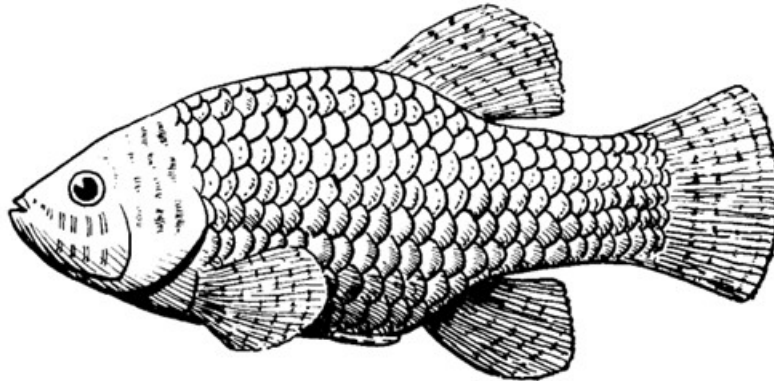


**DESERT FISHES COUNCIL 54TH ANNUAL SYMPOSIUM, 2022 – ST.
GEORGE, UTAH
SHORT PROGRAM**



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DESERT FISHES COUNCIL 54TH ANNUAL SYMPOSIUM, 2022 – ST. GEORGE, UTAH – SHORT PROGRAM

WEDNESDAY AFTERNOON, NOVEMBER 16 – MAIN CONFERENCE ROOM

- 16:00-19:00: Registration
16:00-19:00: Presentation loading in person (if not emailed ahead of time)
18:00-20:00: Social Mixer with snacks provided – main conference room

THURSDAY MORNING, NOVEMBER 17 – MAIN CONFERENCE ROOM

- 07:30-08:30: Presentation loading in person (if not emailed ahead of time)
07:30-12:00: Registration
08:30-08:45: Welcome – Kevin Wilson, President; Krissy Wilson & Richard Fridell, Local Hosts

Virgin River Symposium - Conservation Challenges in the Nation's Fastest Growing Metropolitan Area – Plenary Session – Moderator Rick Fridell

- 08:45-09:05: Collaborative partnerships: the key to successful conservation planning in America's fastest growing metropolitan area – **Rick Fridell, Melinda Bennion, Martin Schijf, Kody Callister, Sarah Siefken, & Erik Woodhouse**
09:05-09:25: Efficient Water Management for People & Wildlife, Virgin River, Utah – **Elaine York**
09:25-09:45: The Virgin River Resource Management & Recovery Program: 20 years of Conservation & Recovery – **Josh Rasmussen**
09:45-10:05: The Virgin Spinedace Conservation Agreement & Strategy: Twenty-seven years of conservation success – **Rick Fridell, Martin Schijf, & Christian Edwards**

10:05-10:15: BREAK

Virgin River Session – Moderator Rick Fridell

- 10:15-10:30: Virgin Spinedace Restoration in the Santa Clara River below Gunlock Reservoir – **Martin Schijf, Rick Fridell, Christian Edwards, Melinda Bennion, Erik Woodhouse, Kody Callister, & Sarah Siefken**
10:30-10:45: Limiting Factors & Recovery of Woundfin in the Virgin River – **Melinda Bennion, Rick Fridell, Martin Schijf, & Kody Callister**
10:45-11:00: Non-native Fishes Management in the Virgin River Basin, Utah – **Erik Woodhouse, Rick Fridell, Martin Schijf, Melinda Bennion, Christian Edwards, Kody Callister, & Sarah Siefken**
11:00-11:15: Red Shiner Eradication: A History of Endangered Species Recovery through Non-Native Removal in the Virgin River – **Sarah Siefken, Rick Fridell, Kevin Wheeler, Melinda Bennion, Martin Schijf, Christian Edwards, Erik Woodhouse, & Kody Callister**
11:15-11:30: Virgin River Chub – **Kody Callister, Rick Fridell, Martin Schijf, & Melinda Bennion**
11:30-11:45: Response of Endangered Species to Nonnative Eradication through Piscicide Application – **Skyler Hedden, Julie Carter, Matthew Rinker, Scott Rogers, & Kevin Guadalupe**
11:45-12:00: Virgin River Riparian Habitat Restoration & Wildlife Conservation – **Christian Edwards & Rick Fridell**

12:00-13:30: LUNCH

THURSDAY AFTERNOON, NOVEMBER 17 – MAIN CONFERENCE ROOM

Student Awards Session – Moderator Sarah Seegert

Student Presentations under consideration for THE ROBERT RUSH & FRANCES HUBBS MILLER AWARD

13:30-13:45: Advances on the genetic analysis of hybridization in the Yaqui catfish, *Ictalurus pricei* (Rutter, 1896) using mitochondrial & nuclear genes – **Alexandre Gutierrez-Barragan, Alejandro Varela-Romero, Francisco Javier García-De León, Mariana Mateos, Carlos Alonso Ballesteros-Córdova, José Manuel Grijalva-Chon, & John Carlos Garza**

Student Presentations under consideration for THE CARL L. HUBBS AWARD

13:45-14:00: Conservation Genomics of Spikedace (*Meda fulgida*) – **Alex Cameron, Megan Osborne, & Thomas Turner**

14:00-14:15: Effects of non-native crayfish on the structure & function of a stream food web in the lower Colorado River basin – **Gregor Hamilton, Thomas Turner, & Alesia Hallmark**

14:15-14:30: Characterizing the fish assemblage in a reservoir forebay & identifying the potential for nonnative fish escapement into a desert river – **Barrett Friesen, Phaedra Budy, & Casey Pennock**

14:30-14:45: Exploring Impacts of Lake Level Decline on a Critical Forage Species in a Large Terminal Desert Lake – **Sarah Barnes, Phaedra Budy, & Robert Al-Chokhachy**

14:45-15:00: From Bad to Worse: High Nonnative Densities & Monsoonal-Induced Habitat Deterioration in Backwater Nurseries may Explain the Recruitment Bottleneck of Imperiled Fishes in the San Juan River of NM, CO, & UT – **Blake Hansen, James Whitney, Amber Bell, Sasha Ewing, Michaela Fishback, Linden Jones, & Josh Holloway**

15:00-15:15: **BREAK**

Student Awards Session – Moderator Megan Osborne

Student Presentations under consideration for THE CARL L. HUBBS AWARD (CONTINUED)

15:15-15:30: Hydroperiod shapes aquatic invertebrate communities of Sonoran Desert rock pools – **Susan Washko & Michael Bogan**

15:30-15:45: The Toad & the Crayfish: Arizona Toad & Non-native Species Occupancy & Interactions in Streams of Arizona – **Brett Montgomery & Heather Bateman**

15:45-16:00: Walking a Fine Line: Miniature Distance Sampling Reveals Greater Abundance of Imperiled Conchos Pupfish in Marginal Habitats – **Lindsey Elkins, Joshua Perkin, Matthew Acre, Megan Bean, Sarah Robertson, & Ryan Smith**

16:00-16:15: Wood you believe it? Experimental Nonnative Wood Addition Enhances In-Stream Habitat for Native Desert Fishes – **Benjamin Miller, Casey Pennock, & Phaedra Budy**

16:15-16:30: Exploring movement patterns of an endangered minnow in a fragmented desert river – **Martinique Chavez, Phaedra Budy & Casey Pennock**

16:30-18:00: **Poster Session & social with snacks provided – main conference room (next page):**

18:30-20:30: **Student Networking session**

THURSDAY AFTERNOON, NOVEMBER 17

16:30-18:00 Poster Session & social with snacks provided – main conference room

Student Posters under consideration for **THE POSTER AWARD**

1. Population genetics of sand shiner (*Notropis stramineus*) across the Great Plains - **Huachan Liang, Chloe McGuan, Guilherme Caeiro-Dias, & Megan Osborne**
2. Endangered & in danger: a test of acquired predator recognition of novel predators by pupfish *Cyprinodon nevadensis shoshone* – **Molly Johnson, Kathryn Hanson, Craig Stockwell, & Brian Wisenden**
3. Aquatic Invertebrate Monitoring in Saguaro National Park: Biodiversity & Citizen Science – **Maya Tainatongo**

General Posters

4. Lower Colorado River Area Report – **Ron Rogers**
5. Parasites of cypriniform fishes of the Santa Clara River – **Max Murray**
6. Grapevine Creek: Creating Gila Trout Angling Opportunities from Eyed Egg Stockings – **Emily Keister & Zach Beard**
7. Evaluating the Relationship between Flow & Smallmouth Bass Abundance, Growth & Diet on the White River, Utah – **Justin Furby, Matt Breen & Casey Pennock**
8. Use of the Gila Topminnow, *Poeciliopsis occidentalis*, for vector control – **Elizabeth Grube & Brian Hickerson**
9. Using a genetic approach to identify undetermined fish to species, with an example from Central Arizona - **Matthew Mayer, Scott Bonar, Melanie Culver, & Kaitlyn Gahl**
10. Green Sunfish: Aquatic Gremlins of the Southwest – **Eric Frye & David Ward**
11. Defending Crystal Spring: eradicating the green sunfish (*Lepomis cyanellus*) from Ash Meadows National Wildlife Refuge – **Emma Priger, Michael Reeves, & Leah Simantel**
12. Idiosyncratic anti-predator responses of two desert fishes to invertebrate predation risk - **Bridger Scraper, Sekhar M.A., Shawn Goodchild, Craig Stockwell, & Brian Wisenden**
13. Assessment of Headwater Catfish (*Ictalurus lupus*) genetics in Texas & New Mexico – **Megan Bean, Dijar Lutz-Carrillo, Joanna Hatt, Brian Ferguson, Joshua Perkin, & Stephanie Parker**
14. Monitoring Comanche Springs Pupfish, Pecos Gambusia, & Leon Springs Pupfish populations in West Texas – **Megan Bean, Ryan Smith, & Dijar Lutz-Carrillo**
15. The Development & Feasibility of Using Camera Traps to Monitor Pupfish Populations – **Megan Bean, Preston Bean, Dominik Chilleri, Robert Mollenhauer, Joshua Perkin, & Matthew Acre**
16. Nevada Area Report, 2022 – **Eric Miskow, Kevin Guadalupe, Dan Dauwalter, & Chris Crookshanks**
17. Using telemetry to track the movements of a federally endangered desert sucker – **Justin Handtke, Brandon Albrecht, Ron Rogers, Mark McKinstry, & Kerri Pedersen**
18. Evaluating water temperature & stream flow in the lower Virgin River, near Mesquite, Nevada, 2019-2021 – **Katherine Earp**
19. A Cutthroat Trout chromosome-level genome assembly – **R. Paul Evans, Kevin Rogers, Dennis Shiozawa**

FRIDAY MORNING, NOVEMBER 18 – MAIN CONFERENCE ROOM

07:30-08:30: Presentation loading in person (if not emailed ahead of time)

08:30-08:45: Welcome – Kevin Wilson

General Session – Moderator Joanna Hatt

08:45-09:00: Predicting an invasion: Smallmouth bass near-term risk below Glen Canyon Dam – **Drew Eppehimer, Charles Yackulic, Lindsey Bruckerhoff, Jian Wang, Kirk Young, Kevin Bestgen, & John Schmidt**

09:00-09:15: Monitoring invasive Northern Pike *Esox lucius* in Utah Lake – **Ben Wiley, Kurtis Shollenberger, Dale Fonken, Brian Kesner, & Paul Marsh**

09:15-09:30: Summary of AZGFD Conservation Efforts Through the Gila River Basin Native Fishes Conservation Program 2001-2022 – **Brian Hickerson, William Stewart, Kent Mosher, & Anthony Robinson**

09:30-09:45: Application of next generation DNA sequencing markers for genetic monitoring of the endangered razorback sucker, *Xyrauchen texanus* – **Abby Wicks, Trevor Krabbenhoft, Joel Corush, Thomas Turner, Megan Osborne, & Thomas Dowling**

09:45-10:00: 2022 Upper Colorado Area Report – **Dave Speas**

10:00-10:15: Ongoing restoration projects for the endangered Moapa dace, *Moapa coriacea*, at the Moapa (Muddy) Warm Springs, Clark County, Nevada – **David Syzdek & Michael Schwemm**

10:15-10:30: **BREAK**

General Session – Moderator Chase Ehlo

10:30-10:45: Springsnails of Ash Meadows – **Harold Fairfield**

10:45-11:00: Back to the future, warmwater fish in the Grand Canyon – **David Rogowski**

11:00-11:15: A small warm tributary provides prespawning resources for Colorado Pikeminnow in a cold dam-regulated river – **Edward Kluender & Kevin Bestgen**

11:15-11:30: Advances in genetic knowledge for the management & conservation of the Sonoyta River Mexican Longfin dace, *Agosia chrysogaster* in Northwest Mexico – **Alejandro Varela-Romero, Marisol A. Paredes-Gallardo, Carlos A. Ballesteros-Córdova, Manuel Grijalva-Chon, Enrique De la Re-Vega, Alexandre Gutiérrez-Barragán, & Nélida Barajas-Acosta**

11:30-11:45: Fish Behavior & Mortality During a Monsoonal Spate in the San Juan River, UT, USA – **James Whitney, Blake Hansen, Amber Bell, & Michaela Fishback**

11:45-12:00: Hatchery propagation & augmentation slow, but do not prevent, genetic erosion in Rio Grande Silvery Minnow – **Megan Osborne, Guilherme Caeiro-Dias, Thomas Archdeacon, Robert Dudley, Charles Yackulic, & Thomas Turner**

12:00-13:30: **LUNCH**

FRIDAY AFTERNOON, NOVEMBER 18 – MAIN CONFERENCE ROOM

General Session – Moderator Michael Bogan

- 13:30-13:45: Flathead catfish upstream expansion as a threat to native fish conservation in the lower Colorado River – **Chase Ehlo & Kirk Young**
- 13:45-14:00: Hydrology to guide conservation: a gain-loss study in the Devils River, Texas – **David Young & Sarah Robertson**
- 14:00-14:15: Native Fish Need a Natural Flow Regime, Not More Water Development – **Phaedra Budy, Casey Pennock, William MacFarlane, Mathew Breen, John Schmidt, & Justin Jimenez**
- 14:15-14:30: Is recovery & delisting possible for conservation-reliant species? A case study of the Apache Trout in Arizona – **Jess Newton**
- 14:30-14:45: Loach Minnow & Spikedace mesohabitat use across space with varying abundances – **Crosby Hedden & Brian Hickerson**
- 14:45-15:00: Update on taxonomic & conservation status of North American blindcats (Ictaluridae) – **Dean A. Hendrickson, John Lundberg, Luckenbill Kyle, & Mariangeles Arce-H**
- 15:00-15:15: **BREAK**

General Session – Moderator David Rogowski

- 15:15-15:30: What can population genomics tell us about conservation of the imperiled Peppered Chub (*Macrhybopsis tetranema*)? – **Guilherme Caeiro-Dias, Megan Osborne, & Thomas Turner**
- 15:30-15:45: Bridging the recruitment gap: ten years of managing flows & habitats to improve recruitment of wild Razorback Sucker, *Xyrauchen texanus* – **M. Tildon Jones, Kevin R. Bestgen, David W. Speas, Matthew J. Breen, Christian T. Smith, Robert C. Schelly, & Michael S. Partlow**
- 15:45-16:00: Oxygen Manipulation for Fisheries Management – **David Ward & Eric Frye**
- 16:00-16:15: Common Carp - Uncommon Predator! – **Eric Frye & David Ward**
- 16:15-16:30: Bonneville Basin Area Report – **Sarah Seegert**
- 16:30-18:00: **Business meeting – main conference room (next page):**
- 19:00-22:00: **Banquet – main conference room:**

DESERT FISHES COUNCIL 54TH ANNUAL SYMPOSIUM, 2022 – ST. GEORGE, UTAH
BUSINESS MEETING
NOVEMBER 18, 16:30-18:00

- I. Welcome & call to order – Kevin Wilson, President
 - a. Discussion & approval of 2021 Business Meeting minutes
 - b. President’s report
- II. Executive Committee Reports
 - a. Immediate Past President – Megan Bean
 - b. Treasurer, Executive Secretary, Membership Secretary – Stewart Reid
 - c. Member-at-Large – Melissa Trammell
 - i. 2022 Grants
 - ii. Nominations & voting for Member at Large & Membership Secretary
 - d. Student awards – Krissy Wilson
 - e. Areas Coordinator – Michael Schwemm
 - f. Outreach Coordinator – Heidi Blasius
 - g. Program Secretary – Chris Hoagstrom
 - h. Proceedings Editor & Data Management, Webmaster – David Rogowski
- III. Old Business
 - a. Phil Pister project update – Freshwaters Illustrated – Jeremy Monroe
 - b. 2023 Meeting – Kevin Wilson
 - c. Call for additional old Business – Kevin Wilson
- IV. New Business
 - a. Future meeting at Cuatro Ciénegas – Dean Hendrickson
 - b. Call for additional new business – Kevin Wilson
- V. Adjourn

SATURDAY MORNING, NOVEMBER 19 – MAIN CONFERENCE ROOM

07:30-08:30: Presentation loading in person (if not emailed ahead of time)

08:30-08:45: Welcome – Kevin Wilson, President

General Session – Moderator Jennifer Graves

08:45-09:00: Upper/Middle Rio Grande & Pecos rivers, including Arkansas, Tularosa & Guzman basins of New Mexico Area Report – **Joanna Hatt, Bryan Bakevich, Thomas Archdeacon, Stephen Davenport, Robert Dudley, Bryan Ferguson, Eliza Gilbert, Jasmine Johnson, Megan Osborne, Yvette Paroz, & Thomas Turner**

09:00-09:15: Conservation & Management of Aquatic Systems in Texas – **Megan Bean, Gary Garrett & Sarah Robertson**

09:15-09:30: Research, management, recovery partnerships, & updates for the Devils Hole pupfish – **Ambre Chaudoin, Jeffrey Goldstein, Kevin Wilson, John Wullschleger, Michael Bower, Olin Feuerbacher, Jennifer Gumm, Alex Jones, Michael Schwemm, Brandon Senger, Mark Hausner, & John Umek**

09:30-09:45: Utilizing Geometric Morphometrics & Artificial Intelligence to Identify Early Life Stages of Klamath Suckers to Support Hatchery Operations – **Josh Rasmussen, Jane Spangler, & Michelle Jackson**

09:45-10:00: Identifying demographic uncertainties & vulnerabilities in an invasive Smallmouth Bass population: Implications for reservoir management & mechanical removal efforts – **Lindsey Bruckerhoff, Charles Yackulic, Drew Eppheimer, & Kevin Bestgen**

10:00-10:15: White River Spinedace Seasonal Survival & Movement in Flag Spring, Nevada – **Summer Burdick, Mark Beckstrand, James Harter, & Rachael Paul-Wilson**

10:15-10:30: **BREAK**

General Session – Moderator Kevin Conway

10:30-10:45: Environmental DNA (eDNA) for Early Detection of Invasive Aquatic Species & Endemic Fish Surveillance in Desert Spring Systems – **Duane Moser, Victoria Wuest, & Michael Schwemm**

10:45-11:00: *Herichthys cyanoguttatus* high-quality genome & genome level introgression into *H. minckleyi* – **Darrin Hulsey**

11:00-11:15: Building Collections to Support Conservation Genomics of Desert Fishes – **Thomas Turner & Emily DeArmon**

11:15-11:30: Ammonia as a tool for removal of invasive crayfish – **Susan Wood & David Ward**

11:30-11:45: Existing Aridity Gradient Mirrors Future Fish Assemblage Projections Under Climate Change Scenarios – **Joshuah Perkin, Lindsey Elkins, Rebecca Mangold, Mariana Perez Rocha, Astrid Schwalb, Ben Schwartz, Weston Nowlin, Karl Cottenie, Christina Saltus, Richard Johansen, & David Smith**

11:45-12:00: Scratching the surface: A preview of imagery of ongoing desert fish film & photo projects from Freshwaters Illustrated – **Jeremy Monroe & David Herasimtschuk**

12:00-13:30: **LUNCH**

SATURDAY AFTERNOON, NOVEMBER 19 – MAIN CONFERENCE ROOM

General Session – Moderator Michael Schwemm

- 13:30-13:45: Climate Change & Managing Effects of Increasing Wildfires on Southwestern Fishes – **Scott Bonar**
- 13:45-14:00: Results from radio-telemetry of captively reared desert suckers in Upper Klamath Lake – **Josh Rasmussen, Christie Nichols & Evan Childress**
- 14:00-14:15: Longer day length may maximize larval growth in captive Devils Hole pupfish but are there physiological costs? – **Jennifer Gumm & Olin Feuerbacher**
- 14:15-14:30: Advances in captive rearing of Devils Hole pupfish at the Ash Meadows Fish Conservation Facility – **Olin Feuerbacher, Jennifer Gumm, Kevin Wilson, Ambre Chaudoin, Jeffrey Goldstein, Alex Jones, Michael Schwemm, John Wullschleger, Corey Lee, & Brandon Senger**
- 14:30-14:45: Obituary for Héctor Espinosa – **Dean Hendrickson, Alejandro Varela-Romero, Lloyd Findley**
- 14:45-15:00: **BREAK**

General Session – Moderator Kate Boersma

- 15:00-15:15: Analysis of the movement & home range of the Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*) in the Sonoyta River, Sonora, Mexico – **Miguel Angel Grageda Garcia & Michael T. Bogan**
- 15:15-15:30: Unexpected distribution of aquatic invertebrate communities in a threatened desert wetland: Sentenac Cienega, Anza-Borrego Desert State Park, CA – **Kate Boersma, Rainier Cardin, Janelle Doi & Jessica Cidrao**
- 15:30-15:45: Integrative Taxonomic Investigation of *Cyprinella* sp. Nueces, a Putative Undescribed Species of Greatest Conservation Need in Texas – **Kevin Conway, Kole Kubicek, Luke Bower, Evan Carson, Amanda Pinion, Elizabeth Hunt, & David Portnoy**
- 15:45-16:00: An epoch abroad: how & when *Cyprinodon* may have reached the Great Basin (& points along the way) – **Christopher Hoagstrom & Megan Osborne**
- 16:00-16:15: Farewell 2022 – Kevin Wilson, President

SUNDAY MORNING, NOVEMBER 20

- 09:00-12:00: Virgin River Field Trip