 139***
- 11:15 – 11:35 a.m.**      **Question and Answer Session**
- 11:35 – 1:00 p.m.**      **Lunch**



***Community Based Conservation:  
Creating a Shared Vision for Valle de Oro National Wildlife Refuge***

**Ariel Elliott and Jennifer Owen-White**

Valle de Oro National Wildlife Refuge, Albuquerque, New Mexico

We have all heard that engaging the communities we serve leads to greater buy in, increased support and overall greater success in our conservation efforts, but how does that work in the real world? How do you engage community members when all the decisions are already made? How do you build trust with communities to start with? How do you keep community members engaged throughout the lifespan of a project?

In this presentation Wildlife Biologist Ariel Elliott and Refuge Manager Jennifer Owen-White tell the story of Valle de Oro National Wildlife Refuge in Albuquerque, New Mexico and its mission to be built “by the community, for the community.” After completing community-based site planning for the refuge, the staff had the difficult task of bringing the shared vision to life. Learn how the refuge continues to engage community members and how those relationships have shaped the refuge’s programs, partnerships and workforce.



**Ariel Elliot** is a wildlife biologist at Valle de Oro National Wildlife Refuge and works to provide biological support to the Northern New Mexico Refuge Complex (Rio Mora, Maxwell, and Las Vegas National Wildlife Refuges). Prior to this appointment, Ariel worked as a research fellow and researched the effects of reintroduced prairie dogs on the landscape at Sevilleta National Wildlife Refuge. Ms. Elliot has a B.S. in Wildlife and Fisheries Science, concentration in wildlife and fisheries management, and a minor in Forestry.

**Jennifer Owen-White** is the first refuge manager of the new Valle de Oro National Wildlife Refuge in Albuquerque. Valle de Oro is the first urban refuge in the Southwest and part of a larger push by the U.S. Fish and Wildlife Service to reach urban audiences and connect them to the important habitats and wildlife that the Service protects. Jennifer is proud to be both a biologist and visitor services specialist. She was born in Chicago, grew up in Houston, and has a B.S. in Biology as well as an M.S. in Wildlife Science from Texas Tech University. Jennifer is completing her PhD in Forestry and Natural Resource Interpretation from Stephen F. Austin State University where she has focused on connecting urban communities to conservation and the outdoors.

## *Native Fish in the Classroom*

### **Angela Palacios**

New Mexico Fish and Wildlife Conservation Office, Albuquerque, New Mexico

In this presentation, Angela Palacios will be presenting on the Native Fish in the Classroom (NFIC) and lessons learned as the program has evolved over the past nine years. The NFIC is structured so that students can raise native fish in their classroom while learning about ecology, biology, conservation, and socio-economic issues regarding water resources. This includes incorporating flexibility to accommodate diverse schools, maintaining relevance in regards to environmental education, and understanding sense of place.

The NFIC Program is designed to encourage appreciation for native New Mexico species, such as the Rio Grande Cutthroat Trout and other native fish species of the Middle Rio Grande in all of our classroom aquariums. This also includes reconnecting with species-specific recovery plans and the target T&E species of the NFIC Program to make the program reflect the goals of species recovery. By understanding the need to conserve habitats, students become stewards of local watersheds and can make informed decisions about how to care for the environment in the future.



**Angela Palacios** was first exposed to fisheries and outreach during high school as a Conservation Aide with the Missouri Department of Conservation (MDC). She continued working for MDC for her first two summers while attending The University of Arizona, where she obtained her Bachelor of Science degree in Renewable Natural Resources in December 2000.

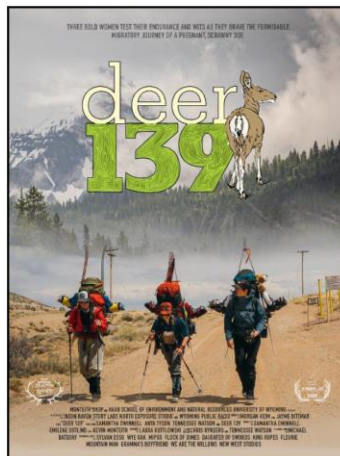
Angela began her career, as a Fish Biologist, with the U.S. Fish and Wildlife Service in May 2008. She has three broad job duties that include fish culture, fieldwork, and outreach. She manages recirculation systems held at New Mexico Fish and Wildlife Conservation Office. This includes caring for both hatchery spawned and wild caught fish species such as the federally listed Gila Trout, Colorado Pikeminnow, and Rio Grande Silvery Minnow. She provides field support for several projects located on the Gila, Rio Grande, Pecos, and San Juan Rivers. In addition, Angela is the lead for the information and education activities that includes the Native Fish in the Classroom (NFIC) Program. Now in its 9th year, the NFIC Program provides students the opportunity to raise native fish in their classroom while learning about native fish and their aquatic ecosystems.

*Breaking Down the Walls of the Ivory Tower:  
Engaging New Audiences with Stories of Science*

**Samantha Dwinell**

Haub School of Environment and Natural Resources, University of Wyoming

According to the North American Model of Wildlife Conservation, wildlife-related management and policy should be based on scientific evidence. Yet, policy in wildlife management is often shaped by public sentiment, which may not always be scientifically well informed. Although wildlife researchers are effective at disseminating information within the scientific community through peer-reviewed publications, they frequently fail to communicate research findings to non-scientific audiences. To promote broader impacts of wildlife research, creative efforts that bring scientific theory and empirical evidence into public domain are greatly needed. To share our stories of the ecology of migratory wildlife with a broader audience, we created a conservation-adventure film, “Deer 139”, which follows a team of women as they traced the migration route of a radio-collared mule deer. Our target audience was outdoor recreationists, who interact with wild landscapes, but may not be connected to the ecology and natural history of the places within which they recreate. Using the powerful tool of visual storytelling, this film shares the firsthand experience of long-distance migration through the lenses of a scientist, naturalist, and journalist. Our objectives were to: (1) engage new audiences with discoveries in wildlife ecology, (2) instill an appreciation for a commonplace species, such as mule deer, and (3) provide broader audiences with an argument for landscape conservation. As wildlife research and management advances, our aim is to use educational tools, such as “Deer 139”, to encourage broader application of scientific research into shaping policy in wildlife management.



**Samantha (Sam) Dwinell** is a wildlife researcher working with Dr. Kevin Monteith where she tackles a variety of questions relating to the nutritional relationships between wildlife and the environments they rely on. With an eye toward wildlife management and conservation, Sam’s research is focused on how changes in environmental conditions – both natural and human-caused – influence the behaviors, life histories, and survival of individual animals and populations. Her graduate work at the University of Wyoming explored how behavioral responses to human disturbance associated with energy development influenced the nutritional interactions between mule deer and the sagebrush habitats of their winter ranges in western Wyoming.

Fri Jan 31	Wildlife Session 1 Reptiles, Amphibians, and Urbanization Impacts	Wildlife Session 2 Student Session/Wildlife Health	Fisheries Session 1 Student Session	Fisheries Session 2
Moderator	Leland Pierce	Melissa Merrick	Kent Mosher	Ty Hardymon
<b>Room</b>	Cottonwood	Clarkdale	Verde A & B	Sedona
1:00	Effects of urbanization on an assemblage of Sonoran Desert snakes. <b>Bosak**</b>	Habitat selection by the Organ Mountains Colorado chipmunk. <b>Schweiger†</b>	Fish Abundance and Population Structure Pre- and Post- High Magnitude Flooding Event in an Arizona River. <b>Jenney**</b>	Environmental DNA and 16S rRNA metabarcoding detects fish and wildlife in the Verde River, Arizona <b>Valente</b>
1:20	The distribution of Jemez Mountains salamanders in relation to geology, topography, and other biogeographical factors. <b>Giermakowski</b>	Micro-habitat selection by the Peñasco least chipmunk <b>McKibben†</b>	Effects of estradiol-17 $\beta$ on the survival, growth, and sex reversal of Red Shiner. <b>Teal**</b>	Environmental DNA sampling of desert fishes: performance relative to location, species, and traditional sampling <b>Robinson</b>
1:40	Conservation and management of flat-tailed horned lizards ( <i>Phrynosoma mcallii</i> ) in Arizona. <b>Grimsley</b>	Assessing geographic variation in song structure and plumage coloration in the willow flycatcher ( <i>Empidonax traillii</i> ) species complex. <b>Mahoney†</b>	Using native fish in Arizona high schools to teach Earth's carrying capacity and limiting factors. <b>Freed**</b>	Using Environmental DNA to Plan, Implement, and Evaluate Piscicide Treatments in Whitewater Creek <b>Paggen</b>
2:00	Effects of urbanization on three Sonoran Desert rattlesnake species. <b>Huerta**</b>	Mapping the spread and effect of chytrid in efforts to protect endangered species of amphibians across New Mexico. <b>Nelson**</b>	Microplastic Pollution in the Effluent-dependent Santa Cruz River. <b>Ehppehimer**</b>	Status of an Iconic Gila Trout Population Five Years after the Whitewater Baldy Wildfire <b>Wallin</b>

Room	Cottonwood	Clarkdale	Verde A & B	Sedona
2:20	Monitoring gila monster health in an urbanizing environment. <b>Johnson**</b>	Emerging viral diseases in at-risk populations of felids and ungulates. <b>Payne**</b>	Shrinkage of Rio Grande silvery minnow after preservation in formalin and storage in ethanol. <b>Grant**</b>	Gila Trout Management and Recovery Efforts in Arizona. <b>Beard</b>
2:40	Life in the city: Ecology of urban desert spiny lizards ( <i>Sceloporus magister</i> ). <b>Whitehair**</b>	Coyotes ( <i>Canis latrans</i> ) in Arizona exhibit immune and genetic evidence of rickettsial infections. <b>Yaglom</b>	New ammonia-based piscicides: Getting from science to useable management tools. <b>Ward</b>	Rio Grande Cutthroat Trout Stocking in the Rio Grande Gorge: the History and Growth of a Public Outreach Event. <b>Trujillo</b>
<b>3:00-3:20 BREAK</b>				
<b>Fri Jan 31</b>	<b>Wildlife Session 3 Wildlife Survey Methods</b>	<b>Wildlife Session 4 Predator/Prey Ecology</b>	<b>Fisheries Session 3</b>	<b>Fisheries Session 4</b>
Moderator	Jessica Moreno	Linsey Blake	Ty Hardymon	Diego Aruajo
3:20	Comparison of sampling methods for herpetofauna in the Sonoran Desert. <b>Baker</b>	Managing water to reduce unintended consequences for desert bighorn sheep. <b>Harris</b>	Restoring Gray Redhorse populations in the Delaware River, New Mexico. <b>Hatt</b>	Varying recruitment success of two endangered fishes in historically wet and dry years in the San Juan River. <b>Barkalow</b>
3:40	Predicting bird guilds using vegetation structure and woody composition on a wild and scenic river in Arizona. <b>Bateman</b>	Influence of Mexican wolves on elk resource selection. <b>Thompson**</b>	Fish Assemblage Restoration in the lower Blue River, Arizona <b>Hickerson</b>	Innovative Approaches to Reduce Predation Risk on Hatchery-Reared Endangered Bonytail and Razorback Sucker <b>Stahr</b>

Room	Cottonwood	Clarkdale	Verde A & B	Sedona
4:00	CRASH! A suite of new tools for carcass reporting - Arizona streets and highways <b>S. Sprague</b>	Community reorganization revealed by exploring shifts in the diet of an apex predator, the Golden Eagle ( <i>Aquila chrysaetos</i> ), with stable isotopes and prey remains. <b>Roemer</b>	Red Tank Draw Drainage Nonnative Fish Mechanical Removal <b>Grube</b>	Falling water, rising temperatures, growing fish? <b>Boyer</b>
4:20	Environmental DNA metabarcoding detects waterbirds in a complex assemblage: a case study from Willow Lake, Arizona. <b>Davis**</b>	Cause-specific mortality and survival of elk in the Mexican wolf recovery area in New Mexico and Arizona. <b>Boyle**</b>	The Success of Green Sunfish Removals in McGee Wash. <b>Montgomery</b>	Is Pearce Ferry rapid a barrier to native and a non-native fish in the Colorado River? <b>Rogowski</b>
4:40	Modeling golden eagle nesting habitat presence/absence across five bird conservation regions. <b>Diamond</b>	Habitat heterogeneity in the Chihuahuan Desert and puma diet diversity. <b>Prude**</b>	Improving the Bartlett Lake Fishery. <b>Pauling**</b>	Assessment of Stocked Rainbow Trout Persistence at Lees Ferry, Colorado River AZ. <b>Oliver</b>
5:00	Testing a new method for the census of Mt. Graham red squirrels, <i>Tamiasciurus hudsonicus grahamensis</i> . <b>O'Donnell</b>	Assessing the impacts of a recovering predator population on prey behavior. <b>Farley**</b>		Estimating Persistence and Movement Probability of Hatchery Gila Trout in an Arizona Stream. <b>Loubere</b>
5:20	Shepherding students from the lab to publication: teaching students conservation genetics in the laboratory setting with actual case studies. <b>Erwin</b>			

Room	Cottonwood	Clarkdale	Verde A & B	Sedona
Sat Feb 1	Wildlife Session 5 Herptofauna Ecology	Wildlife Session 6 Bats, Butterflies, and Springsnails!	Wildlife Session 7 Mammal Ecology and Management	
Moderator	Kent Mosher	Tiffany Sprague	Jacob Mesler	
8:00	Habitat partitioning by sympatric congeners, the mesquite lizard and crevice swift Lizard, in the Trans-Mexican volcanic. belt <b>Flores**</b>	It's good to be home again: PIT tags document cave myotis activity at Kartchner Caverns, Arizona. <b>Buecher</b>	Fire severity influences habitat use of medium and large-sized mammals in the White Mountains of Arizona. <b>Lewis</b>	
8:20	Inundation effects on the ecology of northern Mexican gartersnakes. <b>Myrand**</b>	How far do bats take it? A review of home range studies. <b>Chambers</b>	Habitat selection by female mule deer in relation to prescribed fire, forest thinning and wildfires. <b>Cain</b>	
8:40	Assessing dietary habits of Rio Grande cooter and red-eared slider using carbon and nitrogen stable isotope analysis. <b>Ortega-Berno**</b>	Illuminating knowledge gaps: effects of artificial lights on bats. <b>Martinez-Fonseca**</b>	Evaluating risks associated with animal capture and handling. <b>Dwinnell</b>	
9:00	Female reproduction in flat-tailed horned lizards. <b>Pawlicki</b>	Restoring and enhancing agave for migratory nectivorous bats in the Southwestern U.S. and Mexico. <b>Taylor</b>	The spatial ecology of two endemic California Channel Island carnivores, the island fox and island spotted skunk. <b>Gagorik**</b>	

Room	Cottonwood	Clarkdale	Verde A & B	Sedona
9:20	News and notes for the amphibians and reptiles of New Mexico in 2019. <b>Pierce</b>	Supporting pollinator protection and monarch conservation. <b>Abeyta**</b>	Mexican wolf recovery program updates. <b>Rinkevich</b>	
9:40	Seasonal and daily basking pattern of the Rio Grande cooter ( <i>Pseudemys gorzugi</i> ) using game cameras. <b>Suriyamongkol</b>	Managing springsnails of the southwest: A multi-agency and multi-state springsnail conservation strategy. <b>Mendoza</b>	Camera trapping and non-target species: the crested porcupine in Italy. <b>Mazzamuto</b>	
<b>10:00-10:20 BREAK</b>				
Sat Feb 1	<b>Wildlife Session 7 Conservation Planning, Connectivity, and Riparian Systems</b>		<b>Wildlife Session 8 Invasive Plants, Birds, and Small Mammals</b>	
Moderator	Haley Nelson		Sidney Riddle	
10:20	Thirty years of connectivity conservation plans: an assessment of factors influencing implementation of plans. <b>Beier</b>	Saving the world two evil plant species at a time: preliminary results. <b>T. Sprague</b>		
10:40	Safe passages for wildlife: Progress on Interstate-10 within Arizona's Rincon-Santa Rita-Whetstone Mountains wildlife linkage. <b>Moreno</b>	Investigating vocalizations as a potential reproductive isolating mechanism of gilded and red-shafted flickers in Arizona. <b>Lausch**</b>		



Room	Cottonwood	Clarkdale	Verde A & B	Sedona
11:00	Save the Dells: Leveraging municipal planning frameworks for habitat conservation in Prescott. <b>Fields</b>	Current status and trends in southwestern willow flycatcher and western yellow-billed cuckoo populations on the Rio Grande in New Mexico. <b>Walton</b>		
11:20	Livestock use of riparian habitat for endangered species on six southwestern rivers. <b>Trudeau</b>	Spatial ecology and resource selection of an isolated edge-population: The endemic white-bellied vole ( <i>Microtus longicaudus leucophaeus</i> ) in southern Arizona. <b>Dutt**</b>		
11:40	Springs of the Colorado River Basin: An examination of spring types and water characteristics across elevation, and human population density over time. <b>Jenness</b>	Home ranges of an endangered jumping mouse and three ways they get around. <b>Zahratka**</b>		
12:00	Springs stewardship through the lens of the springs dependent species project: understanding the scope of springs ecosystems as vital endemic habitats and wildlife pathways. <b>Mann</b>	Sound intensity and audibility of masked bobwhite vocalizations. <b>Butler</b>		

\*\* denotes student presenter

†denotes wildlife student presentation competition

**Poster Session (alphabetical by last name of first author)  
Friday, 4:30-6:30**

**Fisheries Posters**

**Efficacy of a Low-Dose EarthTec QZ<sup>®</sup> Treatment for the Control of New Zealand Mud Snails in a Hatchery Setting**

Avenetti, Lorraine D., Devon C. Oliver, Alex Loubere, and Jeff Sorensen

**Gila Trout Egg Stocking as a Successful Repatriation Tool**

Beard, Zachary S. and Brett J. Montgomery

**Hydropower limits on aquatic invertebrates in the Grand Canyon affect fish biomass**

Boyer, Jan K., Theodore A. Kennedy, and Jeffrey D. Muehlbauer

**Mapping the Extent of Effluent Flow and Observing the Impacts of River Drying on Fish in the Santa Cruz River (Agua Nueva Reach)**

\*\*Ebenal, Anton E.

**Geomorphology affects desert fish assemblages in a restored travertine-depositing stream ecosystem in Central Arizona**

\*\* Katz, Nicolas, Scott Bonar, and Christopher Jenney

**Effects of Flooding on Fish Populations in the Verde River**

\*\* Livingston, Jenna, Nicolas Katz, Chris Jenney, and Scott Bonar

**Water Quality in Acequias used by the Pueblo of Sandia**

\*\*Montoya, Jason

**Can native Colorado River fish utilize New Zealand mudsnails as a food source?**

\*\* Nelson, Haile, David Ward, and Laura Tennant

**Analysis of single nucleotide polymorphisms confirm the presence of Coosa Bass *Micropterus coosae* in the Upper Verde River, Arizona.**

Valente, Matthew J., Matthew R. Lewis, Catherine E. Benson, Matthew Chmiel, Eric Peatman, and Hillary L. Eaton.

**Fish hatchery effluent affects the results of vertebrate eDNA metabarcoding studies in Oak Creek, Arizona**

\*\*Wockenfuss, Anna R., Courtney S. Turner-Rathbone, Hillary L. Eaton, Catherine E. Benson, Matthew J. Valente, and Matthew W. O'Neill

## **Wildlife Posters**

### **Urban heat island effect and rodent body condition.**

\*\*Allen, Brittany D., Heather L. Bateman, Marianne S. Moore, and David M. Hondula.

### **Comparing bat species detection equipment and diversity along the Rio Grande between 2012 and 2019.**

\*\*Barkoff, Annabelle, Neil Katzman, and Ian Ferguson.

### **Evaluating breeding status and distribution of yellow-billed cuckoos in the mountains of southeastern Arizona.**

\*\*Beauregard, Nicholas D. and Tad C. Theimer

### **Status and conservation of bank swallow populations in New Mexico.**

Conway, Meaghan and Chuck Hayes

### **The effects of pack size in captivity in Mexican gray wolves using faecal glucocorticoids.**

\*\*Dalton, Isabel.

### **Factors leading to engagement of minors in wildlife and environmentally-oriented political activism**

\*\*Dressler, Madison and Annathea Elliot.

### **Bat habitat use across the gradient of urbanization in the Phoenix Valley.**

\*\*Dwyer, Jessica M. and Jesse S. Lewis

### **Spatial prioritization for endangered Yuma Ridgway's rail habitat on the Gila River in Maricopa County, Arizona.**

Flores, Elija G. and Tice Supplee.

### **Framing the gap: An examination of the self-efficacy of wildlife professionals in the public domain.**

\*\*Foerster, Taylor A. and Matthew M. Mars.

### **Factors affecting burrowing owl nest site selection in artificial burrows in Arizona.**

\*\*Fonseca, Kimberly I., Dejeanne Doublet, Martha J. Desmond, David H. Johnson, and Fitsum Abadi.

### **Testing the acoustic adaptation hypothesis in the willow flycatcher (*Empidonax traillii*) species complex.**

\*\*Gonzalez, Sarah I., Sean M. Mahoney, Bret Pasch, and Tad C. Theimer.

### **Species richness of mammals and terrestrial birds across a gradient of urbanization in central Arizona**

Haight, Jeffrey D., Sharon J. Hall, and Jesse S. Lewis.

**Detecting New Mexico meadow jumping mice using eDNA**

\*\*Hershauer, Samantha., Jacque Lyman, Daniel E. Sanchez, Colin J. Sobek, Carol L. Chambers, and Faith M. Walker.

**\*\*Parasite evaluation in endangered Mount Graham red squirrels (*Tamiasciurus fremonti grahamensis*) and invasive Abert's squirrels (*Sciurus aberti*).**

\*\*Jones, Deandra and John L. Koprowski.

**\*\*Intraindividual variation in the calls of non-passerines: A study of northern flicker calls.**

Letowt, Mariah E. and Rabecca M. Lausch

**Home range and activity of the ornate box turtles in the high plains of eastern New Mexico.**

\*\*Mahan, Laramie B., Hayden C. Hughes, Thanchira Suriyakmongkol, Vinicius Ortega-Berno, and Ivana Mali.

**Carbon, hydrogen, and nitrogen stable isotope analysis of select Albuquerque riparian breeding birds.**

\*\*McGuire, Allison T.

**Spring diets of black-tailed and antelope jackrabbits**

\*\*Meacham, Makenzie, Nashelly Meneses, Kerry Baldwin, Maria Altemus, Randy Babb, Russell Benford, and David Brown.

**Water quality in acequias used by the Pueblo of Sandia**

\*\*Montoya, Jason.

**Identification of hantavirus strains in eastern New Mexico rodent assemblages**

\*\*Moores, Isaiah, Treyton Neece, Thanchira Suriyamongkol, and Ivana Mali.

**Evaluating temporal and spatial distribution of the lesser long-nosed bat (*Leptonycteris yerbabuenae*) on the Barry M. Goldwater Range East.**

Moreno, Eduardo, Ronald Mixan, and Michael Ingraldi.

**The efficacy of translocation to augment Gambel's quail populations.**

\*\*Nelson, Cherie J. and John L. Koprowski.

**Isotopic analysis of porcupine diets.**

\*\*Ranspot, Mikayla.

**Linking bird activity to riparian vegetation using ecoacoustics on a wild and scenic river.**

Riddle, Sidney, B. and Heather L. Bateman.

**Factors affecting the presence of burrowing owls at artificial habitat sites in Arizona.**

\*\*Rodriguez, Jazia M., Dejeanne Doublet, Martha J. Desmond, David H. Johnson, and Fitsum Abadi.

**Incorporating high density bat roosting habitat into highway bridge construction.**  
Scobie, Emily, Eduardo Moreno, and Joel M. Diamond.

**Assessing Mexican woodrat movement over patches of different burn severity.**  
\*\*Slovikosky, Sandy A. and John L. Koprowski.

**Environmental DNA metabarcoding detects mammal use of stock tanks and natural springs on the Prescott National Forest**

\*\*Smith, Kelsey A., Berenice A. Carreras Mendiola, Catherine E. Benson, Matthew J. Valente, Hillary L. Eaton, and Francisco B. Anaya.

**Using biologging devices to detect rhythms of activity in the golden mantled ground squirrel.**

\*\*Vallance, Noa H., Victor Y. Zhang, and C. Loren Buck.

**Stream vegetation recovery in the Chiricahua Mountains following a forest fire.**

\*\*Winzer, Jazmyn, Michael Bogan, and Earyn McGee.

\*\* denotes student presenter

Thank you to the following sponsors for supporting the 2020  
AFS/TWS Joint Annual Meeting.

Audubon Arizona

Miller Net Company

Dickens Sawmill

OS Systems Incorporated

Fincognito

Phoenix Zoo

Jonny Armstrong Photography

Smith-Root

Midwest Lake Electrofishing

Vortex Optics