



JOINT MEETING OF ICHTHYOLOGISTS AND HERPETOLOGISTS

JULY 24-28, 2019

SNOWBIRD, UT - SNOWBIRD SKI AND SUMMER RESORT



PROGRAM BOOK

This program book is current as of June 14, 2019. Any cancellations or changes received after this date will be posted online, at conference.k-state.edu/jmih and outside of the session rooms.

Organizing Societies

American Elasmobranch Society 34th Annual Meeting



President: Dave Ebert
Treasurer: Christine Bedore
Secretary: Tonya Wiley
Editor and Webmaster: Chuck Bangley
Immediate Past President: Dean Grubbs

American Society of Ichthyologists and Herpetologists 98th Annual Meeting



President: Kathleen Cole
President Elect: Chris Beachy
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Prior Past President: Carole Baldwin
Treasurer: Katherine Maslenikov
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Herpetologists' League 76th Annual Meeting



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Vice-President: Susan Walls
Immediate Past President: David Sever (deceased)
Secretary: Renata Platenburg
Treasurer: Laurie Mauger
Communications Secretary: Max Lambert
Herpetologica Editor: Stephen Mullin
Herpetological Monographs Editor: Michael Harvey

Society for the Study of Amphibians and Reptiles 61th Annual Meeting



President: Marty Crump
President-Elect: Kirsten Nicholson
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We would like to thank the following:

Local Hosts

Alan Savitzky, Utah State University, LHC Co-Chair
Catherine Malone, Utah State University, LHC Co-Chair
Diana Marques, Local Host Logo Artist
Marty Crump, Utah State University

Volunteers

We wish to thank the following volunteers who have helped make the Joint Meeting of Ichthyologists and Herpetologists run smoothly. Please look for those with a Volunteer or Host ribbon and thank them for their time.

Triana Arguedas, Colegio de la Frontera Sur	Ashlie McIvor, King Abdullah University of Science and Technology
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Erin Lewis, Utah State University	
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JMIH Meeting Management and Planning Committee

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Table of Contents

General Meeting Information.....	7- 8
Presentation Information.....	9
Special Announcements from the Societies.....	10-11
Social Events.....	12-13
Business and Committee Meetings for Participating Societies.....	14
Symposia.....	15-16
Workshops.....	17-19
Session and Symposia Master Schedule.....	20
Thursday, 25 July - Plenary Session Schedule.....	21
Thursday, 25 July - Afternoon Oral Presentations.....	22-24
Friday, 26 July - Morning Oral Presentations.....	25-28
Friday, 26 July - Afternoon Oral Presentations.....	29-31
Friday, 26 July - Poster Session I.....	32-37
Saturday, 27 July - Morning Oral Presentations.....	38-42
Saturday, 27 July - Lightning Talks.....	40
Saturday, 27 July - Afternoon Oral Presentations.....	43-46
Saturday, 27 July - Lightning Talks.....	47
Saturday, 27 July - Poster Session II.....	48-52
Sunday, 28 July - Morning Oral Presentations.....	53-56
Sunday, 28 July - Afternoon Oral Presentations.....	57-60
Presenter Index.....	61-66
Advertisements	
The Cliff Lodge Map	
Snowbird Center Map	
Exhibitors Diagram	

A list of 2019 JMIH participants will be available on the archives page
of the website beginning 16 August 2019.
<http://conferences.k-state.edu/jmih/about/past-meeting-archives>

General Meeting Information

Meeting Room Information

During presentations, please turn off all cell phones or set them to vibrate.

Plenary Session – Ballroom —The Cliff Lodge

Symposia's

Saturday & Sunday – Ballroom 1 —The Cliff Lodge, Ballroom 2 —The Cliff Lodge, Rendezvous A&B —Snowbird Center

Beverage Breaks

Thursday, Friday, & Saturday, 7 a.m. – Ballroom Lobby —The Cliff Lodge

Thursday, 9:50 a.m. – Ballroom Lobby—The Cliff Lodge

Thursday, 3:00 p.m. – Event Center— Snowbird Center

Friday & Saturday, 9:30 a.m. – Event Center— Snowbird Center

Sunday, 7 a.m., 9:30 a.m. & 3 p.m. – Cottonwood Lobby—Snowbird Center

Sunday, 7 a.m., 9:30 a.m. & 3 p.m. – Ballroom Lobby—The Cliff Lodge

Exhibits – Event Center — Snowbird Center

Poster Presentations with cash bars and snacks

Friday, & Saturday, 4-6 p.m. – Event Center — Snowbird Center

Oral Presentations

The Cliff Lodge Ballroom 1, The Cliff Lodge Ballroom 2, The Cliff Lodge Ballroom 3, Snowbird Center Cottonwood A&B, Snowbird Center Cottonwood C&D, Snowbird Center Rendezvous A&B, Snowbird Center Alpine A,B&C

Presentation Submission Room – Wasatch A — The Cliff Lodge

Speaker Prep Rooms – Little Pine, Red Pine, Terrace Room — The Cliff Lodge,

HL/SSAR Live Auction Viewing Room – Event Center (Wed-Sat)— Snowbird Center then Magpie A (Sun)— The Cliff Lodge

SSAR Silent Auction – Event Center (Wed-Sat)— Snowbird Center then Magpie A — The Cliff Lodge (Sun)

ASIH Graduate Student Book Raffle – Event Center (Wed-Sat) —Snowbird Center then Wasatch B (Sun) — The Cliff Lodge

HL/SSAR Live Auction – Ballroom 1&2 - The Cliff Lodge

HL/SSAR Student Social – Golden Cliff/Eagle's Nest - The Cliff Lodge

SSAR President's Travelogue – Ballroom 2 —The Cliff Lodge

SSAR AV Shows – Ballroom 1 - The Cliff Lodge

Internet Access

Internet access will be provided to all JMIH attendees in the meeting rooms of The Cliff Lodge and the Snowbird Center. The meeting room Wi-Fi network name will be JMIH2019 and the password will be snowbird.

Business Center

The Cliff Lodge Business Center is located behind the concierge desk on lobby level.

Messages and Job Announcements

Message boards are located in The Cliff Lodge Ballroom Lobby. Participants may post messages for friends and colleagues. The registration staff will also post telephone and other messages on these boards. Urgent messages should be directed to The Cliff Lodge front desk at 801-933-222 during meeting hours. These will be relayed to meeting coordinators and posted for participants as soon as possible.

Job announcements or information about employment opportunities may be posted on the message boards as well.

General Meeting Information

Food and Beverage

Morning and afternoon beverage breaks will be served in the following locations:

Thursday, Friday, & Saturday, 7 a.m. – Ballroom Lobby—The Cliff Lodge

Thursday, 9:50 a.m. – Ballroom Lobby—The Cliff Lodge

Thursday, 3:00 p.m. – Event Center— Snowbird Center

Friday & Saturday, 9:30 a.m. – Event Center— Snowbird Center

Sunday, 7 a.m., 9:30 a.m. & 3 p.m. – Cottonwood Lobby—Snowbird Center

Sunday, 7 a.m., 9:30 a.m. & 3 p.m. – Ballroom Lobby—The Cliff Lodge

A cash bar with snacks will be available during poster sessions, 4-6 p.m., Friday, 26 July and Saturday, 27 July.

Lunch is on your own each day. A variety of restaurants are available within walking distance. Visit the JMIH website: <http://conferences.k-state.edu/jmih/lodging-travel/attractions/> for ideas.

Dinner is also on your own each day, with the exception of the opening reception in The Cliff Lodge Conference Center Tent & Terrace and any social even tickets you may have purchased. Visit the JMIH website: <http://conferences.k-state.edu/jmih/lodging-travel/attractions/> for ideas.

Registration Desk

The JMIH Registration Desk, located in The Cliff Lodge Ballroom Lobby on the Lower level is staffed to check in attendees and exhibitors as well as answer any questions you might have regarding the meeting.

Hours of Operation:

Wednesday, 24 July - Saturday, 27 July 7 a.m. - 5 p.m.

Sunday, 28 July 7 a.m. - 3 p.m.

3-5 p.m. - open for information only

Event Tickets

A variety of tickets may be included in your name badge. The number of tickets you have is determined by your personal registration choices.

Reception tickets

For full conference registrants, there are two drink tickets good for beer, wine, and soda at the Opening Reception. (<http://conferences.k-state.edu/jmih/jmih-opening-reception/>). The food is all you can eat with cash bar service serving beer, wine, and soda 5:30 – 8:45 PM.

Any additional tickets purchased will receive an entry ticket into the general opening reception along with two drink tickets.

Additional food and beverage tickets (by registration only) may include:

Workshop on Comparative Phylogenetic Methods in R for Wednesday, 24 July at Primrose B in the Cliff Lodge

A Hands-on-Workshop to Enrich your Profession Through the Japanese Art of Gyotaku (Fish Printing) Session 1 and Session 2 for Wednesday, 24 July at the Conference Center Tent & Terrace at the Cliff Lodge

Professional Women in Herpetology: Lessons & Insights Luncheon in the Golden Cliff at The Cliff Lodge

AES Fundraiser Banquet for Sunday, 28 July in The Golden Cliff/Eagles Nest at The Cliff Lodge.

Presentation Information

Oral Presenters

Oral and symposia presenters should submit their presentations to an Alliance AV representative by 5 p.m. the day preceding their presentation. Alliance AV will be set up in Wasatch A located in The Cliff Lodge to receive presentations at the following times:

Wednesday, 24 July - 1:00 p.m.—5 p.m.
Thursday, 25 July - Saturday, 27 July -
7:30 a.m. —5 p.m.

Use the following format when naming your files:

military time – paper# – Last Name

Examples: 915 – 445 – Todd 1345 – 766 –
Smith

The technical coordinators available will immediately load and review presentations as they are submitted. A presenter's memory stick or CD will be returned when the presentation has been successfully loaded.

An Alliance AV representative will be present in each meeting room to monitor equipment and presentations.

Three *Speaker Prep Rooms* are Available: Little Pine, Red Pine, & Terrace Room - The Cliff Lodge

These rooms will have computers and projectors available for speakers to practice their presentations. A sign-up sheet is posted outside each room.

Speaker prep rooms are available:

Wednesday, 24 July
1–10 p.m.

Thursday, 25 July – Saturday, 27 July
7:30 a.m.—10 p.m.

Sunday, 28 July
7:30 a.m.—5 p.m.

Session moderators have been designated to facilitate each session. The names of moderators are noted in the session schedule. Moderators should have received their packet of instructions when checking in at the registration desk.

Poster Presenters with Cash Bars

Poster session dates and times are as follows:
Friday, 26 July 4:00 p.m.—6:00 p.m.
Saturday, 27 July 4:00 p.m.—6:00 p.m.
In the Event Center - Snowbird Center

At least one author must be present during the entire poster session time period. Please remove your poster immediately following the poster session. Posters not claimed by 5:00 p.m. on Sunday, 28 July will be discarded.

Poster Board Assignments

A listing of poster sessions is current as of the printing of this program book (June 14). All poster boards are numbered. The title and author will be posted on each board as well. Because some posters are part of competitions, it is important that each presenter place their poster in the correct location. **Presenters can place their poster on their assigned board anytime between 9 a.m. and 12 p.m. (noon) on the day they are presenting. Presenters are asked to have their poster set by 12 p.m. (noon) in order that attendees may view the posters prior to the scheduled session time.**

Lightning Talks

Lightning talks (five minutes in length, 10 slides maximum) provide a good forum for presenting preliminary research or for putting out a call for data, feedback, or collaboration.

Special Announcements from Societies

Call for 2021 JMIH Symposia

The JMIH Meeting and Planning Committee invites well-conceived symposia proposals for 2020. See societal websites for details and deadlines or contact any of the following:

AES – Joe Bizzarro at joe.bizzarro@noaa.gov

ASIH – Henry Mushinsky at mushinsk@usf.edu

HL – Mary White at mwhite@selu.edu

SSAR – Richard Durtsche at durtsche@nku.edu

ASIH General Endowment Fund Information

ASIH thanks all of the members who have made contributions to the General Endowment Fund. Currently your gifts are used to support ASIH symposia each year at the Joint Meeting of Ichthyologists and Herpetologists.

ASIH also thanks meeting attendees who participate in the student-run book raffle, which directly supports student travel to the JMIH. In recognition that today's student members are the future of ASIH and that attendance at the JMIH encourages society involvement, ASIH matches dollar for dollar funds raised at the raffle. Please help ASIH promote our students. Be generous and make this year's raffle a great success.

Open Forum to discuss a possible merger between HL and SSAR

Recently, an online poll asked the members of The Herpetologists' League and the Society for the Study of Amphibians and Reptiles if the Boards of those organizations should explore the possibility of a merger. The result was strong support for such an investigation. As part of that process, the joint committee formed for this investigation will hold a public forum (open to all members of either or both societies) at the Snowbird JMIH meetings to discuss issues and options. The forum is scheduled for 8:00-9:30 pm Friday 26 July in Ballroom 1, immediately after the HL Business Meeting to be held in the same room.

SSAR President's Travelogue

Wednesday, 24 July 7:00-8:00 p.m.

Ballroom 2, The Cliff Lodge

Danté Fenolio, Vice President, Conservation & Research, at the San Antonio Zoo will present "The Paths Less Traveled: Natural Trails, Wet and Dry".

Dr. Fenolio is a superb photographer, naturalist, herpetologist, and conservation biologist, who will share his images and stories of fieldwork with amphibians and reptiles. To engage the ichthyologists he will include some photos of deep sea animals from his time working on the Gulf, and cavefish images from south China.

AES Store - Birds Nest, Snowbird Center

The AES Store is open! A variety of elasmobranch-related goods, including pens, water bottles, and shirts are available. Proceeds go to support AES student funding.

Wednesday, 24 July (Drop Off/Set Up Time) Noon - 5:00 p.m.

Thursday, 25 July 8:00 a.m. - 5:00 p.m.

Friday, 26 July 8:00 a.m. - 5:00 p.m.

Saturday, 27 July 8:00 a.m. - 5:00 p.m.

Sunday, 28 July 8:00 a.m. - Noon

Special Announcements from Societies

ASIH Book Raffle

Items can be viewed on the following days and times:

Wednesday, 24 July – Saturday, 27 July in the Event Center, Snowbird Center

Wednesday, 24 July - Drop off Items 2:15 p.m. -5:00 p.m.

Thursday, 24 July 8:00 a.m. - 5:00 p.m.

Friday, 26 July 8:00 a.m. - 6:00 p.m.

Saturday, 27 July 8:00 a.m. - 6:00 p.m.

Sunday, 28 July in the Wasatch B, The Cliff Lodge

8:00 a.m. - 12:00 p.m. - Winner Pick up time

If you have any questions, please contact Helen Plylar (plylar@aggiemail.usa.edu)

SSAR/HL Live Auction Viewing Room

All items for the HL/SSAR Live Auction will be available for viewing. Items can be viewed on the following days and times:

Wednesday, 24 July – Saturday, 27 July in the Event Center, Snowbird Center

Wednesday, 24, July from 1:00 p.m. - 5:00 p.m. —Drop off items & viewing.

Thursday, 24 July 8:00 a.m. - 5:00 p.m.

Friday, 26 July 8:00 a.m. - 6:00 p.m.

Saturday, 27 July 8:00 a.m. - 6:00 p.m.

Sunday, 28 July in the Magpie A, The Cliff Lodge

8:00 a.m. - 12:00 p.m.

If you have any questions, please contact Chelsea Clyde Brockway (chelsea@leatherback.org)

HL/SSAR Silent Auction

All items for the HL/SSAR Silent Auction will be available for viewing. Items can be viewed at the following days and times:

Wednesday, 24 July – Saturday, 27 July in the Event Center, Snowbird Center

Wednesday, 24, July from 1:00 p.m. - 5:00 p.m. —Drop off items & viewing.

Thursday, 24 July 8:00 a.m. - 5:00 p.m.

Friday, 26 July 8:00 a.m. - 6:00 p.m.

Saturday, 27 July 8:00 a.m. - 6:00 p.m.

Sunday, 28 July in the Magpie A, The Cliff Lodge

8:00 a.m. - 2:00 p.m. —Item Pick Up

If you have any questions, please contact Ariana Rupp (arianarupp91@gmail.com) or Daniel Paluh (dpaluh@ufl.edu)

Social Events

Wednesday, 24 July

SSAR Mentorship Program Meet & Greet – Primrose A, The Cliff Lodge
5:00 p.m.— 6:00 p.m.

(Pre-registration required)

For more information, please contact Rob Denton (rdenton@morris.umn.edu)

Open Mic Night – Rendezvous A&B, Snowbird Center
8:00 p.m.— 11:00 p.m.

Join your colleagues on Wednesday evening in the Riverview Ballroom & Lounge for informal networking between students, post-docs, and new and seasoned professionals. Everyone is free and encouraged to bring your own instruments, amplifiers, singing voices, etc.! There will be a cash bar and entertainment provided by...YOU! Take this opportunity to show off your talents!

For more information please contact Kyle Piller (kyle.piller@selu.edu)

Thursday, 25 July

JMIH Opening Reception – Conference Center Tent & Terrace, The Cliff Lodge
5:30-9:00 p.m.

The reception menu will include: Caesar Salad with Roma Tomatoes, Asiago Cheese, Pepperoncini, Freshly Baked Garlic Croutons, Caesar Dressing, Antipasto, Chicken Piccata, Italian Sausage Marinara with Peppers and Onions, Vegetarian Lasagna, Zucchini Provencal, Freshly Baked Rolls, Tiramisu; and two drink tickets good for beer, wine and soda.

Entertainment: The Mama LongLegs

Participants will need to visibly display their JMIH name badge in order to participate in the JMIH opening event.

SSAR/HL Student Social Reception—Golden Cliff/Eagle’s Nest, The Cliff Lodge
9:00 p.m.—10:30 p.m.

This is a special reception for current student members of HL and SSAR, along with HL and SSAR Board members and several invited senior herpetologists. Finger food and drink tickets will be provided.

For more information please contact Chelsea Clyde Brockway (chelsea@leatherback.org)

Friday, 26 July

ASIH Graduate Student Social—Primrose A&B - The Cliff Lodge
9:00 p.m.—11:00 p.m.

ASIH students are encouraged to come and enjoy some light hors d’oeuvres, and cash bar while partaking in a game or two of trivia.

For more information please contact Ariana Rupp (arianarupp91@gmail.com)

Social Events

Saturday, 27 July

AES Student Social – The Tram Club, Snowbird Center
7:00 p.m. — 9:00 p.m.

For more information, please contact Cheston Peterson (cpeterson@bio.fsu.edu)

Sunday, 28 July

The Expanding Role of Natural History Collection Symposium Reception – Ballroom 1, The Cliff Lodge
4:15 p.m. – 5:00 p.m.

*Limited to 50 Graduate Students. To be eligible for this event you must register at the time you do your JMIH 2019 Snowbird, UT conference registration.

Light oeuvres will be served along with a cash bar.

For more information, please contact Eric Hilton (ehilton@vims.edu)

AES Group Photo – at the AES Fundraiser Banquet, The Golden Cliff & Eagles Nest, The Cliff Lodge

AES Fundraiser Banquet - The Golden Cliff & Eagles Nest, The Cliff Lodge
6:00 p.m. – 12:30 a.m.

Professionals (AES Member)= \$60; Students (AES Member)= \$40; Non-AES Mber/Accompanying Person/Guest=\$75.00

On Sunday, July 28 from 6:00 p.m. until 12:30 a.m., the American Elasmobranch Society Banquet will be held in The Golden Cliff & Eagles Nest of The Cliff Lodge. The social hour will start at 6:00 p.m., with dinner served at 7:00 p.m. Wine will be served with dinner, plus cash bars will be available. The traditional AES group photo will be taken.

For more information, please contact Charles Cotton (cottoncf@cobleskill.edu)

HL/SSAR Live Auction – Ballroom 1&2, The Cliff Lodge
9:00 p.m. – midnight

The HL/SSAR Live Auction is an opportunity to support the programs of SSAR and HL and to clean out your office or house of those interesting and valuable herp or fish related items. Any herp or fish related item – including books, art, sculptures, famous autographs, field equipment, or clothing – is appreciated. Please note that items made from amphibians, reptiles, fish, or parts thereof, should NOT be donated. Donations are tax deductible. Receipts will be issued on request (please request receipt at time of donation).

All JMIH participants are welcome to attend and bid on donated items. A cash bar will be available.

For more information, please contact Chelsea Clyde Brockway (chelsea@leatherback.org)

Business and Committee Meetings as of 5-7-19

Wednesday, 24 July

8:00 a.m. - 2:00 p.m.	SSAR Board of Directors (open to the public) - Maybird—The Cliff Lodge
8:00 a.m. - 5:00 p.m.	ASIH Names of Fishes - Aerie PDR Canyon —The Cliff Lodge
8:30 a.m. - 10:00 a.m.	HL/SSAR Ad Hoc Committee - Terrace Room Level 1 —The Cliff Lodge
9:00 a.m. - 12:00 p.m.	AES Executive Committee Meeting - Twin Peaks B —The Cliff Lodge
9:00 a.m. - 2:00 p.m.	ASIH Executive Committee - Cirque Board Room—The Cliff Lodge
2:00 p.m. - 5:00 p.m.	ASIH Editorial Policy Committee - Superior B —The Cliff Lodge
2:00 p.m. - 5:00 p.m.	AES Board of Directors Meeting - Twin Peaks B —The Cliff Lodge
2:00 p.m. - 6:00 p.m.	HL Board of Trustees - Twin Peaks A —The Cliff Lodge
5:00 p.m. - 6:00 p.m.	SSAR Mentorship Program Meet & Greet - Primrose B —The Cliff Lodge
5:00 p.m. - 7:00 p.m.	ASIH Board of Governors (BOG) - Ballroom 1—The Cliff Lodge
7:00 p.m. - 8:00 p.m.	SSAR President's Travelogue - Ballroom 2—The Cliff Lodge

Thursday, 25 July

12:00 p.m. - 1:30 p.m.	ASIH Conservation Committee - Cirque Board Room —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	ASIH Judges Meeting - Maybird —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	SSAR Pre-College Award Luncheon - Twin Peaks A —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	SSAR Seibert Oral and Victor Hutchinson Poster Judges Meeting —Superior B - The Cliff Lodge
12:00 p.m. - 1:30 p.m.	ASIH Endowment & Finance - Superior A —The Cliff Lodge
12:30 p.m. - 1:30 p.m.	SSAR Graduate Student Business Meeting - Wasatch B —The Cliff Lodge

Friday, 26 July

7:30 a.m. - 9:00 a.m.	SSAR Long Range Planning Committee - Twin Peaks B —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	ASIH Long Range Planning and Policy Meeting - Maybird —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	SSAR Graduate Student Workshop - Superior A&B —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	AES Graduate Student Workshop - Alpine A,B,C —Snowbird Center
12:00 p.m. - 1:30 p.m.	SSAR/HL Steering Committee - Cirque Board Room —The Cliff Lodge
12:05 p.m. - 12:35 p.m.	NSF Presentation - Cottonwood A-D—Snowbird Center
3:00 p.m. - 5:00 p.m.	ASIH Collections Committee - Cirque Board Room —The Cliff Lodge
4:00 p.m. - 5:00 p.m.	HL Judges Meeting - Twin Peaks A —The Cliff Lodge
6:00 p.m. - 8:00 p.m.	NIA (Neotropical Ichthyological Association) Meeting - Ballroom 2—Cliff Lodge
6:00 p.m. - 8:00 p.m.	HL Business Meeting - Ballroom 1 —The Cliff Lodge
8:00 p.m. - 9:30 p.m.	SSAR-HL Open Form - Ballroom 1 —The Cliff Lodge

Saturday, 27 July

12:00 p.m. - 1:30 p.m.	Journal of Herpetology Editor's Lunch - Cirque Board Room —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	HL Graduate Student Workshop - Superior A&B —The Cliff Lodge
12:00 p.m. - 1:30 p.m.	ASIH Graduate Student Business Meeting - Maybird - The Cliff Lodge
3:00 p.m. - 5:00 p.m.	AES Business Meeting - Rendezvous A&B —Snowbird Center
4:00 p.m. - 6:00 p.m.	ASIH Web Content Management Committee – Superior A —The Cliff Lodge
6:00 p.m. - 8:00 p.m.	SSAR Business Meeting – Ballroom 2 —The Cliff Lodge
6:00 p.m. - 8:00 p.m.	ASIH Business and Awards Meeting – Ballroom 3 —The Cliff Lodge

Sunday, 28 July

12:00 p.m. - 1:30 p.m.	JMIH Meeting and Management and Planning Committee - Twin Peaks B —The Cliff Lodge
12:00 p.m. - 3:00 p.m.	ASIH Graduate Student Workshop - Superior A&B —The Cliff Lodge

Symposia

Saturday, 27 July

8:00 AM – 3:00 PM

Rendezvous A&B - Snowbird Center

The Behavior and Sensory Biology of Elasmobranch Fishes

2019 marks the 20th anniversary of the Donald R. Nelson symposium on the behavior and sensory biology of elasmobranch fishes. Don Nelson imagined, proposed, or developed technology and equipment for studying behavior in the field. He championed cutting edge technological advances that would facilitate study of behavior and of the sensory mechanisms that underlay those behavioral responses. Since the last symposium on sensory biology & behavior, there have been tremendous advances in technology, and the development of entirely new techniques, that now allow us to gather more data than previously imagined. The data are of higher quality, greater resolution, and in some cases, entirely different from what was collected in the past. In much the same way as there have been advances in the technology and techniques for the study of behavior in the field, there have been similar advances for the investigation of the sensory mechanisms that drive behavior. These include techniques in lab-based electrophysiology, molecular techniques, and imaging developments that were previously unavailable or prohibitively expensive. This plethora of information provides a deeper and more robust understanding of behavior and permits us to answer questions that were previously intractable. Due to the development of these new tools and techniques, the time is ripe for a review of the current state of knowledge and a prospective of where the study of behavior is leading. Therefore, we are presenting a symposium that focuses upon behavior, the sensory systems that drive behavior, and the technology that enables us to study behavior. The symposium will review the current state of knowledge and provide a forward looking prospective to drive future research questions.

Featured Speakers include: Peter Klimley, Jayne Gardiner, Christine Bedore, Tricia Meredith, Kyle Newton, Timothy Tricas, Conner White, Chris Clark, Yannis Papastamatiou, Yuuki Watanabe, Joy Young, Emily Meese, Sarah Hoffmann, Braden Ruddy, Kara Yopak, Christopher Lowe, Stephen Kajiura

Organizers:

Stephen Kajiura; kajiura@fau.edu; 561-297-2677 (co-organizer)

Christopher Lowe; Chris.Lowe@csulb.edu; 562-985-4918 (co-organizer)

8:00 AM – Noon; 1:30 PM – 4:00 PM

Ballroom 1 - The Cliff Lodge

Professional Women in Herpetology: Lessons and Insights Symposium

Jointly sponsored by ASIH, HL, and SSAR.

This symposium will highlight women leaders in science policy, academic administration, collections, research, and conservation. Talks by a diverse array of speakers will be followed by a moderated panel discussion on (and possible solutions to) topics that can disproportionately impact women in science and their careers, such as: a) implicit bias and gender/sexual harassment, b) family and dual-careers, and c) service, mentorship and other obligations within academic departments and units. An open discussion period will follow to provide opportunities for full audience participation and engagement. The theme of the symposium is timely at the national level because of new trends in graduate education and postdoctoral training (e.g., NIH's Broadening Experiences in Scientific Training (BEST) initiative) as well as a national emphasis on improving the retention of women in science (e.g., National Academies of Science, Engineering, and Medicine 2018 report on sexual harassment of women in academia; new NSF award conditions guidelines). An overarching goal of the symposium is to improve the visibility of women leaders in herpetology and enhance the discussion around ways to encourage diversity and inclusivity in science.

Featured Speakers include: Nicole Angeli, Rayna Bell, Marty Crump, Alison Davis Rabosky, Mo Donnelly, Karen Lips, Anne Maglia, Martha Munoz, Priya Nanjappa, Wendy Palen, Leslie Rissler, Bree Rosenblum, Becca Tarvin, and Nicole Valenzuela.

Organizer:

Leslie J. Rissler: 205-393-6054, leslie.rissler@gmail.com. Division of Environmental Biology, National Science Foundation, Alexandria, VA

Symposia

Sunday, 28 July

8:00 AM – 5:00 PM

Ballroom 2 - The Cliff Lodge

Citizen Science in Herpetology: Productive Past and Promising Future Symposium

Jointly sponsored by ASIH, HL, and SSAR.

There is a long history of non-professionals making important contributions to herpetology, but in recent decades, the increasing use of digital cameras, smartphone apps, GPS technology, social media, and the internet have fueled the rapid development and growth of citizen science projects that specifically invite participation by non-professionals. Within the field of herpetology, citizen science projects are having important conservation and research outcomes. In this symposium, presenters will discuss numerous aspects of citizen science in herpetology, from historical projects to contemporary projects that are providing new methods for conservation, biodiversity, ecology, evolution, and behavior research. A primary goal of this symposium is to generate a review article on the use of citizen science for herpetological research and to highlight future opportunities for community partnerships to enhance herpetological research. Presenters and attendees are invited to participate in break-out discussions at the end of the symposium to begin drafting this review.

Featured speakers include: Cameron Barrows, Don Becker, Russ Burke, Andrew Durso, Toby Hibbitts, Alexandra Kanonik, Travis LaDuc, Jane Li, Robin Maritz, Dillon Monroe, Greg Pauly, Todd Pierson, Bree Putman, Willem Roosenburg, Wade Ryberg, Brian Todd, John Vanek, and Amanda Zellmer.

Organizers:

Russ Burke: 516.463.7272; Russell.L.Burke@hofstra.edu. Professor of Biology, Hofstra University.

Greg Pauly: 213.763.3212; gpauly@nhm.org. Curator of Herpetology, Natural History Museum of Los Angeles County.

8:00 AM – 5:00 PM

Ballroom 1 - The Cliff Lodge

The Expanding Role of Natural History Collections Symposium

Jointly sponsored by ASIH, HL, and SSAR.

Museum specimens are the bedrock of systematic and taxonomic research, provide the basis for repeatability or reinterpretation of observations, and are fundamental to fields such as ecology, behavior, and development. Recent technological advances continue to expand how specimens are used and approached in research. Mike Webster, editor of *The Extended Specimen*, will provide an introduction to this symposium. Other speakers will include students, collections staff, curators, researchers, and educators from across the ichthyological and herpetological spectra, and will present on four general themes: 1) collection, curation, and use of specimens, particularly non-traditional specimens; 2) the use of specimens and technological advances in morphology, ontogeny, systematics, and taxonomy; 3) specimen use in other fields of biology and ecology; and 4) specimen use in education and outreach. This symposium aims to advance the visibility of the inherent and critical value of natural history museums and the care of the specimens they protect for future generations.

Organizers:

Eric Hilton: 804.684.7178, ehilton@vims.edu, Professor of Marine Science, Curator, Nunnally Ichthyology Collection, Virginia Institute of Marine Science, College of William & Mary

Sarah Huber
Greg Watkins-Colwell

Workshops

Wednesday, July 24

8:30 a.m. - 5:00 p.m.
Primrose B- The Cliff Lodge

Workshop on Comparative Phylogenetic Methods in R (Pre-registration required.)

Student & Postdocs: \$50

Faculty: \$75

Must be done in JMIH registration. (<https://conferences.k-state.edu/jmih/registration/attendees/>)

***Limited to 60 participants, minimum of 15 needed for workshop to happen: To be eligible for this event, you must register for it at the time you do your JMIH 2019 Snowbird, UT conference registration.**

A team of four or five instructors will lead a hands-on introduction to several of the most common and widely-used phylogenetic comparative methods in R. The workshop will provide a basic introduction to the theory behind these methods, but is not intended to be a comprehensive course on comparative phylogenetic methods. You will learn to use elements of the R packages phytools, ape, geiger, geomorph, fishbase, phyloEM and others to analyze real data. Topics will include tree visualization, phylomorphospace plotting, calculation of phylogenetic signal, ancestral state reconstruction, phylogenetic regression, evolutionary model fitting and other topics. Tree inference is not included. You will receive numerous code snippets that they can take home and use as templates when creating new workflows, and will have an opportunity to apply skills learned in the workshop on their own datasets during open lab time.

This is an intermediate level workshop, targeted at those who already have basic familiarity with scripting in R, but not necessarily experience with phylogenetic comparative methods. The workshop aims to reduce the access barrier to these methods, and to help more members of the JMIH community implement these methods in their own work, emphasizing the benefits of clear, repeatable analysis through R scripting. The methods can be applied to questions in any taxon, and should interest herpetologists and ichthyologists alike.

Schedule:

8:30 a.m. Participants arrive and get settled
9:00 a.m. Introductions and package installation
9:45 a.m. Importing and visualizing phylogenies
10:30 a.m. Coffee break
11:00 a.m. Linking trait data to phylogenies
12:00 p.m. Lunch (included)
1:00 p.m. Phylogenetic signal and regression
2:00 p.m. Ancestral state reconstruction and phylomorphospace visualization
3:00 p.m. Coffee break
3:30 p.m. Evolutionary model fitting
4:30 p.m. Wrap up and participant surveys

Contact Information: **Brian Sidlauskas**(brian.sidlauskas@oregonstate.edu) and **Hannah Owens**(howens@flmnh.ufl.edu)

Session 1: 9:00 a.m. - 12:00 p.m. or Session 2: 1:30 p.m. - 4:30 p.m.
Conference Center Tent & Terrace- The Cliff Lodge

A Hands-on Workshop to Enrich Your Profession Through the Japanese Art of Gyotaku (Fish Printing) (Pre-registration required.)

Cost: \$90.00 (Professionals), \$70.00 (Students)- Must be done in JMIH Registration (<https://conferences.k-state.edu/jmih/registration/attendees/>)

***Limit of 12 participants, minimum three professionals needed for workshop to happen**

The goal of this hands-on workshop is to introduce the Japanese art of *Gyotaku* (fish printing). Following a brief presentation about *Gyotaku* and how this activity can enhance program outreach and community engagement, participants will be led through the process. Considerable 1:1 interaction with the instructor enhances the learning experience with participants creating numerous prints during the three-hour session. All materials and supplies are provided including real fish, paint, brushes, paper and other consumables.

This activity appeals to a wide audience including educators, research scientists, students of any level and professionals.

Contact Information: **Bruce Koike** (Koike.bruce@gmail.com), MSc-Fisheries Science

Workshops

Wednesday, July 24 cont...

11:45 a.m. - 1:30 p.m.
Superior B - The Cliff Lodge

ASIH Graduate Student FishLife Workshop (*Pre-registration required.*)

Audience: postdocs, graduate, and undergraduate students (Limited to 20 participants)
Lunch will be provided

The workshop will present detailed information on target-capture protocols and a tutorial of the bioinformatics pipeline optimized to assemble phylogenomic databases from raw Illumina reads. This workshop will be led by students and postdocs associated with the NSF-funded FishLife project. It is part of an outreach effort (Broader Impacts) of the activities supported by this grant.

More details concerning the project will be presented in a talk:

“FishLife Exons Advance Phylogenomic Studies of Fishes”

Guillermo Ortí
Dept. of Biological Sciences, George Washington University
Washington DC, USA

Our knowledge of the Tree of Life of fishes has undergone a dramatic transformation in the last ten years. Increased phylogenetic resolution has led to identification of new clades among poorly resolved groups of fishes but many clades remain to be sampled more densely while others still have poor or contested resolution. Much of this progress has been spawned by the development and implementation of methods to sequence a handful of exons for phylogenetic analysis for hundreds of species. A quantitative leap in the size of molecular datasets came about with the development of target enrichment and next-generation sequencing methodologies, a technology that has promoted other types of useful molecular markers such as UCEs. Based on thorough inspection of 144 genomes and 159 transcriptomes of fishes, the NSF-funded FishLife project has identified a set of 1105 orthologous exons and optimized exon-capture protocols to effectively sequence them across the diversity of species in the fish Tree of Life. These exons have phylogenetic information to resolve divergences among ancient lineages, recent speciation events, and even population structure (e.g., phylogeography). In this presentation, I will give a summary of the progress made to acquire sequences, the taxonomic groups under study, the members of the team involved, and of optimized protocols for acquiring and assembling the data. The growing FishLife database, holding large numbers of species sequenced to date (4000, plus 1200 in process), constitutes a valuable resource for future studies aiming to refine our knowledge of the evolutionary history of fishes.

If you have questions about this workshop, please contact Guillermo Ortí at gorti@gwu.edu

Friday, 26 July

12:00 p.m. - 1:30 p.m.
Alpine A,B,C - Snowbird Center

AES Graduate Student Workshop (*Pre-registration required*)

For more information, please contact Bryan Keller (bkeller@fsu.edu)

12:00 p.m. - 1:30 p.m.
Superior A&B - The Cliff Lodge

SSAR Graduate Student Workshop (*Pre-registration required*)

For more information, please contact Jessica Tingle (jessica.tingle@email.ucr.edu)

Workshops

Friday, 26 July cont...

6:00 p.m. - 8:00 p.m.

Superior Lobby - The Cliff Lodge

ASIH Speed Networking Workshop (Pre-registration required.)

**To participate you must be an ASIH student member in good standing (i.e., paid dues for 2019 ASIH membership) and be registered for the 2019 JMIH meetings*

Scientific meetings offer great opportunities to (re)-establish professional contacts and to network amongst fellow attendees. But younger members may find few opportunities to interface with more senior members of a society.

To remedy this, the American Society of Ichthyologists and Herpetologists (ASIH) is again offering an "ASIH Graduate Student Speed Networking Workshop" at the upcoming 2019 Joint Meeting of Ichthyologists and Herpetologists in Snowbird, UT.

The workshop will be conducted as follows: 1 professional (working in state or federal agencies, at museums or universities) will be seated at a table in the room. Two students will sit with each professional for ~5 minutes of dialogue, then rotate to the next table when 5 minutes expire. Over the course of an hour, students will visit 11 tables (= 11 professionals), after which all attendees will gather for a mixer (pizza and limited drinks provided, then cash bar).

Please note that this event usually fills quickly. If space is full, you can have your name added to a waiting list. Also, if you are signed-up for the event but later on decide not to participate, please let us know immediately so another student has the opportunity to attend. Each year about 1/3 of registered students do not show up for the event. This is not only unprofessional but also unfair to fellow graduate students.

Saturday, 27 July

12:00 p.m. - 1:30 p.m.

Superior A&B - The Cliff Lodge

Herpetologists' League Graduate Student Workshop (Pre-Registration is required)

To attend this workshop, you must be 1) registered for the 2019 Joint Meeting of Ichthyologists and Herpetologists; 2) a student member of the Herpetologists' League; 3) in good standing with the Herpetologists' League (i.e., all dues paid).

12:00 p.m. - 1:30 p.m.

The Golden Cliff - The Cliff Lodge

Professional Women in Herpetology: Lessons and Insights Luncheon (Pre-Registration is required)

*Limited to 100 registrants, \$10 cost per person. To be eligible for this event you must register at the time you do your JMIH 2019 Snowbird, UT conference registration.

Box Lunch (sandwich, chips, fruit, and drink) will be provided.

Erica Bree Rosenblum will do a work-life balance workshop during the luncheon.

Sunday, 28 July

12:00 p.m. - 3:00 p.m.

Superior A&B - The Cliff Lodge

ASIH Graduate Student Workshop (Pre-registration required)

For more information, please contact Whitney G. Walkowski (wwalko@lsuhsc.edu)

Session and Symposia Master

			THURSDAY	FRIDAY	SATURDAY	SUNDAY
	ROOM	# seats	25-Jul	26-Jul	27-Jul	28-Jul
AM	Ballroom 1 - Cliff Lodge	200	↓	SSAR Seibert Conservation I & II	ASIH/HL/SSAR Symposium: Professional Women in Herpetology: Lessons and Insights	ASIH/HL/SSAR Symposium: The Expanding Role of Natural History Collections
	Ballroom 2 - Cliff Lodge	200		SSAR Seibert Systematics and Evolution I & II	Amphibian Conservation	ASIH/HL/SSAR Symposium: Citizen Science in Herpetology: Productive Past and Promising Future
	Ballroom 3 - Cliff Lodge	200		Herpetology Biogeography I & II	Herpetology Conservation and Disease/Lightning Talks	Amphibian Disease
	Primrose A&B - Cliff Lodge	200		ASIH Stoye Genetics, Development, & Morphology II (herps)/ ASIH Stoye Ecology & Ethology II	Reptile Ecology/ Herpetology Ecology & Behavior	General Herpetology I & II
	Cottonwood A-D - Snowbird Center	200		ASIH Stoye Ecology & Ethology I/ ASIH Stoye General Ichthyology II	Ichthyology Conservation/General Ichthyology I	Ichthyology Genetics/ Ichthyology Reproduction, Development, and Morphology
	Rendezvous A&B - Snowbird Center	200		AES Gruber III/ AES Genetics/Ecology	AES Symposium: The Sensory Biology of Elasmobranch Fishes	AES Conservation & Management I & II
	Alpine A,B, C - Snowbird Center	150		AES Reproduction & Life History	Ichthyology Life History/ NIA/Ichthyology Ecology	AES Physiology I & II
			LUNCH	LUNCH	LUNCH	LUNCH
PM	Ballroom 1 - Cliff Lodge	200	HL Graduate Research Award/ Herpetology Genetic Diversity	Herpetology Morphology and Systematics	ASIH/HL/SSAR Symposium: Professional Women in Herpetology: Lessons and Insights	ASIH/HL/SSAR Symposium: The Expanding Role of Natural History Collections
	Ballroom 2 - Cliff Lodge	200	SSAR Seibert Ecology I & II	Amphibian Ecology	Reptile Conservation	ASIH/HL/SSAR Symposium: Citizen Science in Herpetology: Productive Past and Promising Future
	Ballroom 3 - Cliff Lodge	200	SSAR Seibert Physiology/Morphology	Turtle Conservation/ Amphibian Conservation	Herpetology Physiology	Session Honoring Contributions and Retirement of Pat Gregory
	Primrose A&B - Cliff Lodge	200	ASIH Stoye General Herpetology I & II	ASIH Stoye Physiology & Physiological Ecology	Herpetology Ecology	
	Cottonwood A-D - Snowbird Center	200	ASIH Stoye Genetics, Development, & Morphology I (fishes)/ ASIH Stoye General Ichthyology I	ASIH Stoye Conservation	General Ichthyology II	Ichthyology Systematics I & II
	Rendezvous A&B - Snowbird Center	200	AES Gruber I & II	AES Ecology	AES Symposium: The Sensory Biology of Elasmobranch Fishes	AES Conservation & Management III & IV/ Behavior
	Alpine A,B, C - Snowbird Center	150			Ichthyology Lightning Talks	AES Trophic Ecology I and II/Ecology
	POSTER SESSIONS			POSTER SESSION I Event Center - The Snowbird Center	POSTER SESSION II Event Center - The Snowbird Center	
	BUSINESS MEETINGS (Rooms vary)			HL (6 - 8 p.m.) NIA (6 - 8 p.m.)	AES (3 - 5 p.m.) ASIH (6 - 8 p.m.) SSAR (6 - 8 p.m.)	
EVE	SOCIAL EVENTS		JMIH OPENING RECEPTION (5:30 - 9:00 P.M.) Conference Center Tent & Terrace - The Cliff Lodge HL/SSAR GRADUATE STUDENT SOCIAL (9:00 p.m. - 10:30 p.m.) The Golden Cliff/Eagles Nest - The Cliff Lodge	ASIH GRADUATE STUDENT SOCIAL (9:00 p.m. - 11:00 p.m.)	SSAR AV SHOWS (8:30 p.m. - 10:00 p.m.) Ballroom 1	MMPC MEETING (12:00 - 1:30 p.m.) Twin Peaks B AES Banquet (6:00 p.m. - Midnight) The Golden Cliff/Eagles Nest - The Cliff Lodge HL/SSAR LIVE AUCTION (9:00 p.m. - midnight) Ballroom 1&2

Plenary Session

Thursday, 25 July
The Cliff Lodge
Ballrooms 1, 2, and 3

- 8:00 – 8:20** **Welcome and Introductory Remarks**
- 8:20 – 8:30** **SSAR Awards**
- 8:30 – 9:15** **JMIH Plenary Keynote**
Physiological trade-offs in a changing environment: Costs for individuals and populations
Susannah S. French
Department of Biology
Utah State University
- 9:15 – 9:50** **AES Presidential Address**
Searching for Lost Sharks
David A. Ebert
Pacific Shark Research Center
Moss Landing Marine Laboratories
- 10:10 – 10:20** **PARC Awards**
- 10:20 – 10:30** **Distinguished Teaching Awards in Ichthyology and Herpetology**
- 10:30 – 10:55** **ASIH Awards**
- 10:55 – 11:15** **ASIH Past-Presidential Address**
Influences
Brian I. Crother
College of Science and Technology
Southeastern Louisiana University
- 11:15 - 11:30** **HL Awards**
- 11:30 - 12:00** **HL Distinguished Herpetologist Lecture**
Imperfect fixes: Costs of adaptive responses to environmental perturbations
Tracy Langkilde
Department of Biology
The Pennsylvania State University

Oral Presentations - Thursday, 25 July - Afternoon

PRESENTERS ARE SOLELY RESPONSIBLE FOR THE CONTENT OF THEIR PRESENTATIONS, JMIH ORGANIZERS, THE JMIH SOCIETIES AND SPONSORS OF THE MEETING AREN'T RESPONSIBLE FOR THE CONTENT.

ROOM		<i>Ballroom 1 - Cliff Lodge</i>		<i>Ballroom 2 - Cliff Lodge</i>
SESSION/ SYMPOSIUM		HL Graduate Research Award		SSAR Seibert Ecology I
MODERATOR		Willem Roosenburg		Andrew Durso
1:30 PM			516	Miranda Strasburg*, Michelle Boone Effects of Trematode Parasites on an Anuran Host across a Predator Gradient
1:45 PM	335	Florence Wen* Determining Olive Ridley Sea Turtle Hatchling Sex Ratios at an Arribada Nesting Beach in Costa Rica	296	Ashley Kobisk*, Matthew Kwiatkowski Effects of Artificial Light at Night on Anuran Calling Behavior
2:00 PM	48	Cara Smith*, Stephen Mackessy, Drew Schield, Todd Castoe, Josh Parker Snakes on a Plain: Biochemical Ecology and Venom Variation in North America's Most Widely Ranging Rattlesnake (<i>Crotalus viridis</i>)	817	Krista Ruppert*, Drew Davis, Richard Kline, Saydur Rahman Development, Application, and Assessment of an Environmental DNA Assay for Detection of the Rio Grande Siren
2:15 PM	26	Kristina Chyn*, Te-En Lin, Yu-Kai Chen, Chih-Yun Chen, Lee Fitzgerald The magnitude of roadkill in Taiwan: Patterns and consequences from the citizen science Taiwan Roadkill Observation Network	117	Casey Brewster*, Steve Beaupre The Effect of Body Posture on Available Habitat and Activity -time in a Lizard: Implications for Thermal Ecology Studies
2:30 PM	248	Anthony Waddle*, Jef Jaeger Prior Pathogen Exposure and a Preliminary Vaccine Increase Amphibian Resistance to Chytridiomycosis	776	Dustin Owen*, David Ensminger, Michael Sheriff, Tracy Langkilde Effects of Maternal Stress on Lizards from High- and Low-Stress Sites
2:45 PM	374	Zachary Lange*, James Watling, Andres Aponte Pristimantis Frogs Experience Shifting Patterns of Thermal Quality with Elevation and Forest Cover in the Colombian Andes	785	Dalton Neuharth*, Michael Forstner, Sarah Fritts Response of a Lizard Assemblage to a Catastrophic Wildfire
3:00 PM		BREAK		
SESSION/ SYMPOSIUM		Herpetology Genetic Diversity		SSAR Seibert Ecology II
MODERATOR		Lisa Barrow		Nicholas Caruso
3:30 PM	55	Lisa Barrow*, Emanuel Fonseca, Coleen Thompson, Bryan Carstens Do Species Traits Predict Genetic Diversity in North American Amphibians?	70	Sebastian Gonzales*, Hayley Crowell, Emily Taylor A Comparative Study of Home Range and Movement Patterns of Pacific Rattlesnakes (<i>Crotalus oreganus</i>)
3:45 PM	256	Matthew Fujita*, Sonal Singhal, Tony Gamble, Robert Fisher Genome evolution in the parthenogenetic lizards	746	Emily Mausteller*, Jayme Waldron, John Holloway, Will Dillman, Alex Foote, Nicholas Bolin, Elizabeth Johnson, Shane Welch <i>Crotalus adamanteus</i> Ambush Site Selection in Coastal South Carolina Salt Water Marshes
4:00 PM	567	Nathan Kudla*, Eric McCluskey, Jen Moore Genome evolution in the parthenogenetic lizards	405	Neil Balchan*, Stephen Mackessy Physiological venom resistance of Colorado rodents to Desert Massasauga and Prairie Rattlesnake venoms
4:15 PM	656	Michael Mahr*, Justin Autz, Jennifer Buchanan, Alexis Powell, Lynnette Sievert, David Edds, J. Daren Riedle Morphologic variation, geographic distributions, and taxonomic boundaries of map turtles (<i>Graptemys</i> spp.) in Kansas	547	Kodiak Hengstebeck*, Christina Romagosa, Paul Andreadis, Ian Bartoszek Burrow Use and Selection by Invasive Burmese Pythons (<i>Python bivittatus</i>) in Florida
4:30 PM	450	Matthew Holding*, Jason Strickland, Rhett Rautsaw, Andrew Mason, Erich Hofmann, Michael Hogan, Schyler Ellsworth, Gunnar Nystrom, Mark Margres, Timothy Colston, Miguel Borja, Christoph Grünwald, Jason Jones, Gamaliel Castañeda, Luciana Sousa, Ana Moura da Silva, Inácio Azevedo, Felipe Grazziotin, H. Lisle Gibbs, Darin Rokyta, Christopher Parkinson Assessing the relationship between venom complexity and diet diversity in rattlesnakes using a novel, genome-wide phylogeny	118	Nathan Byer*, Brendan Reid, M. Z. Peery Impacts of life-history and pace-of-life on nesting behavior in an armored ectotherm
4:45 PM	328	Daniel Portik*, John Wiens SuperCRUNCH: A Toolkit for Creating and Manipulating Supermatrices and Other Large Phylogenetic Datasets	402	Ellery Ruther*, Jinelle Sperry, Brett DeGregorio Regional Trends in Spotted Turtle (<i>Clemmys guttata</i>) Movement Patterns

* denotes presenter

Oral Presentations - Thursday, 25 July - Afternoon

ROOM		<i>Ballroom 3 - Cliff Lodge</i>		<i>Primrose A&B - Cliff Lodge</i>
SESSION/ SYMPOSIUM				ASIH Stoye General Herpetology I
MODERATOR				Maureen Donnelly
1:30 PM			9	Donglin Han* , Lynnette Sievert The effect of temperature on activity of the digestion and hopping behavior of <i>Anaxyrus woodhousii</i>
1:45 PM			28	Meaghan Gade* , Phillip Gould , William Peterman Habitat mediated responses of terrestrial salamanders to wildfire in the short-term
2:00 PM			210	Bannon Gallaher* , Steven Beaupre Factors That Affect Home Range of Timber Rattlesnakes (<i>Crotalus horridus</i>) in Northwest Arkansas
2:15 PM			264	Katherine R. Martin* , Kate L. Mansfield , Anna E. Savage Disease and the Evolution of the Major Histocompatibility Complex in Nearshore Juvenile Sea Turtles
2:30 PM			330	Thomas Firreno* , Alyson Emery , Josiah Townsend , Matthew Fujita Diversification and gene flow in a problematic species complex of Mesoamerican toads (<i>Incilius coccifer</i> complex)
2:45 PM			412	Adolfo Rodríguez-Velázquez* , Alberto Sabat-Guernica , Zabrina Santana-Navarro , Nelly Báez-Henry Evaluation of the use of Camera Traps to Study the Predation of the Puerto Rican Racer (<i>Borikenophis portoricensis</i>).
3:00 PM		BREAK		
SESSION/ SYMPOSIUM		SSAR Seibert Physiology/Morphology		ASIH Stoye General Herpetology II
MODERATOR		Chris Murray		Sara Ruane
3:30 PM	39	Jackson Phillips* , Kurt Schwenk Surface-feeding and Air-Breathing in Tadpoles: What They Might Tell Us About the Evolution of Lungs	462	Anat Belasen* , Tim James Habitat fragmentation reduces genetic diversity and increases susceptibility to <i>Batrachochytrium dendrobatidis</i> infections in frogs of the Brazilian Atlantic Forest
3:45 PM			469	Andrew Hopkins* , Tiffany Schriever Herpetofauna Species Composition and Environmental Variation in Interdunal Wetlands of Lake Michigan Coastline
4:00 PM	395	Analisa Shields-Estrada* , David Cannatella Evolutionary history of African dwarf toads and the implication on loss of the tympanic middle ear	524	Malorie Hayes* , Kathlene Joyce , Jacqueline Potter , Craig Guyer Phylogeography of the slimy salamander complex (<i>Plethodon</i> , <i>Plethodontidae</i>) in Alabama
4:15 PM	58	Howard Rainey* , Todd Pierson , Jennifer Deitloff Distinguishing morphological differences in the head shape of <i>Eurycea cf. wilderae</i> (Blue Ridge Two-Lined Salamander)	646	Justin Agan* , Matthew Lovern , Jennifer Grindstaff , Stanley Fox Use of Hatchling Orange Bars in Male-Male Interactions of <i>Crotaphytus collaris</i>
4:30 PM	18	John Bellah* , Lynnette Sievert Biting the Hand That Feeds You: Affects of Parasitism in Northern Watersnakes (<i>Nerodia sipedon</i>)	650	Ariana Rupp* , Brad Moon How to Train Your Mud Snake: First Data on Juvenile Mud Snake Growth in a Laboratory Setting
4:45 PM	197	Haley A. Moniz* , Vicki L. Thill , Robert E. del Carlo , Jessica S. Reimche , Edmund D. Brodie Jr. , Normand LeBlanc , Chris R. Feldman Jack of all trades, or master of one? Tradeoffs in organismal performance of Tetrodotoxin-resistant garter snakes (<i>Thamnophis</i>)	757	Stephen Mirkin* , Mary Tucker , Dean Williams Predation release of Texas horned lizards living in small towns

* denotes presenter

Oral Presentations - Thursday, 25 July - Afternoon

ROOM		<i>Cottonwood A-D - Snowbird Center</i>		<i>Rendezvous A&B - Snowbird Center</i>
SESSION/ SYMPOSIUM		ASIH Stoye Genetics, Development, & Morphology I (fishes)		AES Gruber I
MODERATOR		Kevin Conway		Kara Yopak
1:30 PM	172	Alexandra Meyer* , Chris L. Chabot, Andrew Nosal, Daniel Cartamil, Felipe Galván-Magaña, Larry G. Allen Assessment of the Population Genomic Structure of the Shovenose Guitarfish, <i>Pseudobatos productus</i> , from Southern California to Baja California Sur	29	John Swenson* , Jeff Klomp, Robert Fisher, Karen Crow-Sanchez Zipping and Zagging: The Story of Cownose Ray Fin Development
1:45 PM	213	Lindsey Nelson* , Christian Jones, Jan McDowell An Interdisciplinary Investigation of the Population Structure of Clearnose Skates, <i>Rostororaja eglanteria</i> , Using Genetics and Morphology	259	Emily Peele* , Kara Yopak In Hot Water: The Effects of Increased Temperature on Brain Development in the Epaulette Shark (<i>Hemiscyllium ocellatum</i>)
2:00 PM	312	Kole Kubicek* , Ralf Britz, Kevin Conway Developmental Osteology of Two Loricarioid Catfishes, <i>Corydoras panda</i> and <i>Ancistrus</i> sp. (Teleostei:Siluriformes).	426	Ornella C. Weideli* , Ian A. Bouyoucos, Yannis P. Papastamatiou, Gauthier Mescam, Serge Planes, Jodie L. Rummer Intraspecific Variability in Maternal Investment, Body Condition, and Foraging Rates of Young Reef Sharks Between an Atoll and Island System
2:15 PM	362	Kara Million* Characterizing Immunogenetic Diversity in Darters (<i>Etheostoma</i>) of Indiana: a Deep-Sequencing Approach	479	Nick Weber* , Bryan Frazier, Nick Whitney, Mike Janech, Lou Burnett, Gorka Sancho Stress Response and Post-Release Mortality of Blacktip Sharks, <i>Carcharhinus limbatus</i> , Captured in Shore-Based and Charter Recreational Fisheries
2:30 PM	515	Amanda Pinion* , Ralf Britz, Rafael Martínez-García, Dustin Siegel, Kevin Conway The larval attachment organ of <i>Atractosteus tropicus</i>	566	D. Lorena Silva-Garay* , Christopher G. Lowe Metabolic Thermal Sensitivity of the Round Stingray (<i>Urobatis halleri</i>)
2:45 PM	533	Zachary May* , Matthew Davis Evolutionary Relationships and the Evolution of Body Shape among Deep-Sea Hatchetfishes (Sternoptychidae)	146	Gail Schwieterman* , Daniel Crear, Danielle Lavoie, Brooke Andersen, James Sulkowski, Richard Brill Interactions of Acute Temperature and pH Changes on Metabolic Rates and Hypoxia Tolerance: A Comparison Between Mid- and North-Atlantic Species
3:00 PM		BREAK		
SESSION/ SYMPOSIUM		ASIH Stoye General Ichthyology I		AES Gruber II
MODERATOR		Bill Ludt		Jayne Gardiner
3:30 PM	619	Rose Peterson* , John Sullivan, Guillermo Orti Phylogenomics, Electric Organ Discharge, and Cranial Evolution in Mormyridae (Osteoglossomorpha)		
3:45 PM	496	Emily DeArmon* , Matthew Davis Dragons of the Deep: Evolutionary Relationships of the Family Stomiidae (Dragonfishes) and the Evolution of their Bioluminescent Barbels	109	Bryan Keller* , Bryan Frazier, Dean Grubbs The Spatiotemporal Ecology of the Bonnethead (<i>Sphyrna tiburo</i>): Nearshore Parturition, Site Fidelity and the Effect of SST on Migration
4:00 PM	355	Calder Atta* , Luke Tornabene, Hao Yuan, Chenhong Li Phylogenomic analysis of pleuronectid flatfishes based on exon-capture data	734	Kelsey Martin* , Dan Abel, Derek Crane, Neil Hammerschlag, Erin Burge Blacktip Shark <i>Carcharhinus limbatus</i> Presence at Fishing Piers in South Carolina: Association and Environmental Drivers
4:15 PM	169	Jerry Kattawar* , Kyle Piller, Rich Harrington, Dan MacGuigan, Tom Near Phylogenetics of <i>Stigmacerca</i> : Resolution of a Group of Egg-Clustering Darters	170	Beth Bowers* , Stephen Kajiura Traveling the Atlantic Seaboard: Blacktip Shark Coastal Hot Spots
4:30 PM	628	Diego Elias* , Fernando Alda, Caleb McMahan, Prosanta Chakrabarty Revisiting the Biogeographic History of the Middle American Cichlids (Tribe Heroini)	384	Margaret McClain* , J. Marcus Drymon, Bryan Frazier, Austin Gallagher, R. Dean Grubbs, Tristan Guttridge, Neil Hammerschlag, Matt Smukall, Toby Daly-Engel Ohana means Family: Kinship analysis of Tiger Sharks reveals natal philopatry and age-dependent structure in the Western North Atlantic
4:45 PM			275	Dominic Swift* , Dean Grubbs, Dana Bethea, Bryan Frazier, Fernando Márquez-Farías, Liliana Cuervo-López, Tristan Guttridge, Alexei Abierno, David Portnoy Population Genomics Assessment of Blacktip Shark Structure Across National Boundaries in the Gulf of Mexico and western North Atlantic Ocean

* denotes presenter

Oral Presentations - Friday, 26 July - Morning

ROOM		<i>Ballroom 1 - Cliff Lodge</i>		<i>Ballroom 2 - Cliff Lodge</i>
SESSION/ SYMPOSIUM		SSAR Seibert Conservation I		SSAR Seibert Systematics and Evolution I
MODERATOR		Jennifer Deitloff		Luis Ceriaco
8:00 AM	126	Emily Karwacki* , Katherine Martin, Anna Savage 100 Years of Infection With Three Global Pathogens in Amphibian Populations of Florida, USA	707	Itzue Caviedes-Solis* , Adam Leache Intertwined evolution of swimming, morphology and microhabitat in tree frogs from the subfamily Hylinae
8:15 AM	572	Andrew Rothstein* , Roland Knapp, Erica Bree Rosenblum Stepping into the past to conserve the future: amphibian skin swabs from extant and extinct populations inform conservation genetic management		
8:30 AM	372	Allison Byrne* , Erica Bree Rosenblum, Vance Vredenburg, An Martel, Frank Pasmans Cryptic diversity of a widespread global pathogen reveals new targets for amphibian conservation	668	Alexandra Sumarli* , Bradford Hollingsworth, Annie Peralta-Garcia, Jorge Valdez-Villavicencio, Tod Reeder Species Delimitation of the Common Chuckwalla (<i>Sauromalus ater</i>): Implementation of an Integrative Approach
8:45 AM	311	Alexander Shepack* , Alessandro Catenazzi Demography and viability of amphibian populations recovering from chytridiomycosis related declines	736	Kaitlin Allen* , Walter Tapondjou, Eli Greenbaum, Luke Welton, Aaron Bauer High Levels of Hidden Phylogenetic Structure Within Central and West African <i>Trachylepis</i> Skinks
9:00 AM	358	Matthew Atkinson* , Anna Savage Impacts of the emergent protistan pathogen <i>Perkinsea</i> on Florida's amphibian communities	244	Kristen Larson* , Dustin Rhoads A Quantitative Color-Pattern Test of the 'Stone Mimicry Hypothesis' in Roundtailed Horned Lizards (<i>Phrynosoma modestum</i>) Utilizing Digital in situ Photography
9:15 AM	579	Elliot Lassiter* , Orlando Garces, Jorge Gurrel, Roberto Ibañez, Brian Gratwicke Identifying the Cause of Spindly Leg Syndrome in Captive Amphibian Assurance Colonies		
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		SSAR Seibert Conservation II		SSAR Seibert Systematics and Evolution II
MODERATOR		Gareth Hopkins		Henry Mushinsky
10:00 AM	298	Hunter Howell* , Caitlin Mothes, Stephanie Clements, Shantel Catania, Betsie Rothermel, Christopher Searcy Amphibian Responses to Livestock use of Wetlands: New Empirical Data and a Global Review	811	Jackie Childers* , Aaron Bauer, Todd Jackman Lizards of a Different Stripe: Phylogeography of the <i>Pedioplanis</i> undata Species Complex (Squamata: Lacertidae),
10:15 AM	446	George Brooks* , Dylan Childs, Thomas Gorman, Carola Haas Assessing Population Viability and the Efficacy of Future Management Scenarios for an Endangered Amphibian	738	Walter Paulin Tapondjou* , Kaitlin Allen, Legrand Gonwouo, Rafe Brown Phylogeography of the mountain endemic chameleons of the Cameroon Volcanic Line (Chamaeleonidae: <i>Troceros</i>)
10:30 AM	586	Andrew MacLaren* , Paul Crump, Michael Forstner Using Automated Audio Recorders to Optimize Human Performed Audio Surveys for Monitoring the Endangered Houston Toad.		
10:45 AM	777	Joseph Nacy* , Joseph Pechmann Artificial Burrows Mitigate the Effects of Fire-Suppression on the Growth of Juvenile Dusky Gopher Frogs.	38	Randy L. Klabacka* , Perry L., Jr. Wood, Jimmy A. McGuire, Jamie R. Oaks, L. Lee Grismer, Jesse L. Grismer, Anchalee Aowphol, Jack W., Jr. Sites Riverine barriers as potential drivers of biodiversification in the <i>Draco maculatus</i> species complex of Indochina
11:00 AM	68	Ethan Royal* , Jessica Homyack, J.D. Willson Effects of forest management on habitat structure and upland pine-associated herpetofaunal communities.	203	Thomas Marshall* , Drew Davis, David Hillis Investigating Mitonuclear Discordance in North American Corn Snakes (<i>Pantherophis guttatus</i> complex)
11:15 AM	245	Dustin Rhoads* , Dean Williams Background Color-Matching in the Texas Horned Lizard (<i>Phrynosoma cornutum</i>)		
11:30 AM	218	Tiffany Bougie* , Nathan Byer, Carly Lapin, M. Zach Peery, James Woodford, Jonathan Pauli Wood turtle (<i>Glyptemys insculpta</i>) nest protection fails to overcome spatial and temporal influences on nest success in northern Wisconsin	745	Mark William Herr* , Christian Cox, Adrian Nieto, Rafe Brown Comparative phylogeography of the North American Centipede Snakes (<i>Tantilla</i>)
11:45 AM	804	Anjana Parandhaman* , Marjorie Matocq, Doug Boyle, Scott Bassett, Amy Vandergast, Todd Esque, Jill Heaton, Kenneth Nussear Using Existing Genetic and Climate Data to Direct Sampling Efforts for the Desert Tortoise, <i>Gopherus agassizii</i> , across the Mojave Desert	790	Austin Osmanski* , Katherine Brittain, Elizabeth Jones, Cao Rui, Jaime Gongora, Alexander Suh, Ray David Ancient Hybridization Detection within <i>Crocodylus</i>
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Friday, 26 July - Morning

ROOM		<i>Ballroom 3 - Cliff Lodge</i>		<i>Primrose A&B - Cliff Lodge</i>
SESSION/ SYMPOSIUM		Herpetology Biogeography I		ASIH Stoye Genetics, Development & Morphology II (herps)
MODERATOR		Bradford Hollingsworth		James Watling
8:00 AM	326	Danielle Rivera*, Miguel T Rodrigues, Matthew K Fujita Patterns of Genetic Diversity in Widespread South American Rhinella Toad Populations		
8:15 AM	680	Eric Hoffman*, Nicholas Christodoulides, Anna Farmer, Kevin Enge, Alexa Trujillo, Steve Johnson Contrasting molecular markers and connectivity in an imperiled salamander	783	Kelsey Fleming*, Justin Perrault, Nicole Stacy, Christina Coppenrath, Alison Gainsbury Effects of In Situ Incubation Temperatures on Hatchling Loggerhead Sea Turtle (Caretta caretta) Morphology, Health Indices, and Locomotor Performance
8:30 AM	744	Kaitlyn S. Campbell*, Andy Baltensperger, Jacob Kerby Random Frogs: A Machine Learning Approach to Predicting Amphibian Distributions in the Upper Missouri River Basin	755	Leonard Jones*, Adam Leache, Frank Burbrink Range wide Phylogeography and Demography of the Common Garter Snake <i>Thamnophis sirtalis</i>
8:45 AM	760	Donald Shepard*, Ryan Philobos, Pedro Simoncini, Cameron Robicheaux Demographic Responses to Pleistocene Climate Change in Interior Highlands Woodland Salamanders (Genus <i>Plethodon</i>)	565	Kevin P. Mulder*, Nandadevi Cortes-Rodriguez, Evan H Campbell Grant, Adrienne Brand, Robert C. Fleischer North-facing Slopes and Elevation Shape Asymmetric Genetic Structure in the Range-restricted Salamander <i>Plethodon shenandoah</i>
9:00 AM	676	Adam Leache*, Matt Fujita, Jamie Oaks Mechanisms of Diversification in West African Amphibians and Reptiles	318	Bradley T. Martin*, Marlis R. Douglas, Tyler K. Chafin, John S. Placyk Jr., Roger D. Birkhead, Chris A. Phillips, Michael E. Douglas Introgression and Selection in <i>Terrapene</i> from the Southeastern United States
9:15 AM	508	Bradford Hollingsworth*, Alexandra Sumarli, Melissa Stepek, Jorge Valdez-Villavicencio, Tod Reeder Genomic Perspective of the Species Boundaries and Phylogenetic Relationships within the Baja California Gophersnake (<i>Pituophis vertebralis</i>)		
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		Herpetology Biogeography II: Lizards		ASIH Stoye Ecology & Ethology II
MODERATOR		Lotanna Micah Nneji		Chris Beachy
10:00 AM	24	Lotanna Micah Nneji*, Adeniyi Charles Adeola, Jie-Qiong Jin, Adiaha A. A. Ugwumba, Min-Sheng Peng, Robert W. Murphy, Jing Che Phylogeography of Red Headed Rock agama (<i>Agama agama</i>) from Nigeria	50	Michael Izumiyama*, Satoshi Awata, Karen Crow Is the number of fathers a good approximation for the number of mates? Examining the reproductive strategy of <i>Ditrema temminckii</i>
10:15 AM	151	Eric Hileman*, Patrick Barnhart, Bradley Eichelberger, Jill Liske-Clark, Robert Reed, Amy Yackel Adams, Melia Nafus Predictors of Lizard Distribution on Saipan	167	Kristopher Row*, Luke Frishkoff Morphological limitations imposed on lizards facing urbanization
10:30 AM	185	Brett Butler*, Aaron Bauer, Todd Jackman Phylogeography and Taxonomy of Angolan Agamas	171	Alexander Murray*, Luke Frishkoff Does arboreality heighten sensitivity to habitat modification in anurans?
10:45 AM	332	Krone Isaac* Ecological and Phylogenetic Patterns in Lizard Range Size	282	Clay Noss*, Bree Rosenblum Trophic Cascades in the Desert? An Enclosure Experiment in White Sands
11:00 AM	502	Jonathan Richmond*, Hidetoshi Ota, L. Lee Grismer, Robert Fisher Ecological specialization influences historical biogeography and diversification of seafaring scincid lizards (genus <i>Emoia</i>)	286	Alejandro Grajal-Puche*, Christopher M. Murray, Jonathan K. Warner, Mark Merchant, Christopher Nix, Mathew Kearley, Tania Datta, Donald M. Walker Microbial assemblage dynamics within the American Alligator (<i>Alligator mississippiensis</i>) nesting microbiome
11:15 AM	542	Ivan Prates*, Kevin de Queiroz, Miguel Rodrigues, Rayna Bell Evolutionary consequences of sexual signal diversity in South American anoles	568	Maggie Hantak*, Shawn Kuchta Spatial Variation of Correlated Trait Complexes in the Polymorphic Eastern Red-backed Salamander, <i>Plethodon cinereus</i>
11:30 AM	575	Sean Harrington*, Riley Parks, Robert Thomson Tip-dated phylogenetics and biogeography of <i>Xenosaurus</i>	682	Steven Hromada*, Todd Esque, Amy Vandergast, Corey Mitchell, Kirsten Dutcher, Kenneth Nussear Habitat selection by Mojave Desert Tortoises (<i>Gopherus agassizii</i>) in Altered Landscapes.
11:45 AM	687	Andrew Gottscho*, Kevin de Queiroz Diversification and Dispersal in Baja California: Phylogeography of Zebra-tailed Lizards (<i>Phrynosomatidae</i> : <i>Callisaurus draconoides</i>)	689	Megan Sporre* Frequency of Multiple Paternity Varies with Population Sex-Ratio in an Estuarine Turtle Species (<i>Malaclemys terrapin</i>)
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Friday, 26 July - Morning

ROOM		<i>Cottonwood A-D - Snowbird Center</i>		<i>Rendezvous A&B - Snowbird Center</i>
SESSION/ SYMPOSIUM		ASIH Stoye Ecology & Ethology I		AES Gruber III
MODERATOR		Nancy Brown-Peterson		Chris Bedore
8:00 AM	563	Benjamin Chubak* , Mark Steele Evaluating the Importance of Reef-Based Resources for Reproduction in a Temperate Reef Fish		
8:15 AM	458	Echelle Burns* , Jeff Armstrong, Danny Tang, Ken Sakamoto, Christopher Lowe Differences in the Short-Term Movement Patterns and Habitat Association of Flatfishes (Order Pleuronectiformes) Near the Orange County Sanitation District Outfall	49	Derek Kraft* , Melanie Hutchinson, Brian Bowen Global Genetic Inventory of the Silky Shark (<i>Carcharhinus falciformis</i>), the Shark Finning Industry, and DNA Fingerprinting
8:30 AM	292	Alyssa Clevestine* , Christopher Lowe Aggregation patterns and site fidelity of the protected giant sea bass (<i>Stereolepis gigas</i>) at Catalina Island, California	271	Ryan Lehman* , Jill Hendon, Dr. Gregg Poulakis, Rachel Scharer, Dr. Nicole Phillips Finding Fragments: Using eDNA to assess the occurrence of Critically Endangered Smalltooth Sawfish outside its core range in U.S. waters
8:45 AM	234	Jennifer Main* , Ginny Adams, Reid Adams Have Fish Assemblages Changed in the Strawberry River Over the Last 30-40 Years?	124	Diego Cardeñosa* , Andrew Fields, Elizabeth Babcock, Stan Shea, Huarong Zhang, Kevin Feldheim, Jessica Quinlan, Debra Abercrombie, Gunter Fischer, Demian Chapman Development and applications of DNA forensics to global shark conservation and law enforcement
9:00 AM	232	George Gavrielides* , Ginny Adams, Reid Adams, Matthew Connolly Potential Effects of Land Cover Change on Fish Assemblages in the Eleven Point River Basin	570	Camila Caceres* , Oceane Beaufort, Lauren Ali, Aljoscha Wothke, Jeremy Kiszka, Michael Heithaus Characterizing Catches in Artisanal Elasmobranch Fisheries in the Lesser Antilles
9:15 AM	226	Chance Garrett* , Ginny Adams, Reid Adams Habitat Associations Of Riffle Fishes In An Ozark River Having A Dynamic Gravel Bed Load	315	Michael McCallister* , Grace Roskar, Matthew Ajemian Elasmobranch Community Dynamics in Florida's Southern Indian River Lagoon
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		ASIH Stoye General Ichthyology II		AES Genetics/Ecology
MODERATOR		Brian Sidlauskas		Shannon Corrigan
10:00 AM	51	Joao Pedro Fontenelle* , Nathan Lovejoy Matryoshka fishes? Assessing South American continental-scale biogeography using the widespread Neotropical freshwater stingrays (<i>Myliobatiformes</i> : <i>Potamotrygoninae</i>)	431	Amanda Barker* , Doug Adams, Christine Bedore, Bryan Frazier, Jim Gelsleichter, David Portnoy Population Structure and Conservation Genetics of Scalloped Hammerheads (<i>Sphyrna lewini</i>) in the U.S. Atlantic and Gulf of Mexico
10:15 AM	141	Jonathan Huie* , Luke Tornabene Co-evolution of cleaning and morphology in Caribbean neon gobies	580	Andrew Fields* , Bryan Frazier, Marcus Drymon, Dean Grubbs, James Gelsleichter, Demian Chapman, Alexei Ruiz, Robert Hueter, Jayne Gardiner, David Portnoy Population Structure of the Bonnethead shark (<i>Sphyrna tiburo</i>) in the western North Atlantic
10:30 AM	536	Rene Martin* , Abbey Dias, Adam Summers, Mackenzie Gerringier Assessment of Bone Density Reduction within Deep-Sea Grenadiers (<i>Macrouridae</i>)	262	Nicole Phillips* , Katherine Schweiss, Emily Seubert, Toby Daly-Engel, Marcus Drymon Using Environmental DNA to Examine Habitat Use of Bull Sharks (<i>Carcharhinus leucas</i>) in the Mobile-Tensaw River Delta, Alabama
10:45 AM	40	Daniel Sinopoli* , Donald Stewart, Jeremy Wright, Jay Palumbo Morphological Variation of the Extant Bowfin (<i>Amiidae</i> : <i>Amia calva</i>) in the Mississippi River Basin: Taxonomic and Conservation Implications	98	Shannon Corrigan* , Lei Yang, John Denton, Bautisse Postaire, Judith Bakker, Demian Chapman, Gavin Naylor Whole mitogenome relaxed hybridization target sequence capture from environmental DNA samples
11:00 AM	655	Matthew Girard* Morphological support for the relationships among carangiform fishes	495	Clark Morgan* , Dr. Jim Gelsleichter Distribution and community structure of First Coast shark assemblages
11:15 AM	86	Noah Bressman* , Joseph Love, Tyler King, Caroline Horne, Miriam Ashley-Ross Emersion and Functional Terrestrial Locomotion by the Invasive Northern Snakehead, <i>Channa argus</i>	381	Simon Dedman* , Henriette Grimmel, Robert Bullock, Guttridge Tristan, Bond Mark, Samuel Gruber Assessment of Faunal Communities and Ecosystem Interactions within a Shallow Water System using Non-invasive BRUVs Methodology
11:30 AM	779	Dylan Wichman* , Raelynn Deaton Haynes, Samuel Cornelius, Sunny Scobell The Effects of Prozac on Feeding Behaviors and Reproductive Success in a Sex Role-Reversed Saltwater Fish	782	Atsuko Yamaguchi* , Keisuke Furumitsu Role of estuarine and coastal areas as nursery grounds of elasmobranchs
11:45 AM	365	Kimberly Foster* , Devin Bloom Top down diversification: the adaptive landscape of South American Darters (<i>Crenuchidae</i> : <i>Characiformes</i>) across a benthic/pelagic habitat axis	121	Camrin Braun* , Simon Thorrold, Peter Gaube The influence of mesoscale eddies on pelagic predators
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Friday, 26 July - Morning

ROOM		<i>Alpine A,B,C - Snowbird Center</i>	
SESSION/ SYMPOSIUM			
MODERATOR			
8:00 AM			
8:15 AM			
8:30 AM			
8:45 AM			
9:00 AM			
9:15 AM			
9:30 AM		BREAK	
SESSION/ SYMPOSIUM		AES Reproduction & Life History	
MODERATOR		Chris Mull	
10:00 AM	85	<p style="text-align: center;">Bethany Deacy*, Lisa Natanson</p> <p style="text-align: center;">Age Underestimation Using Vertebral Band Pairs in the Sandbar Shark, <i>Carcharhinus plumbeus</i>, in the Western North Atlantic Ocean.</p>	
10:15 AM	672	<p style="text-align: center;">Morgan Arrington*, Beth Matta, Christopher Gburski, Thomas Helser, André Punt, Timothy Essington</p> <p style="text-align: center;">Exploring the growth of longnose skates (<i>Raja rhina</i>) along the North American West Coast</p>	
10:30 AM	33	<p style="text-align: center;">Christopher Mull*, Sebastián Pardo, Alastair Harry, Luz Saldaña Ruiz, Emiliano Garcia Rodriguez, Brit Finucci, Christopher Bird, Cassandra Rigby, Manuel Dureuil, Nicholas Dulvy, Holly Kindsvater</p> <p style="text-align: center;">SharkTraits: a curated, open-access database of shark, ray, and chimaera life history traits</p>	
10:45 AM	340	<p style="text-align: center;">Matthew Smukall*, Natalie Mylniczenko, Andrew Seitz, Samuel Gruber, Tristan Guttridge</p> <p style="text-align: center;">Body Condition and Energy Storage of Juvenile Tiger Sharks <i>Galeocerdo cuvier</i></p>	
11:00 AM	145	<p style="text-align: center;">Hannah Verkamp*, Gregory Skomal, Megan Winton, James Sulikowski</p> <p style="text-align: center;">First observations of reproductive hormone concentrations in white shark (<i>Carcharodon carcharias</i>) skeletal muscle tissue</p>	
11:15 AM	593	<p style="text-align: center;">Jennifer Wyffels*, Lisa Hoopes, Cayman Adams, Tim Handzel, Michael Hyatt, Alisa Newton, Linda Penfold</p> <p style="text-align: center;">Endocrine and Nutritional Parameters and Semen Quality for In Situ and Aquarium Sand Tiger Sharks (<i>Carcharias taurus</i>)</p>	
11:30 AM	690	<p style="text-align: center;">Toby Daly-Engel*, Yannis P. Papastamatiou</p> <p style="text-align: center;">Integrating Genetics and Telemetry to Resolve Discrepancies in Sex-Biased Dispersal in Sharks</p>	
11:45 AM			
12:00 PM		LUNCH	

* denotes presenter

Oral Presentations - Friday, 26 July - Afternoon

ROOM		<i>Ballroom 1 - Cliff Lodge</i>		<i>Ballroom 2 - Cliff Lodge</i>
SESSION/ SYMPOSIUM		Herpetology Morphology and Systematics		Amphibian Ecology
MODERATOR		Brad Shaffer		John Maerz
1:30 PM	823	Amanda Hewes* , Kurt Schwenk Multiple origins of a complex phenotype: morphology, kinematics, and phylogenetics of tongue-feeding in squamate reptiles	84	Robert Brodman* Interactive effects of temperature and roundup on salamanders: Are things going to keep getting worse?
1:45 PM	115	Dustin Siegel* , Jordan Hartley Modification of genital kidney nephrons for sperm transport in <i>Eurycea longicauda</i>	281	David Marsh* , Alexa Caffio, Anna Daccache, Margaret Dewing, Kathryn McCreary, Nathan Richendollar, Parker Skinner Range Limits and Demography of a Mountaintop Endemic Salamander and its Widespread Competitor
2:00 PM	30	Deran Reddy* A Fluorescence Microscopy study of the Lung of the Nile crocodile	45	Max Nickerson* , Amber Pitt, Joseph Mitchell Mitchell, Joseph Mitchell, Kristen Hecht Hecht Evaluation of the Diet of Two Native and Two Introduced Fish Species for Presence of Hellbender Salamander Larvae and Eggs.
2:15 PM	544	Allison Bogisich* , Jennifer Dever Frogs Hiding in Plain Sight: Phylogenetic Systematics of Myanmar's <i>Occidozyga</i> Species Complex		
2:30 PM	489	David Cannatella* A New Siren? The Value of Alternative Hypotheses in Taxonomy, with Examples	639	John Maerz* , Vanessa Terrell, Nathan Engbrecht, Rochelle Stiles, Brian Crawford, Michael Lannoo Population dynamics of Threatened Crawfish Frogs Informs Targets for Management
2:45 PM	463	Veronica Urgiles* , Anna Savage Diversification of Terrestrial Frogs in a High Altitude Tropical Hotspot.	659	Michael Westphal* , Karen Kiemnec-Tyburczy, Emme Nix, Maxwell Westphal, Eva Gruber Timing of Larval Development in a Sympatric Population of <i>Taricha torosa</i> and <i>T. granulosa</i>
3:00 PM	493	John McCormack* , Eugenia Zarza, Elizabeth Connors, James Maley, Whitney Tsai, Moises Kaplan, Peter Heimes "Yes, and" is better than "No, but": genomic and barcoding data help uncover cryptic lineages of Mexican highland frogs	691	Andres Aponte Gutierrez* , James Watling Thermal hardening of <i>Pristimantis medemi</i> (Anura: Craugastoridae) from forest around Villavicencio (Meta), Colombia
3:15 PM	268	Luis Ceriaco* , Krystal Tolley, Mariana Marques, Matthew Heinicke, David Blackburn, Aaron Bauer A Dwarf Among Giants: Biogeography and Phylogenetic Position of the Elusive Angolan Adder, <i>Bitis heraldica</i> (Bocage, 1889)	20	Sarah Kupferberg* , Alessandro Catenazzi Between Bedrock and a Hard Place: Riverine Frogs Navigate Tradeoffs of Pool Permanency and Disease Risk During Drought
3:30 PM	433	Brad Shaffer* , Peter Scott Can 80 Genomes, 600 RADseq Libraries, the Best Museum Collections and 20 Herpetologists Resolve a Hard Species Delimitation Problem?	11	Jennifer Buchanan* , Alexis Powell, Lynnette Sievert Diet of the Mudpuppy (<i>Necturus maculosus</i>) in Lentic versus Lotic Habitats
3:45 PM	780	Sam Fellows* , Tod Reeder, Bradford Hollingsworth Integrating Genomic and Environmental Data to Delimit Species in Sidewinders (<i>Crotalus cerastes</i>) Reveals Cryptic Diversity	114	Kristen Cecaala* , Eli Walker, Shawna Mitchell, Josh Ennen, Jon Davenport Exploring mechanisms regulating interspecific interactions in headwater vertebrate communities
4:00 PM		POSTER SESSION I in the Event Tent, Snowbird Center		
5:00 PM				
6:00 PM				

* denotes presenter

Oral Presentations - Friday, 26 July - Afternoon

ROOM		Ballroom 3 - Cliff Lodge		Primrose A&B - Cliff Lodge
SESSION/ SYMPOSIUM		Turtle Conservation/ Amphibian Conservation		ASIH Stoye Physiology & Physiological Ecology
MODERATOR		Nancy Karraker		Nicole Valenzuela
1:30 PM	569	Bryan Windmiller*, Cara McElroy Growth Rates of Headstarted Blanding's Turtles in Captivity and Survival Rates Post-Release	101	Hayley Crowell*, Emily Taylor Thermoregulatory Accuracy and the Effects of Rising Temperatures on Pacific rattlesnakes (<i>Crotalus oreganus</i>)
1:45 PM			139	Michael Britton*, Maureen Donnelly Metabolic ecology of over 100 species of amphibians across a 5,000 meter elevational gradient in the Peruvian Andes
2:00 PM	419	Steven Whitfield*, Daniel Valle, Adrian Figueroa, Brianna Chin Habitat Associations of Gopher Tortoises in Miami's Urban Natural Areas	177	Larry Kamees*, Steven Beaupre Balancing Foraging and Thermoregulation: Can Thermal Conduction Counter Frequent Solar Exposure in an Ectothermic Ambush Predator?
2:15 PM	368	Betsie Rothermel*, Hunter Howell, K. Nicole White, Christopher Searcy, Tracey Tuberville, Michael Yuan, Kelly Zamudio Demographic Consequences of Habitat Alteration and Inbreeding for a Gopher Tortoise Population in Southern Florida	250	Catherine Tylan*, Tracy Langkilde Surviving the Invader: What Branches of the Immune System are Altered by Multigenerational Exposure to a Novel Predator?
2:30 PM	217	Nancy Karraker*, Mirza Kusrini, Jessica Atutubo, Ryan Healey, Aini Yasratul Ecological Roles of One of the World's Most Heavily Traded Turtles	523	Kathleen Ivey*, Hayley Crowell, Heather Neldner, Michael Westphal, Emily Taylor Thermal ecology of the federally endangered Blunt-nosed Leopard Lizard (<i>Gambelia sila</i>)
2:45 PM	189	Sasha Tetzlaff*, Alondra Estrada, Brett DeGregorio, Jinelle Sperry 3D Printed Models Aid in Identifying Factors Affecting Predation Risk for Juvenile Box Turtles	595	Natalie Claunch*, Laura Schoenle, Samantha Oakey, Cynthia Downs, Lynn Martin, Robert Reed, Christina Romagosa Stress, Immunity, and Invasion: A Case Study of Multiple Populations of Two Lizards in their Introduced Range
3:00 PM	673	Wendy Estes-Zumpf*, Brenna Marsicek, Joseph Ceradini, Zoe Nelson Rocky Mountain Amphibian Project: A collaborative effort to monitor amphibians in the Rocky Mountain Region	674	Matthew Dickson*, Aaron Bauer, Robert Espinoza Getting Comfortable In Your Own Skin: Variation In Integument Ultrastructure Among Introduced Populations of Mediterranean House Geckos
3:15 PM	32	Erin Muths*, F. Boyd Wright, Larissa Bailey Two decades of reintroductions of toads in the Rockies: Results and ruminations	696	Sara McClelland*, Sarah Woodley Impacts of Developmental Exposure to Ecologically Realistic Pesticide Concentrations on Amphibian Larval and Juvenile Neurodevelopment
3:30 PM			820	Anthony Cobos*, Robert Espinoza, L. Lee Grismer, Evan Quah, Shahrul Anuar An Introduction to Gollum's Rule with an Assessment of Convergent Evolution for Cave-dwelling Malaysian Bent-toed Geckos
3:45 PM			741	Zachary Skelton*, Philip Hastings A Cross-Species Comparison of Temperature Preference and Q10s of Three Species of Juvenile Sharks
4:00 PM		POSTER SESSION I in the Event Tent, Snowbird Center		
5:00 PM				
6:00 PM				

* denotes presenter

Oral Presentations - Friday, 26 July - Afternoon

ROOM		<i>Cottonwood A-D - Snowbird Center</i>		<i>Rendezvous A&B - Snowbird Center</i>
SESSION/ SYMPOSIUM		ASIH Stoye Conservation		AES Ecology
MODERATOR		Tom Turner		Bryan Franks
1:30 PM	73	<p style="text-align: center;">Elizabeth Marchio*</p> <p>The Art of Aquarium Keeping Communicates Science and Conservation</p>	438	<p style="text-align: center;">Charles Bangley*, Tobey Curtis, Matthew Ogburn</p> <p>Seasonal changes in distribution and habitat preferences of Dusky Sharks (<i>Carcharhinus obscurus</i>) in the Northwest Atlantic Ocean</p>
1:45 PM	581	<p style="text-align: center;">Daniella Biffi*, Andrea López-Mobilia, Shaleyla Kelez, Dean A. Williams, Matthew M. Chumchal, Molly Weinburgh</p> <p>Mislabeling and Mercury Content in Seafood in Peru</p>	195	<p style="text-align: center;">Clemency E. White*, Maurits van Zinnicq Bergmann, Tristan L. Guttridge, Bryan R. Franks, Kristine L. Stump, Samuel H. Gruber</p> <p>Using Biotelemetry to Infer Ontogenetic Shift and Assess the Impact of Anthropogenic Development in the Lemon Shark, <i>Negaprion brevirostris</i></p>
2:00 PM	727	<p style="text-align: center;">Marta Gomez-Buckley*, Luke Tornabene, Ryan Kelly, Ramon Gallego, Raymond Buckley</p> <p>Using eDNA to Detect Species of Cryptobenthic Reef Fishes in Shallow Coral Ecosystems in Vava'u, Kingdom of Tonga</p>	500	<p style="text-align: center;">Andrea Kroetz*, Dean Grubbs, John Carlson, Mark Bond</p> <p>Endangered Smalltooth Sawfish, <i>Pristis pectinata</i>, Habitat Use and Residency in Andros, the Bahamas</p>
2:15 PM	539	<p style="text-align: center;">Kenny Jones II*, Michael Sandel, Bernie Kujahda</p> <p>Conservation Genomics of the Mobile Basin Endemic Coal Darter (<i>Percina breviceauda</i>)</p>		
2:30 PM	240	<p style="text-align: center;">Calvin Rezac*, Ginny Adams, Reid Adams, Matthew H. Connolly</p> <p>A 40 Year Outlook on the Impacts of Landuse and Fluvial Geomorphology on Fish Assemblages in the Spring River, Arkansas</p>	466	<p style="text-align: center;">Rachel Shaw*, Tobey Curtis, Gregory Metzger, Michael McCallister, Christopher Fischer, Matthew Ajemian</p> <p>3D Movement and Habitat Use of Young White Sharks (<i>Carcharodon carcharias</i>) in the Northwest Atlantic Ocean</p>
2:45 PM	66	<p style="text-align: center;">Chelsea Kross*, John Willson</p> <p>Rearing Habitat influences Larval Density-Dependence and Population Dynamics in Crawfish Frogs</p>	487	<p style="text-align: center;">Bryan R. Franks*, John P. Tyminski, Camrin D. Braun, G. Christopher Fischer, Robert E. Hueter</p> <p>Migration and Movements of the White Shark in the Western North Atlantic over Multiple Spatiotemporal Scales</p>
3:00 PM	23	<p style="text-align: center;">Angela Burrow*, John Maerz</p> <p>The Contribution of Wetland Succession to Declines of Threatened Amphibians in the Longleaf Pine Ecosystem</p>	753	<p style="text-align: center;">Cheston Peterson*, Dean Grubbs</p> <p>Preliminary analysis of effects of prey and predator distribution on movement and habitat use of two intermediate marine fish predators</p>
3:15 PM	354	<p style="text-align: center;">Allison Kelley*, Shane Welch, John Holloway, Will Dillman, April Atkinson, Jayme Waldron</p> <p>The Effectiveness of Long-Distance Translocation of Eastern Diamondback Rattlesnakes (<i>Crotalus adamanteus</i>)</p>	173	<p style="text-align: center;">Marcus Drymon*, Kevin Feldheim, Auriel Fournier, Emily Seubert, Amanda Jefferson, Andrea Kroetz, Sean Powers</p> <p>Tiger Sharks Eat Songbirds: Scavenging a Windfall of Nutrients from the Sky</p>
3:30 PM			157	<p style="text-align: center;">Brianna Hall*, Jennifer Bigman, Christine Bedore</p> <p>Scaling and ecological relationships in the visual ecology of sharks</p>
3:45 PM			702	<p style="text-align: center;">Jennifer Bigman*, Sebastián Pardo, Tanya Prinzing, Nicholas Wegner, Nicholas Dulvy</p> <p>Ecological lifestyles and the scaling of shark gill surface area</p>
4:00 PM		POSTER SESSION I in the Event Tent, Snowbird Center		
5:00 PM				
6:00 PM				

* denotes presenter

Friday, 26 July, Poster Session I

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
1	57	RU-Katie Fitzgerald*, Jennifer Deitloff	Head Morphology Variation across Pennsylvanian Populations of <i>Plethodon cinereus</i>
2	299	RU-Colin Eckman*, Austin Morder, Teah Evers, Jennifer Deitloff	Assessment of the Density, Spatial Distribution and Movement Patterns of <i>Plethodon cinereus</i> (Eastern Red-backed Salamander) Using Spatial Capture-Recapture
3	510	RU-Rebecca Weber*, Alexandra Karwowska, Armand A. Cann, Joseph R. Milanovich, Leigh Anne Harden	A Collaborative Effort to Assess the Hematological Health of Augmented Blanding's Turtle (<i>Emydoidea blandingii</i>) Populations
4	781	RU-Andrea Aparicio Ramirez*, Karina Perez, Rory Telemeco	Temperature Preference and Performance in Crested Geckos (<i>Correlophus ciliatus</i>)
5	574	RU-Maggie Cornwall*, Kathleen Ivey, Michael Westphal, Emily Taylor	Does Body Temperature Predict Surface Activity and Microhabitat Use in Heliothermic Lizards?
6	621	RU-Parker Gottsch*, Neil Balchan, Stephen Mackessy	Predator-prey interactions between the Desert Massasauga Rattlesnake (<i>Sistrurus tergeminus edwardsii</i>) and the Tiger Centipede (<i>Scolopendra polymorpha</i>)
7	369	RU-Josiah Johnson*	Conservation assessment of the Northern Black Racer, <i>Coluber constrictor constrictor</i> , in Maine
8	357	RU-Michael Buontempo*, Matthew Lattanzio	Evidence for Ecogeographic Divergence Linked to Dorsal Coloration in the Eastern Hognose Snake
9	447	SSAR:EGS-Matthew Murdoch*, Lee Grismer, Todd Jackman, Aaron Bauer	Comparative Phylogeography of <i>Hemidactylus</i> geckos and insights into biogeographical dispersal barriers in Myanmar.
10	317	SSAR:EGS-Andrew Feltmann*, Matthew Gifford, Emily Field	Effect of selection and genetic drift on phenotypic diversification in the eastern collared lizard
11	199	SSAR:EGS-Suzana Bandeira*, Aaron Bauer, Luis Ceriaco	Integrative taxonomy of Angolan <i>Ichnotropis</i> (Squamata: Lacertidae)
12	103	SSAR:EGS-Jessica Tingle*	Correlated Evolution of Snake Body Size and Vertebral Count with Habitat and Biome
13	667	SSAR:CM-Taylor Carlson*, Elisa Cabrera-Guzmán, Stanley Fox	First Documentation of Breeding Aggregations of the Ringed Salamander, <i>Ambystoma annulatum</i> , in Oklahoma, USA
14	230	SSAR:CM-John Vanek*, Richard King, Gary Glowacki	Landscape and Management Factors Influence the Occupancy Dynamics of Sympatric Salamanders in an Urban Preserve System
15	149	SSAR:CM-Nathan Byer*, Brendan Reid, M. Z. Peery	Landscape genetic and metapopulation modelling tools reveal complex effects of climate and land use change on a long-lived vertebrate
16	221	SSAR:CM-Amy Bogolin*, Dr. Abdullah Rahman, Dr. Richard Kline, Carl Franklin, Dr. Saydur Rahman, Dr. Drew Davis	Comparing Novel and Traditional Sampling Methodologies to Assess the Population Status of the Rio Grande Cooter, <i>Pseudemys gorzugi</i> .
17	392	SSAR:CM-Andrew Powers*, Tim Karels	Habitat Fragmentation and its Indirect Effects on Squamate Species Richness in Southern California
18	289	SSAR:CM-McKenzie J. Wasley*, Stephen J. Mullin	Piles of <i>Osteopilus</i> : Competition at the Larval Stage Backs Native Anurans into a Corner
19	91	SSAR:ENHDB-Erica Ely*, Chris Feldman	Feeding Ecology and Morphometrics Provide Evidence of Resource Partitioning in three sympatric garter snakes (<i>Thamnophis</i>)
20	322	SSAR:ENHDB-Lindy Muse*, Kenzie Pereira, Sarah Woodley, Clifford Fontenot, Brian Crother, Demetra Kandalepas	Chytrid Growth Inhibition in Two Fully Aquatic Salamanders
21	728	SSAR:ENHDB-Audrey Kelly*, Karin Pfennig	Spadefoot toad females do not avoid mating with sterile F1 hybrid males
22	511	SSAR:ENHDB-Jessica McQuigg*, Erin Overholt, Craig Williamson, Michelle Boone	Catching Some Rays: The Effect of Varying UV Radiation Exposure on an Amphibian-Disease System

*denotes presenter

RU = Rabb Undergraduate Award

SSAR: EGS = SSAR Hutchison Student Poster Award: Evolution, Genetics, and Systematics

SSAR: CM = SSAR Victor Hutchison Student Poster Award: Conservation & Management

SSAR: ENHDB = SSAR Hutchison Student Poster Award: Ecology, Natural History, Distribution, & Behavior

Friday, 26 July, Poster Session I

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
23	555	SSAR:ENHDB-Cassandra Thompson*, Viorel Popescu	Of Pools & Predators: How predator exposure and hydro-period length drive larval development and thermal preference
24	90	SSAR:PM-Allison Litmer*, Christopher Murray	Critical Thermal Tolerances of <i>Hyla chrysoscelis</i> in Relation to Season and Proximity to Water
25	265	SSAR:PM-Whitney Walkowski*, William Gordon, Nicolas Bazan, Hamilton Farris	Endocrine Control of Retinal Sensitivity in <i>Hyla cinerea</i>
26	784	SSAR:PM-Calvin Vick*, Matthew Gifford	Physiological plasticity in an ambystomatid predator-prey relationship
27	273	SSAR:PM-Natasha Stepanova*, Aaron Bauer	Comparative Cranial Morphology in Acontias and Other African Burrowing Skinks
28	179	SH-Max Carnes-Mason*, Steven Beaupre	Timber Rattlesnake Habitat Restoration: Persistent effects of habitat management efforts in the Ozarks after 10 years.
29			
30	624	SH-Natalie Claunch*, Ignacio Moore, Heather Waye, Laura Schoenle, Samantha Oakey, Cynthia Downs, Lynn Martin, Christina Romagosa, Robert Reed	Stress in the infamous island invader, <i>Boiga irregularis</i>
31	258	SH-Ryan Hanscom*, Stephen Dinkelacker, Aaron McCall, Adam Parlin	Demographic Traits of Freshwater Turtles in a Maritime Forest Habitat
32	430	SH-Eli Beal*, Adam Rosenblatt	American Alligator (<i>Alligator mississippiensis</i>) Distribution Across an Urban Landscape
33	184	SH-Amelia Weixler*	Genetic Divergence within <i>Iguana iguana</i>
34	769	SH-Nicholas Christodoulides*, Anna Savage	Exploring immune gene expression and microbiome variation in natural populations of pathogen-tolerant and pathogen-susceptible amphibians
35	82	SH-Molly Richard*, Chris Gienger	Repeatability of Standard Metabolic Rate in Eastern Box Turtles, <i>Terrapene carolina carolina</i>
36	269	SH-Cody Godwin*, Christopher Murray, Alejandro Grajal-Puche, Matthew Grisnik, Alexander Romer, Donald Walker	Testing the Febrile Response of Snakes Inoculated with <i>Ophidiomyces ophiodiicola</i> (O.o), The Causative Agent of Snake Fungal Disease
37	453	SH-Jaime Smith*, Joseph H.K. Pechmann, Robin Overstreet	Can dusky gopher frogs acquire resistance to the <i>Perkinsea</i> clade parasite <i>Dermomycooides</i> sp.?
38	758	SH-Mary Tucker*, Stephen Mirkin, Dean Williams	Ectoparasite loads of Texas horned lizards (<i>Phrynosoma cornutum</i>) living in small Texas towns.
39	140	SH-Michael Britton*, Maureen Donnelly	Circadian rhythm of resting metabolic rate in tropical amphibians
40	261	SH-Alison Webb*, Nicholas Lilly, Juliane Wood, Susannah French	Behavioral and physiological response to an immune challenge in side blotched lizards, <i>Uta stansburiana</i>
41			
42	77	SI-Alex Maile*, Matthew Davis	Patterns of Biofluorescence in the Rabbitfishes (Siganidae)
43	87	SI-Noah Bressman*, Jeffrey Hill, Miriam Ashley-Ross	Chemoreceptive Terrestrial Orientation and Natural History of the Invasive Walking Catfish (<i>Clarias batrachus</i>)
44	94	SI-Kearstin Findley*, Henry Bart Jr., Kyle Piller	Distributional Assessment of Three Imperiled Fishes in Louisiana: An Ecological Modelling Approach
45	95	SI-Megan Ryba*, Kyle Piller	Environmental DNA as a tool to survey the fish communities of artificial reefs in Lake Pontchartrain

*denotes presenter

SSAR: ENHDB = SSAR Victor Hutchison Student Poster Award: Ecology, Natural History, Distribution, & Behavior

SSAR: PM = SSAR Hutchison Student Poster Award: Physiology & Morphology

SH = ASIH Storer Herpetology

SI = ASIH Storer Ichthyology

Friday, 26 July, Poster Session I

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
46	97	SI-Aaron Krolow*, Kyle Piller	Assessing Diversity of Fish Communities on Artificial Reefs along the Louisiana Coast through the use of Environmental DNA (eDNA)
47	754	SI-Anna Eastis*, Micheal Sandel, Zachary Culumber	Applying Genomic Methods to Investigate the Invasive Spread of the Green Swordtail (<i>Xiphophorus hellerii</i>)
48	96	SI-Sarah Ward*, Kyle Piller	Assessing molecular variation of the Largespot Livebearer (<i>Poeciliopsis pleurospilus</i>): A comparison of Pacific and Atlantic basin populations
49	119	SI-Andrew Sherman*, Kyle Piller	Resolving Taxonomic Turmoil Among Aquarium Strains and Wild-Caught Samples of Characodon (<i>Goodeidae</i>)
50	100	SI-Jerry Kattawar III*, Kyle Piller	Comparative population genetics of two Darters (<i>Etheostoma</i> : <i>Catonotus</i>) in western Kentucky
51	552	SI-Nastasia Disotell*	Are neighbors pillaging nests: detecting spatial complexity of allopaternal care in the imperiled Egg-mimic Darter (<i>Percidae</i> : <i>Etheostoma pseudovulatum</i>)
52	361	SI-Blake Mitchell*, Jennifer Main, Ginny Adams, Reid Adams	Variation in habitat use and body condition of <i>Etheostoma caeruleum</i> and <i>Etheostoma fragi</i> in the Strawberry River, Arkansas
53	786	SI-Audrey Carlos*, Amanda K. Pinion, Kevin W. Conway	Phylogeography of the Proserpine Shiner <i>Cyprinella proserpina</i> (Girard, 1856)
54	99	SI-Laurel Nave-Powers*, Kyle Piller	Testing global niche convergence of cypriniform fishes (Suborder Cyprinoidei): A geometric morphometric approach
55	774	SI-Rebecca Castro*, Amanda K. Pinion, Kevin W. Conway	The lateral line canal bearing scales of the Ghost Shiner <i>Notropis buchanani</i> (Teleostei: Cyprinidae)
56	582	SI-Amanda Pinion*, Daemin Kim, Kevin Conway	Morphological investigation of the Sand Shiner <i>Notropis stramineus</i> (Teleostei: Cyprinidae)
57	188	SI-Cory Blackwelder*, Aaron Geheber	Trophic Morphology of <i>Mayaheros urophthalmus</i> as a Function of Diet in Native and Non-native Populations
58	229	SI-Emily S. Ladin*, Larry G. Allen, Crystal D. Rogers	Developmental Ontogeny of Giant Sea Bass, <i>Stereolepis gigas</i>
59	310	SI-Kole Kubicek*, Ralf Britz, Kevin Conway	Ontogeny of the Pectoral-fin Radials in Siluroid and Loricarioid Catfishes
60	344	SI-Katherine Bemis*, James Tyler, Dahiana Arcilla	Life history, distribution, and molecular phylogenetics of the Upward-Mouth Spikefish <i>Atrophacanthus japonicus</i> (Teleostei: Tetraodontiformes: Triacanthodidae)
61	363	SI-Jacob Brumley*, Philip Lienesch	Use of Dead Mussels by Madtom Catfishes in the Green River
62	389	SI-Callie Ingram*	Estimating Elasmobranch Presence of Calabash Caye, Belize, Using Underwater Video Census
63	474	SI-Pamela Hart*, Matthew Niemiller, Jonathan Armbruster, Prosanta Chakrabarty	Population Genomics of a Cavefish Species Complex: Implications for Conservation and Aquifer Connectivity
64	561	SI-Daniella Biffi*	Developing a Sustainable Seafood Initiative: Testing Message Framing on Intentions to Avoid Shark Meat in Peru
65	608	SI-Bridget Vincent*, Adam Searles, Alexa Trujillo, Richard Paperno, Douglas Adams, Geoffrey Cook, Eric Hoffman	Determining the Relationship of <i>Micropogonias</i> Species in the Indian River Lagoon
66	643	SI-Jennifer Gardner*, James Orr, Luke Tornabene	Two new species of snailfish (<i>Liparidae</i>) from the Aleutian Islands, Alaska, and the status of <i>Temnocora</i>
67	661	SI-Julia Wallen*, Shannon O'Leary, David Portnoy	Population Structure of <i>Bagre marinus</i> in the Gulf of Mexico
68	662	SI-Aline Trejo*, Shannon O'Leary, Charles Cotton, Steve Murawski, David Portnoy	Populations structure of King Snake Eel (<i>Ophichthus rex</i>) throughout the Gulf of Mexico.
69	800	SI-Dominique Dawson*, Steve Rider, Michael Sandel	Investigating Ancestry and Genomic Diversity of Walleye (<i>Sander vitreus</i>) in the Mobile River Basin
70	501	SI-Rachel Manning*, Luke Tornabene, Carole Baldwin	A New Genus of Caribbean Deep-reef Gobies (Teleostei: Gobiidae) of the <i>Priolepis</i> Lineage with Descriptions of Six New Species
71	371	C-Joshua Moyer*, Stephanie Shannon, Duncan Irschick	Feeding Kinematics and Behavior of the Sand Tiger Shark, <i>Carcharias taurus</i>
72	88	C-Rachel Skubel*, Jodie Rummer, Patricia Albano, Neil Hammerschlag	Temperature and oxygen impact on sharks' hematological and stress response indicators at capture

*denotes presenter

SI = ASIH Storer Ichthyology

C = AES Carrier

Friday, 26 July, Poster Session I

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
73	560	C-Amanda Macek*, Bryan Franks, Steven Kessel	Effects of Three Circle Hooks on Coastal Sharks Using Recreational and Commercial Fishery Techniques
74	615	C-Casey Zender*, James Gelsleichter, Nick Whitney	Evaluation of alternative plasma biomarkers as indicators of post-release mortality in blacktip sharks (<i>Carcharhinus limbatus</i>)
75	647	C-Ken Ogborn*, Mauricio Hoyos, Elena Tamburin, Felipe Galvan, Michelle Wcisel, Sue Houghton, Hayes Baxley, Nicolette Murphy, Toby S. Daly-Engel	Genetic relatedness and connectivity in great white sharks (<i>Carcharodon carcharias</i>) from the Pacific Coast of Baja, Mexico
76	338	C-Matthew Larsen*, Daniel Abel, Derek Crane, Scott Parker, Bryan Keller, Dean Grubbs	Negative Allometric Growth in the Digitiform Rectal Gland Morphology: Mitigating NaCl Influx in Small Sharks.
77	129	C-Mariana Martins*, Patricia Costa, Otto Gadig, Adalto Bianchini	Contamination by Non-essential Metals in Early Life Stages of Elasmobranchs from Southeastern Brazil
78	201	C-Mitchell Rider*, Neil Hammerschlag	Determining Spatial Range and Philopatry of Acoustically Tagged South Florida Bull Sharks (<i>Carcharhinus leucas</i>) Using Data from Cooperative Telemetry Networks
79	339	Bryanna Wargat*, James Gelsleichter	Characterization of a Scalloped Hammerhead (<i>Sphyrna lewini</i>) Nursery Habitat in Portions of the Atlantic Intercoastal Waterway
80	382	Gretchen Arndt*, Beth Bowers, Stephen Kajiura	Environmental preferences of a male Blacktip Shark during seasonal migration
81	490	Shannon Barry*, Toby Daly-Engel	Identifying ecological drivers of nursery habitat use for the bull shark (<i>Carcharhinus leucas</i>) in the Indian River Lagoon, Florida
82	765	Ashley Dawdy*, Dean Grubbs, Cheston Peterson, Bryan Keller	The Effect of Tidal and Diel Cycles on Spatial Use Patterns of Bull Sharks (<i>Carcharhinus leucas</i>) and Bonnetheads (<i>Sphyrna tiburo</i>)
83	789	Amanda Schaaf*, Jim Gelsleichter	Exploring potential inshore habitat use by euryhaline elasmobranchs in a southeastern Atlantic river system utilizing fishery surveys and environmental DNA
84	525	Madeline Marens*, Dewayne Fox, Bradley Wetherbee, Amanda Southwood-Williard, Frederick Scharf	Movement and Habitat Use of Female Sand Tiger Sharks (<i>Carcharias taurus</i>) in North Carolina Coastal Waters
85	700	Katrin Villinger*, Bryan Franks	Resident and Migratory Sharks Utilizing Jacksonville's Coastal Waters: Examining Their Role in NE Florida's Ecosystems
86			
87	266	Jill Brooks*, Kaitlyn Isaacson, Hannah Medd, Gretchen Arndt, Deborah Azevedo, Dan Tabatabai, Steven Cooke, Steven Kessel	Depth Use of Great Hammerhead Sharks (<i>Sphyrna mokarran</i>) Released from a Shore-based Recreational Angling Fishery in Florida, USA.
88	459	John Swenson*, Dovi Kacev, Charlotte Boyd, Michael Kinney, Kevin Feldheim, Lisa Komoroske	Next-Generation Mark-Recapture: Evaluating Close-Kin Mark-Recapture as a Tool for Abundance Estimation in Elasmobranchs
89	241	Brooke Welch*, Kim Bassos-Hull, Krystan Wilkinson	Once a Spot always a Spot? Investigating Natural Marking Stability in Recaptured Whitespotted Eagle Rays off West Coast of Florida
90	279	Amber Reichert*, Joseph Bizzarro, David Ebert	Habitat characteristics of catshark oviposition sites and potential nursery grounds off central California
91	633	Paige Koehler*, Marcus Drymon, Emily Seubert, Simon Gulak, Brent Winner, Toby S. Daly-Engel	Not a Load of Bull: Polyandry and Relatedness in Bull Sharks (<i>Carcharhinus leucas</i>) in the Northern Gulf of Mexico
92	21	Halee Larson*, James Gelsleichter	Reproductive Endocrinology of the Atlantic sharpnose shark, <i>Rhizoprionodon terraenovae</i> , off the Coast of Northern Florida
93	749	Kristin Palmrose*, Lindsay French, George Burgess, Jim Gelsleichter	Preliminary observations on reproduction of the spinner shark, <i>Carcharhinus brevipinna</i>
94	665	Morgan Arrington*, Thomas Helsler, Irina Benson, Beth Matta, Christopher Gburski, Timothy Essington	Rapid age estimation of longnose skate (<i>Raja rhina</i>) vertebrae using near-infrared spectroscopy
95	467	Donald Faughnan*, Chip Cotton	Age and Growth of Great Lanternshark (<i>Etmopterus princeps</i>)
96	81	Theresa Santos*, João Veloso, Bruno Macena, Fabio Hazin	Foraging aspects of Cookiecutter Shark (<i>Isistius</i> sp.) in an equatorial Mid-Atlantic archipelago
97	138	Phillip Sternes*, Kenshu Shimada	Diversity and evolution of body forms in dogfish sharks (Elasmobranchii: Squaliformes)
98	348	Todd D. Cook*, Gerard R. Case, Bradley Van Ess, Morgan Shields, Bonney Weathers	A Paleocological and Paleobiogeographical Examination of Late Eocene Selachians from the Southern Region of the United States Atlantic coastal plain
99	334	Krystan A. Wilkinson*, Randall S. Wells, William E. Pine, III, Rena R. Borkhataria, Robert E. Hueter	When the shark bites: Evaluating predator-prey interactions between sharks and resident bottlenose dolphins (<i>Tursiops truncatus</i>) in Sarasota Bay, FL

*denotes presenter

C = AES Carrier

Friday, 26 July, Poster Session I

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
100	759	Caitlin Shea-Vantine*, Stephen M. Kajjira, Marianne E. Porter	Puncture performance of the barbs from the Atlantic stingray, <i>Hypanus sabinus</i>
101	713	Lisa Hoopes*, Alisa Newton, Christopher Fischer	Fatty Acid Profiles of White Sharks (<i>Carcharodon carcharias</i>) in the Western North Atlantic
102	375	Maria Sabando*, Yannis Papastamatiou, Guillaume Rieucan, Darcy Bradley, Jennifer Caselle	Dominance and Competitive Interaction Outcomes are Habitat-Specific In Ectothermic Marine Predators at a Pacific Atoll
103	460	Brianna Cahill*, Krystan A. Wilkinson, John J. Morris, Dean A. Dougherty, Greg L. Byrd, Robert E. Hueter	Historical Changes in Patterns of Shark Presence along Florida's Central Gulf Coast
104	200	Triana Arguedas Alvarez*	An Analysis of Catch Trends of <i>Carcharhinus leucas</i> and <i>Carcharhinus acronotus</i> in the Southern Gulf of Mexico: A Preliminary Review
105	246	Ashlie McIvor*, Collin Williams, Michael Berumen	<i>Taeniura lymma</i> Population Structure in the Red Sea
106	597	Robert Bretzing*, Elizabeth Hunt, David Portnoy	Comparative Analysis of Elasmobranch Field Identification Using CO1
107	207	Shigehiro Kuraku*, Yuichiro Hara, Kazuaki Yamaguchi, Mitsutaka Kadota, Yoshinobu Uno, Osamu Nishimura, Kiyonori Nishida, Keiichi Sato, Susumu Hyodo	Molecular Evolution of Elasmobranchs through a Genomic Lens
108	534	Krista Laforest*, Emily Peele, Kara Yopak	Older and Wiser? Ontogenetic Shifts in the Brains of the Atlantic sharpnose shark, <i>Rhizoprionodon terraenovae</i> .
109	527	Alisa Newton*, Michael Hyatt, Malatos Joseph, Steven Ksepka, Stephan Bullard	Scuticociliate (<i>Miamiensis</i> sp.) Associated Meningoencephalitis in Wild Northwest Atlantic Smooth Dogfish (<i>Mustelus canis</i>)
110	356	Jessica Wingar*, Daniel Abel, George Boneillo, Paul Yancey	Osmoregulation and Salinity Preference in Juvenile Sandbar Sharks (<i>Carcharhinus plumbeus</i>) in Winyah Bay, SC
111	630	Aimee Little*, Jim Gelsleichter, Christine Bedore	Androgen Receptors in the Olfactory Epithelium of the Atlantic Stingray, <i>Hypanus sabina</i>
112	605	Emily Williams*, Jim Gelsleichter	Total Mercury Concentrations in Egg Yolk from Sharks and Rays
113	390	Sarah Sullivan*, Jeffrey Hudgins, Jim Gelsleichter	An Evaluation of the use of Red Blood Cells as a Surrogate for Measuring Mercury Contamination in Sharks and Rays
114	437	Michaela Livingston*, Jonathan Davis, Jessica Dutton	Mercury Accumulation in Young-of-the-Year and Juvenile Bull Sharks (<i>Carcharhinus leucas</i>)
115	585	Graceann Sparkman*, Oliver Shipley, Edward J. Brooks, Lucy Howey, Jim Gelsleichter	Mercury Concentrations in the Oceanic Whitetip Shark, <i>Carcharhinus longimanus</i> , off of Cat Island, Bahamas.
116	257	Jessica Hobbs*, Jennifer Schmidt, Jennifer McKinney, Eric Hoffmayer, Dení Ramirez-Macias, Jessica Dutton	Mercury Concentrations in Whale Sharks (<i>Rhincodon typus</i>) from the Gulf of Mexico and Gulf of California
117	739	Jayne Gardiner*, Alexa Baldino, Lukas Heath, Danielle Zeris, Joel Beaver, Tonya Wiley	The effects of red tide (<i>Karenia brevis</i>) on elasmobranchs in a southwest Florida estuary
118	768	Jim Gelsleichter*, Cailla Strobel, Sarah Noonan	Preliminary observations on the uptake of microplastics in the Atlantic sharpnose shark (<i>Rhizoprionodon terraenovae</i>) and the Atlantic stingray (<i>Hypanus sabina</i>).
119	128	Peter Klimley*, James Ketchum, Mauricio Hoyos-Padilla, Frida Lara-Lizardi	The Creation of the Revillagigedo Islands National Park
120	237	Lauren Meyer*, Madeline Green, Lachlan Fetterplace	Otlet – an online platform for sourcing biological samples
121	116	Dustin Siegel*, Cody Long	All -gnathus salamanders lack nasolacrimal ducts.
122	443	Matthew Holding*, Vivian Trevine, Oleksandr Zinenko, Jason Strickland, Rhett Rautsaw, Andrew Mason, Erich Hofmann, Michael Hogan, Christopher Parkinson, Felipe Grazziotin, Adam Summers, Sharlene Santana, Mark Davis, Darin Rokyta	Fang length evolution in vipers is predicted by furred and feathered diets
123	464	Megen Kepas*, Ted Turner, Al Savitzky	Adrenal histology among snakes with differing levels of toad consumption
124	316	Domenic D'Amore*, Jason Testin	Tooth morphology and biomechanics in Crocodylia: linking beam-theory and functional ecology.
125	302	Helen Plylar*, Alan Savitzky	Assessing the Relationship Between Eye and Pit Organ Size in Pythonid Snakes
126			

*denotes presenter

Friday, 26 July, Poster Session I

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
127	658	Brittany Cornell* , Chelsea Thorn, Bethany Walker, James Willet, Aaron M. Bauer, Juan Diego Daza	Variation on the Atlas- Axis Complex in Gekkota
128	766	Heather Engler* , Braulio Assis, Dustin Owen, Tracy Langkilde	Are Post-anal Scales a Secondary Sex Characteristic in Eastern Fence Lizards?
129	233	Kentaro Okuyama* , Takeshi Sasaki	Morphological Characteristics of the Vomeronasal Organ and its Associated Structures in the Japanese Grass Lizard, <i>Takydromus tachydromoides</i>
130	388	Matthew Kwiatkowski* , Leah Perez, Jennifer Gumm	Opsin Diversity in Anurans
131	397	Bryan Juarez* , Daniel Moen, Dean Adams	Does Morphology Predict Interspecific and Intraspecific Jumping Performance in Frogs?
132	797	Jennifer Y. Lamb* , Matthew P. Davis	Shining a New Light on Salamanders: Survey of Biofluorescence Across Caudata.
133	620	Christine Wisell* , Shana Geffaney, Charles Hanifin	Cause or Consequence: The Evolution of TTX-resistance in Cardiac Tissue of <i>Taricha newts</i>
134	193	Keira Lopez*	Characterization of Serine Proteases from Prairie Rattlesnakes (<i>Crotalus viridis viridis</i>) venom: potential medical applications
135	127	Lindsey Martin-Krikorian* , Tristan Bulice, Matthew Gifford	Physiological tradeoffs in reproductive collared lizards
136	439	Laurie Mauger* , Sierra Ball, Carrie Jo Bucklin	A Population Survey and Biodiversity Assessment of Reptiles in Southern Utah

*denotes presenter

Oral Presentations - Saturday, 27 July - Morning

ROOM		<i>Ballroom 1 - Cliff Lodge</i>		<i>Ballroom 2 - Cliff Lodge</i>
SESSION/ SYMPOSIUM		ASIH/HL/SSAR Symposium: Professional Women in Herpetology: Lessons and Insights		
MODERATOR		Leslie Rissler		
8:00 AM				
8:15 AM				
8:30 AM	480	Maureen Kearney* Structural Reform and Systemic Culture Change for STEMM		
8:45 AM	480	Maureen Kearney* Structural Reform and Systemic Culture Change for STEMM		
9:00 AM	480	Maureen Kearney* Structural Reform and Systemic Culture Change for STEMM		
9:15 AM	480	Maureen Kearney* Structural Reform and Systemic Culture Change for STEMM		
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		ASIH/HL/SSAR Symposium: Professional Women in Herpetology: Lessons and Insights		Amphibian Conservation
MODERATOR		Leslie Rissler		Justin Nowakowski
10:00 AM	1	Marty Crump* Look How Far We've Come!	35	Richard Lehtinen*, Christopher Gumper, Linnea Johnson, Mackenzie Kellar, Nathan Weltman A Comparison of Diversity and Abundance of Glass Frogs (Centrolenidae) in Primary and Secondary Rainforests in Costa Rica
10:15 AM	809	Wendy Palen* Enough already; changing the power dynamic that holds back our scientific societies	802	Justin Nowakowski*, Luke Frishkoff, Michelle Thompson, Tatiana Smith, Brian Todd Phylogenetic homogenization of amphibian assemblages in human-altered habitats across the globe
10:30 AM	106	Maureen Donnelly* HERpers as Society Leaders: How Far Have We Come?	590	John Romansic*, Kevan Moffett, Nicolette Nelson, Jonah Piovio-Scott Beaver Dams are Associated with Higher Amphibian Diversity in the Southern Washington Cascades
10:45 AM	513	Priya Nanjappa*, Kirsten Hecht Underrepresented Animals, Underrepresented People: how the needs of amphibians and reptiles shed light on ways to empower people	545	Nathaniel Akers*, Brian Arbogast Assessing Geographic Patterns of Genetic Variation and Gene Flow in North Carolina Populations of the Gopher Frog (<i>Rana capito</i>)
11:00 AM	712	Rebecca Tarvin* What ten years in the tropics has taught me about frogs and society	528	Michelle E. Thompson*, Rudolf von May, Germán Chávez, Giuseppe Gagliardi-Urrutia, Guillermo Knell, Jonh Jairo Mueses-Cisneros, Lily O. Rodriguez, Pablo J. Venegas, Mario H. Yáñez-Muñoz Anuran Species Richness and Composition in the Amazonian Lowlands of the Putumayo Watershed: Implications for Conservation
11:15 AM	263	Karen Lips* Coordinating Global Efforts in Research, Education, and Policy to Address Amphibian Population Declines	423	Julia Earl* Evaluating Published Amphibian Population Models for Common Assumptions
11:30 AM	470	Erica Bree Rosenblum* A tale of two study systems	280	Jonathan Rose*, Brian Halstead, Robert Fisher Integrating Multiple Data Sources and Sampling Bias to Predict the Current Distribution of Western Spadefoot, <i>Spea hammondi</i> , in Northern California
11:45 AM	160	Leslie Rissler*, Katherine Hale, Nicholas Caruso, Nina Joffe Why Aren't More Women Submitting Grants?	191	Sinlan Poo* Conservation through Cryopreservation: Behavioral and Morphological Fitness of Captive-Bred Tadpoles
12:00 PM		Professional Women in Herpetology: Lessons and Insights Luncheon (preregistration required)		LUNCH

* denotes presenter

Oral Presentations - Saturday, 27 July - Morning

ROOM		Ballroom 3 - Cliff Lodge		Primrose A&B - Cliff Lodge
SESSION/ SYMPOSIUM		Herpetology Conservation and Disease		Reptile Ecology
MODERATOR		Robert Fisher		Peter Lindeman
8:00 AM	393	Robert Fisher*, Staci Amburgey, Carlton Rochester, Cheryl Brehme, Stacie Hathaway, Katy Delaney, Seth Riley, JP Montagne, Emily Perkins, David Miller Patch Dynamics in Southern California Small Vertebrates	329	
8:15 AM	111	Jessa Watters*, Tamaki Yuri, Lara Souza, Cameron Siler Environmental DNA: an Innovative Technique to Monitor Herpetological Species of Conservation Concern in Oklahoma	594	Emily Grabowsky*, Stephen Mackessy Venom composition in a high elevation lizard specialist, <i>Crotalus pricei</i> (Twin-spotted Rattlesnake)
8:30 AM	93	Susan Walls* Need for Climate Adaptation Strategies for Imperiled Amphibians and Reptiles in Coastal Regions	110	Deb Pandey*, Pranish Bhattarai, Ram Piya Food Spectrum of Common Krait (<i>Bungarus caeruleus</i>): An Implication for Snakebite Prevention and Snake Conservation
8:45 AM	747	Robert Lovich*, Matthew Allender, Michael Ravesi, Ellen Haynes, Emilie Ospina, Christopher Petersen, Christopher Phillips Ophiidiomyces Detection in Free-ranging Snakes on Department of Defense Installations in the United States and Puerto Rico	724	Anna Kase*, Jacob Kerby Turtle Distribution and Abundance in a Modified River Habitat in South Dakota
9:00 AM	182	Matthew Grisnik*, Donald Walker, Jacob Leys, Alejandro Grajal-Puche, Christopher Murray, Matthew Allender The Snake Fungal Disease Pathogen is Predictive of the Skin Microbiome Across Spatial Scales	604	Brandon Bowers*, Danielle Walkup, Toby Hibbitts, Paul Crump, Wade Ryberg Movements, Home Range, Activity Patterns, and Habitat Selection of the Western Chicken Turtle (<i>Deirochelys reticularia miraria</i>) in Texas
9:15 AM	164	John Peterson*, Caleb Cizauskas, Sarah Bauer, Emilie Ospina, Matthew Allender Thermal ecology of <i>Ophiidiomyces ophioidicola</i> , the cause of snake fungal disease, in free-ranging snakes in prairie and riparian habitat.	83	Peter V. Lindeman* Growth and Body Condition of the Common Map Turtle (<i>Graptemys geographica</i>): A 19-Year Study of Inter-Annual and Seasonal Variation
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		Herpetology Lightning Talks		Herpetology Ecology & Behavior
MODERATOR		David Green		Diana Hews
10:00 AM		518 Neldner 503 Mitchell 554 Koo 494 Bonewell 584 Bevier 60 Schalk 640 Nielsen 303 Yackel Adams 705 Myers 284 Jreidini 222 Jobe 709 Kuchta 206 Atkins 788 Kwiatkowski 398 Page	76	Troy Baird*, Joshua York Female Collared Lizards Acquire Fitness Benefits by Producing Offspring with Multiple Males
10:15 AM			8	Ann-Elizabeth Nash*, Stephen Mackessy Social Structure of the Spiny-Tailed Iguana, <i>Ctenosaura similis</i>
10:30 AM			617	Matthew Heinicke*, Melissa Bowlin, Juan Daza, Tony Gamble, Cameron Siler Evaluating Aerial Descent in the Flap-legged Geckos (Genus <i>Luperosaurus</i>) of the Philippines
10:45 AM			548	Diana Hews*, Duje Lisičić, Marko Glogoški, Sofia Blažević, Dubravka Hranilović Do Island and Mainland Populations of <i>Podarcis sicula</i> Mirror Typical Within-Population Personality Differences?
11:00 AM			46	Peter Zani* Overwintering Site Use and Seasonal Activity Extremes by Side-Blotched Lizards as Quantified by Camera Traps Reveals Latent Lives of Lizards
11:15 AM			726	Meghan Kelley*, Che Ka, Mary Mendonca Multimodel Signal Use in Gopher Tortoises
11:30 AM			801	John Bosak*, Diego Huerta, Jonathan Gould, Alexis Cazares, Matt Goode The Effect of Moon Illumination and Other Environmental Variables on Nightly Snake Abundance
11:45 AM			290	Mason Murphy*, Michelle Boone Over the Field or Through the Woods? An Assessment of Movement and Orientation Behavior in Two Anuran Species
12:00 PM			LUNCH	

* denotes presenter

Lightning Talks- Saturday, 27 July - Morning

10:00 AM - 12:00 PM, Ballroom 3 - The Cliff Lodge

518	<p>Heather Neldner*, Michael Westphal, Ignacio Moore, Kathleen Ivey, Emily Taylor</p> <p>Blunt-Nosed Bling: Are Radio Collars a Stressor to Blunt-nosed Leopard Lizards (<i>Gambelia sila</i>)?</p>
503	<p>Corey Mitchell*, Todd Esque, Amy Vandergast, Jill Heaton, Kirsten Dutcher, Steve Hromada, Kevin Shoemaker, Kenneth Nussear</p> <p>Integrating Telemetry and Mark-Recapture Methods to Estimate Density for the Mojave Desert Tortoise</p>
554	<p>Michelle Koo*, Carol Spencer, David Blackburn, David Cannatella, Alessandro Catenazzi, Ann Chang, Joyce Gross, Rebecca Tarvin, Vance Vredenburg, David Wake</p> <p>New Updates on AmphibiaWeb: All Amphibians, All the Time</p>
494	<p>Lea' R. Bonewell*, Amy A. Yackel Adams, Bryan G. Falk, Adam J. Knox, Emma B. Hanslowe, Mark A. Hayes, Thomas R. Stanley, Robert N. Reed</p> <p>An introduced population of southern watersnakes, <i>Nerodia fasciata</i>, in the Lower Colorado River, Arizona</p>
584	<p>Catherine Bevier*, Vaughn Holmes, Michael Kinnison, Phillip deMaynadier</p> <p>Assessing Distribution and Abundance of the Introduced Mudpuppy (<i>Necturus maculosus</i>) in Maine Using Trapping and eDNA Efforts</p>
60	<p>Christopher Schalk*, Michael Cove</p> <p>Squamates as Prey: Predator Diversity Patterns and Predator-prey Size Relationships</p>
640	<p>Stuart V. Nielsen*, Mark-Oliver Rödel, Michael Barej, David C. Blackburn</p> <p>It Isn't Easy Being Slippery...or Giant! Systematics and Biogeography of African Slippery Frogs (<i>Conraua</i>)</p>
303	<p>Amy Yackel Adams*, Björn Lardner, Julie Savidge, Robert Reed</p> <p>Maximizing Animal Detection Rate by Optimizing the Walking Pace: A Visual Encounter Survey Experiment Targeting an Invasive Snake</p>
705	<p>Edward Myers*, Frank Burbrink</p> <p>The Importance of Biogeographic Barriers, Refugia, and Climatic Gradients in Driving Speciation in Corn Snakes (<i>Pantherophis guttatus</i> complex)</p>
284	<p>Nathalie Jreidini*</p> <p>Population dynamics of an endangered amphibian across a changing landscape</p>
222	<p>Kasey L. Jobe*, Carmen G. Montaña, Christopher M. Schalk</p> <p>Caudates as prey: Predator diversity and size-relationship patterns.</p>
709	<p>Shawn Kuchta*</p> <p>Paraphyly and species delimitation in the <i>Plethodon wehrlei</i> species complex</p>
206	<p>Zak S. Atkins*, Nick Clemann, Amy M. Edwards, Michael R. Kearney, Kylie A. Robert</p> <p>Novel Techniques for Understanding Thermal Behaviour and Improving Conservation of a Threatened Australian Alpine Lizard.</p>
788	<p>Matthew Kwiatkowski*</p> <p>Association Between Color Polymorphism and Habitat in Ornate Tree Lizards</p>
398	<p>Robert Page*, Claire Conarroe, Diana Quintanilla, Joshua Solis, Andriea Palomo, David Marsh</p> <p>Genetic Variation in <i>Plethodon hubrichti</i> and <i>Plethodon cinereus</i> from In and Around a Contact Zone</p>

* denotes presenter

Oral Presentations - Saturday, 27 July - Morning

ROOM		Cottonwood A-D - Snowbird Center	Rendezvous A&B - Snowbird Center
SESSION/ SYMPOSIUM		Ichthyology Conservation	AES Symposium: The Sensory Biology of Elasmobranch Fishes
MODERATOR		Joel Corush	Chris Lowe
8:00 AM	751	Jennifer Gumm*, Mitchell Stanton, Olin Feuerbacher Captive Breeding of the Devils Hole Pupfish (<i>Cyprinodon diabolis</i>)	123 Peter Klimley* In Memoriam, Donald Nelson, Ph.D., Shark Researcher and Teacher
8:15 AM	716	Joel Corush*, Trevor Krabbenhoft, Thomas Dowling Development of SNPs for molecular monitoring of the endangered razorback sucker (<i>Xyrauchen texanus</i>)	123 Peter Klimley* In Memoriam, Donald Nelson, Ph.D., Shark Researcher and Teacher
8:30 AM	583	Abby Wicks*, Trevor Krabbenhoft, Thomas Dowling Exploring Variable Growth Rates in Captive Reared Razorback Suckers (<i>Xyrauchen texanus</i>) with Differential Gene Expression Analysis	239 Christopher Lowe* We have come a long way in 20 years - Influence of rapidly evolving technology in studying elasmobranch behavior and ecology
8:45 AM	349	Dovi Kacev*, Luke Thompson, Kelly Goodwin, Anne Freire de Carvalho, Andrew Thompson Metabarcoding to Increase Ichthyoplankton Sampling Capacity	239 Christopher Lowe* We have come a long way in 20 years - Influence of rapidly evolving technology in studying elasmobranch behavior and ecology
9:00 AM	379	David AJS O'Connor*, Avery Scherer, Kristine N Moody, Peter B McIntyre, Michael J Blum, J Derek Hogan Effects of aquatic invasive species removal on populations of a native Hawaiian freshwater goby <i>Awaous stamineus</i> (Gobiidae: Oxudercidae).	473 Emily Meese*, Christopher Lowe Movement strategies and fine-scale activity patterns of the California horn shark, <i>Heterodontus francisci</i>
9:15 AM	498	Sarah Hylton*, Woon Yuen Koh, Gail Wippelhauser, James Sulikowski Sex and Foraging Ecology of Endangered Shortnose Sturgeon (<i>Acipenser brevirostrum</i>) in the Merrimack River, MA	762 Joy Young* The role of collaborative networks in advancing the science of movement
9:30 AM	BREAK		
SESSION/ SYMPOSIUM		General Ichthyology I	AES Symposium: The Sensory Biology of Elasmobranch Fishes
MODERATOR		Luiz Rocha	Pete Klimley
10:00 AM	541	Justin Mann*, Henry Bart The Neil H Douglas Collection of Fishes: an unfortunate example of an all too common trend.	629 Connor White*, Chris Clark, Chris Lowe Shark Tracking Robots: Development of Autonomous Vehicles for Tracking Animals
10:15 AM	669	William A. Pérez-Doria*, Charles W. Olaya-Nieto, Angel L. Martínez-González, Fredys F. Segura-Guevara Multiannual length–weight relationship of <i>Mojarra amarilla Caquetaia kraussii</i> in the Ciénaga de Ayapel, Colombia	409 Christopher Clark* Modeling and Tracking Fish Aggregations
10:30 AM	812	Michael Minicozzi*, Alice Gibb Changes in body size affect the biomechanics and behavior of teleost fishes	413 Yuuki Watanabe* Using accelerometers to understand the behavioral ecology and energetics of elasmobranch
10:45 AM	378	Kelsie Ebeling-Whited* Mating success of the six-bar wrasse (<i>Thalassoma hardwicke</i> , Labridae) utilizing two mating strategies	421 Sarah Hoffmann* Past, Present, and Future of Sensor Tags: Applications for Elasmobranch Research and Management
11:00 AM	684	Mikayla Struble*, Cassandra Donatelli, Emily Standen, Alice Gibb, Jaida Elcock Burial Behavior in Elongate Fishes of the Salish Sea	54 Yannis Papastamatiou* A picture is worth a thousand words: shark-borne camera tags and their use to study ecology, physiology and behavior
11:15 AM	136	SeoHa Jang*, JinKoo Kim Molecular and Morphometric Variations in the sea raven, <i>Hemitripteris villosus</i> from Korea: Implication on Biogeographic Barrier	305 Braden Ruddy*, Stephen Kajiura, Marianne Porter Aerial Drone Utilization in the Study of Elasmobranch Fishes
11:30 AM	353	Chris L. Chabot*, Matthew P. Salomon, Corinne N. Paterson Holder, Larry G. Allen Phylogeography of the spotted sand bass, <i>Paralabrax maculatofasciatus</i> (Serranidae), within the northeastern Pacific	558 Kara Yopak* No Scalpel Required: Advancing our Understanding of the Brain in Elasmobranchs using 3D bioimaging
11:45 AM			710 Jayne Gardiner* Multisensory Integration in Elasmobranchs: Recent Advances and Future Directions
12:00 PM	LUNCH		

* denotes presenter

Oral Presentations - Saturday, 27 July - Morning

ROOM		Alpine A,B,C - Snowbird Center		
SESSION/ SYMPOSIUM		Ichthyology Life History/NIA		
MODERATOR		Hank Bart		
8:00 AM	476	Graham Wagner*, William Roumillat, Wally Bublely, Virginia Shervette Age, Growth, and Reproductive Biology of a Data-Deficient Parrotfish Species (<i>Sparisoma viride</i>) in the US Caribbean		
8:15 AM	613	Carly Lynn Strange*, Nicholas Partington, Melanie Herrera, Madison R. Martin, Antony S. Harold Seasonal Variation in Patterns of Abundance of Early Life History Stages of Fishes Associated with the <i>Gracilaria vermiculophylla</i>		
8:30 AM	448	Derek Hogan*, Heidi Heim-Ballew, Kristine Moody, Peter McIntyre, Michael Blum Reproductive isolation and genetic differentiation between migrant and non-migrant forms of the Hawaiian River Goby <i>Awaous stamineus</i> (Gobioidae: Oxudercidae)		
8:45 AM	336	Victor Giovannetti*, Mônica Toledo-Piza Morphological Variation of Characiform Dentition and its Phylogenetic Significance		
9:00 AM	436	Kathryn Innamorato*, Mariangeles Arce H. Anatomical Variation of Mandibular and Hyoid Musculature of Chiapas Catfishes (Lacantunidae, Siluriformes).		
9:15 AM	778	Donald Stewart*, L. Cynthia Watson, Kean Clifford, Leandro Castello, Deirdre Jafferally, Samantha James, Graham Watkins, Zacharias Norman State of Recovery and Environmental Influences on <i>Arapaima</i> Populations in Guyana		
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		Ichthyology Ecology		
MODERATOR		Mark Peterson		
10:00 AM	704	Joshua Egan*, Andrew Simons Ecological and evolutionary processes in the origins of the latitudinal diversity gradient in clupeiform fishes (herrings, anchovies, and relatives)		
10:15 AM	770	Thomas Turner*, Tyler Pilger, Alexander Cameron, Keith Gido, James Whitney, David Propst Genetic and demographic data predict fish meta-community response to catastrophic wildfire		
10:30 AM	102	Larry G. Allen*, Emily Ladin* The Song of <i>Stereolepis</i>		
10:45 AM	72	Mark Peterson*, Michael Andres Tale of Two Tributaries: Examples of Urbanization Impacts on Fishes and Benthic Resources.		
11:00 AM	660	Jesús Vargas-González*, Ángel L. Martínez-González, Fredys F. Segura-Guevara, Glenys Tordecilla-Petro, Charles W. Olaya-Nieto Length–Weight relationship of <i>Liso Rhamdia quelen</i> in the Sinú River, Colombia		
11:15 AM	627	Glenys Tordecilla-Petro*, Yeinny J. Solano-Rosario, William A. Pérez-Doria, Ángel L. Martínez-González, Fredys F. Segura-Guevara, Charles W. Olaya-Nieto Trophic ecology of Bagre rayado <i>Pseudoplatystoma magdaleniatum</i> in the San Jorge River, Colombia		
11:30 AM	601	Fredys F. Segura-Guevara*, Sonia E. Sánchez-Banda, Charles W. Olaya-Nieto Trophic ecology of <i>Blanquillo Sorubim cuspicaudus</i> in the High Sinu River seven years after filling of Urra Dam, Colombia		
11:45 AM	512	Kirsten Work* The Integrity of Coldwater Spring Resources for Fish and Invertebrates		
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Saturday, 27 July - Afternoon

ROOM		Ballroom 1 - Cliff Lodge		Ballroom 2 - Cliff Lodge
SESSION/ SYMPOSIUM		ASIH/HL/SSAR Symposium: Professional Women in Herpetology: Lessons and Insights		Reptile Conservation
MODERATOR		Leslie Rissler		Brian Halstead
1:30 PM	108	Anne Maglia* Career Mapping: Charting the Course for Traditional and Alternative Science Careers	618	Alexus Cazares*, Matt Goode, Diego Huerta, John Bosak, Jonathan Gould Effects of Urbanization on Gila Monsters in Arizona
1:45 PM	80	Nicole Valenzuela* The Fascinating Biology and Challenges of Studying Turtles	472	Dean Williams* Genetic Considerations for Reintroducing Captive-bred Texas Horned Lizards (<i>Phrynosoma cornutum</i>)
2:00 PM	202	Rayna Bell* Behind the scenes of the Smithsonian's National Museum of Natural History: collections, research, and inspiring the next generation	810	Matt Goode* Ecology and Conservation of King Cobras in India and Southeast Asia
2:15 PM	799	Nicole Angeli* My "alternative" early career research: recovery of species when threats still exist	678	Terence Farrell*, Joseph Agugliaro, Erin Graham, Robert Ossiboff, Heather Walden, James Wellehan, Craig Lind Rapid Geographic Spread of Invasive Pentastome Parasites in Rattlesnakes (<i>Sistrurus miliaris</i>) Indicates an Emerging Conservation Threat to North American Snakes
2:30 PM	78	Martha Munoz* Stories from the field: On the role of behavior in evolution and being a woman in herpetology.	642	Diego Huerta*, Alexis Cazares, John Bosak, Jonathan Gould, Matt Goode Ecology of Three Sonoran Desert Rattlesnake Species at an Urbanizing Site
2:45 PM	287	Alison Davis Rabosky* Building a Tangled Bank: Mimics, Models, and Michigan	411	Goetz Scott*, Eric Hileman, Melia Nafus, Amy Yackel Adams, Robert Reed, Shane Siers Brown Treesnake survivorship in relation to aerial applications of toxicant-laced baits
3:00 PM			385	Brian Halstead*, Jonathan Rose, Gabriel Reyes, Glenn Wylie, Michael Casazza Conservation Reliance of a Threatened Snake on Rice Agriculture
3:15 PM		Panel	175	Jillian Josimovich*, Amy Yackel Adams, Melia Nafus, Charlotte Robinson, Austin Fitzgerald, Robert N. Reed, Bryan Falk, M. Rockwell Parker Exploring the Potential for Hormone Manipulation and Pheromonal Attractants to Improve Detection and Control of Invasive Burmese Pythons in Florida
3:30 PM		Panel	307	Melia Nafus*, Frank Mazzoti, Robert Reed Estimating Detection Probability for Burmese Pythons with Few Detections and Zero Recapture Events
3:45 PM		Panel	155	Sarah Ebert*, Kasey Jobe, Christopher Schalk, Daniel Saenz, Cory Adams, Christopher Comer Correlates of Snake Entanglement in Erosion Control Blankets
4:00 PM		POSTER SESSION II - in The Event Tent, Snowbird Center		
5:00 PM				
6:00 PM				

* denotes presenter

Oral Presentations - Saturday, 27 July - Afternoon

ROOM		Ballroom 3 - Cliff Lodge		Primrose A&B - Cliff Lodge
SESSION/ SYMPOSIUM		Herpetology Physiology		Herpetology Ecology
MODERATOR		Mary White		Paul Klawinski
1:30 PM	703	Rory Telemeco*, Eric Gangloff Hierarchical Mechanisms of Thermal Limitation: A Mechanistic Framework for Understanding Performance Loss at High Temperature in Reptiles and Amphibians.	168	Luke Frishkoff*, Eveling Gabot, George Sandler, Cristian Marte, D. Luke Mahler Elevation shapes the reassembly of Anthropocene lizard communities
1:45 PM	383	Allyson Fenwick*, Laura Kimmel, Samah Houmam, Briant Nguyen, Susan McKenna Year-Round Temperature Observations of Mediterranean Geckos (<i>Hemidactylus turcicus</i>) at the University of Central Oklahoma	637	Paul Klawinski* Strangers in a Strange Land: 27 Years of Competition among Exotic Geckos
2:00 PM	422	David Ensminger*, Tracy Langkilde Effects of Maternal Glucocorticoids on Offspring Absolute Telomere Length in Wild Lizards.		
2:15 PM	249	Braulio Assis*, Julian Avery, Catherine Tylan, Ryan Earley, Tracy Langkilde Maternal Inheritance and Fitness Consequences of a Male-typical Ornament in <i>Sceloporus undulatus</i>	288	Jessica Ford* Evidence for Intraguild Predation amongst Toad Tadpoles
2:30 PM	600	Emily Virgin*, Susannah French Physiological responses to an immune challenge vary by reproductive stage in female Side-blotched lizards (<i>Uta stansburiana</i>)	444	Nicholas Schiwitz*, Christopher Schalk, Daniel Saenz Activity Level and Predation Risk in a Tadpole Guild: Implications for Species' Distributions Along the Hydroperiod Gradient
2:45 PM	588	Tanner Harvey*, Stephen Mackessy Cytotoxicity of Argentine Racer and the Sonoran Lyre Snake venoms	130	Van Wishingrad*, Robert Thomson <i>Sceloporus occidentalis</i> lizard landscape genetics in the Sierra Nevada mountain range
3:00 PM	162	Stephen Mackessy*, Cassandra Modahl Rear-fanged snake venoms: prey specificity, three finger toxins and novel structural variants	267	Amanda Martin*, Karen Root Fine-scale Reptilian Movement Patterns within a Fragmented and Heterogeneous Landscape
3:15 PM	718	Mickey Agha*, Yuzo Yanagitsuru, Nann Fangue, A. Justin Nowakowski, Laura Kojima, Joseph Cech, Melissa Riley, Janna Freeman, Dennis Cocherell, Brian Todd Physiological consequences of rising water salinity for a declining freshwater turtle		
3:30 PM	816	Mary White*, Mark Merchant Expression of Innate Immune System Genes and Antimicrobial Proteins in Infected and Uninfected Alligators		
3:45 PM	238	Adam Rosenblatt*, Molly O'Brien Effects of Simulated Climate Change on the Development of American Alligator Embryos		
4:00 PM		POSTER SESSION II - In The Event Tent, Snowbird Center		
5:00 PM				
6:00 PM				

* denotes presenter

Oral Presentations - Saturday, 27 July - Afternoon

ROOM		Cottonwood A-D - Snowbird Center		Rendezvous A&B - Snowbird Center
SESSION/ SYMPOSIUM		General Ichthyology II		AES Symposium: The Sensory Biology of Elasmobranch Fishes
MODERATOR		Dave Johnson		Tim Tricas
1:30 PM	313	Michael Burns* , Devin Bloom Migratory lineages rapidly evolve large body sizes in ray-finned fishes	666	Christine Bedore* Visual ecology of elasmobranch fishes
1:45 PM	795	Milton Tan* , Jonathan Armbruster Shape Evolution and Diversification in North American Leuciscidae (Cypriniformes)	320	Tricia Meredith* , Stephen Kajiura Stop to smell the rosettes: reflecting on the diversity of the elasmobranch olfactory system
2:00 PM	614	Elizabeth P. Hunt* , Kat Hamilton, Shannon O'Leary, Kyle Piller, Jeremy J. Wright, Kevin W. Conway, David S. Portnoy. Molecular phylogenetics of the genus <i>Erimyzon</i> (Family Catastomidae) based on mitochondrial and nuclear loci	297	Kyle Newton* The Electro- and Magnetosensory Biology of Chondrichthyan Fishes
2:15 PM	509	Ray Schmidt* , Christian Barrientos Finding <i>Enteromius potamogalis</i> : discoveries and insights on the diversity of freshwater fishes from Equatorial Guinea.	805	Timothy Tricas* The mechanosensory lateral line and ear of sharks and rays: Still far from the source
2:30 PM			174	Stephen Kajiura* Impact on Elasmobranch Research of the Donald R. Nelson Award
2:45 PM	219	Ken Thompson* , Clark Hubbs Artificially Produced Intergeneric Hybrids Among Three Genera of Neotropical Cichlidae.		
3:00 PM	616	Maxwell Bernt* , James Albert Assessing the Amazonian Radiation of Ghost Knifefishes (Gymnotiformes: Apterontidae)		
3:15 PM	589	Angel L. Martínez-González* Feeding ecology of <i>Mojarra amarilla Caquetaia kraussii</i> in the Ciénaga de Ayapel, San Jorge River System		
3:30 PM	573	Sarah Gibson* , Andrew Milner, Paul Olsen Revisiting † <i>Tanaocrossus kalliokoskii</i> (Osteichthyes, Actinopterygii), an Enigmatic Fish from the Upper Triassic Chinle Formation of the Southwestern United States		
3:45 PM	301	G. David Johnson* Revisions of Anatomical Descriptions of the Pharyngeal Jaw Apparatus in Moray Eels of the Family Muraenidae (Teleostei: Anguilliformes)		
4:00 PM		POSTER SESSION II - In The Event Tent, Snowbird Center		
5:00 PM				
6:00 PM				

* denotes presenter

Oral Presentations - Saturday, 27 July - Afternoon

ROOM		Alpine A,B,C - Snowbird Center		
SESSION/ SYMPOSIUM		Ichthyology Lightning Talks		
MODERATOR		Jennifer Gumm		
1:30 PM		135 Ryu 631 Olson 105 Kim 711 Schneider 71 Bemis 756 Fast 346 Wharton 763 Eastis 429 Nowicki 387 Donaldson 47 Flemming 69 Robertson 418 Melo 147 Jiménez-Rosenberg 337 Larsen		
1:45 PM				
2:00 PM				
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM				
3:15 PM				
3:30 PM				
3:45 PM				
4:00 PM		POSTER SESSION II - In The Event Tent, Snowbird Center		
5:00 PM				
6:00 PM				

* denotes presenter

Lightning Talks- Saturday, 27 July - Afternoon

1:30 PM - 4:00 PM, Alpine A,B,C - Snowbird Center

135	<p>JungHwa Ryu*, JinKoo Kim</p> <p>Marine fish diversity and the aspects of assemblage structure according to Tsushima warm current areas around the Korean peninsula</p>
631	<p>Emily Olson*</p> <p>Documentation of a Sand Tiger Shark (Lamniformes: Carcharias taurus) Captive Breeding Event</p>
105	<p>JinKoo Kim*, JungHwa Ryu</p> <p>Spatio-temporal variations of giant and large fish in Korean waters inferred from daily observer reports</p>
71	<p>William Bemis*</p> <p>Teeth and tooth replacement in the Bluefish, Pomatomus saltatrix (Acanthopterygii: Pomatomidae)</p>
756	<p>Kayla Fast*, Parker Nenstiel, Anakela Popp, Pat O'Neil, Brett Albanese, Michael Sandel</p> <p>eDNA Surveillance and Genomic Characterization of the Threatened Trispot Darter (Etheostoma trisella)</p>
346	<p>Jim Wharton*, Hap Fatzinger, Beth Firchau</p> <p>Aquariums and Zoos Working with Conservation Partners for the Conservation of Sharks and Rays: AZA SAFE Update</p>
763	<p>Anna Eastis*, Micheal Sandel, Zachary Culumber</p> <p>New Records of the Invasive Green Swordtail (Xiphophorus hellerii) in north Florida</p>
429	<p>Rob Nowicki*, Diana Churchill</p> <p>An Estimate of Amino Acid Trophic Enrichment Factors for Stable Isotope Analysis in Sharks and Rays</p>
387	<p>Terry Donaldson*</p> <p>Global Distribution Patterns of the Hawkfishes (Pisces: Cirrhitidae): What We Know and What We Should Know</p>
47	<p>Adania Flemming*, Katherine Boole</p> <p>Broadening diversity in Ichthyology and Herpetology through experiential learning in Natural History Collections</p>
69	<p>D Ross Robertson*, Giacomo Bernardi</p> <p>Hybridization among a population of IndoPacific damselfishes in the Gulf of Mexico</p>
418	<p>Bruno F. Melo*, Fabio F. Roxo, Luz E. Ochoa, Brian L. Sidlauskas, Brant C. Faircloth, Thomas J. Near, Jonathan Chang, Jairo Arroyave, Melanie L. J. Stiassny, Ricardo C. Benine, Michael D. Burns, Kendra Hoekzema, Natália C. Sanches, Michael E. Alfaro, Claudio Oliveira</p> <p>Phylogenomics and temporal diversification of characiform fishes</p>
147	<p>Sylvia Jiménez-Rosenberg*, María Clara Arteaga, Clara Galindo-Sánchez, Anaíd Saavedra-Flores, Javier Robles-Flores, Miguel Martínez, Jaime Gasca, Sharon Herzka</p> <p>Fish larvae diversity in the deep water region of the Gulf of Mexico</p>
337	<p>Matthew Larsen*, Daniel Abel, Derek Crane, Bryan Keller, Dean Grubbs</p> <p>Evidence of Reduced Metabolic Activity in Bathypelagic Sharks Determined by Heart Ventricular Mass</p>

* denotes presenter

Saturday, 27 July, Poster Session II

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
1	253	Hannah Wilson*, Alan Savitzky	An Arduino Electrocardiography Unit for Snakes
2	403	Jaden Clark*, Chris Clark	Modeling the Flight Dynamics of <i>Draco volans</i>
3	478	Jacob Gastelum*, Dalton Leibold, Rory Telemeco	Effects of Metabolic Demand on Thermal Preference Across Oxygen Environments
4	602	Heather Wayne*, Peter Dolan, Alexis Hernandez	White Blood Cell Profiles in Long-Term Captive and Recently Captured Eastern Tiger Salamanders (<i>Ambystoma tigrinum</i>)
5	750	Sara McClelland*, Elizabeth Cha, Sarah Woodley	Neurodevelopmental Effects of Corticosterone in Northern Leopard Frog (<i>Lithobates pipiens</i>) Tadpoles, a Common Vertebrate Model
6	104	Kiara Zurow*, John Peterson	Oral abnormalities in Green Frog (<i>Lithobates clamitans</i>) tadpoles
7	131	Jennifer Terry*, Tristan Bulice, Lorin A. Neuman-Lee	Monitoring Illinois Chorus Frog (<i>Pseudocris illinoensis</i>) in Northeast Arkansas
8	720	Meghan Kelley*, John Finger, Matt Hamilton, Yufeng Zhang, Andreas Kavizis, Travis Glenn, Tracey Tuberville	Selenium exposure and its effects on oxidative status in the American alligator (<i>Alligator mississippiensis</i>)
9	715	Nicholas Caruso*, Carola Haas	Hydrological characteristics of Ephemeral Wetlands On Eglin Air Force Base: Implications for the Persistence of the Flatwoods Salamander
10	113	Katherine Jones*, John Peterson	Environmental variation in Green Frog (<i>Lithobates clamitans</i>) tadpole body morphology
11	161	Max Henderson*	Ecotoxicology at a Population Level: The Impact of Endocrine Disruption on Crocodylian Population Viability
12	807	Maggie Grundler*, Sonal Singhal, Mark Cowan, Daniel Rabosky	Is genomic diversity a useful proxy for census population size? Evidence from a species-rich community of desert lizards
13	531	Kathleen Currie*, Matthew Fujita	Annotation of MHC loci in two parthenogenetic lizard complexes
14			
15	729	Jonathan Dain*, Sam Fellows, Tod Reeder	Morphological and mitochondrial datasets contradict subspecies divisions of <i>Crotalus cerastes</i>
16	571	Stuart V. Nielsen*, Anna Farmer, Kevin Enge, David C. Blackburn	Integrative Taxonomy of the Near Threatened Gopher Frog (<i>Rana capito</i>)
17	564	Margaret Rubin*, Christopher Brochu	Examination and placement of a new specimen in Alligatorine evolutionary history
18	488	Jeffery Wilkinson*, Anna Sellas, Matt Pollock, Daniel Mulcahy	The Polypedates leucomystax Species Complex How Many Species Are There?
19	304	Mariana Marques*, Luis Ceriaco, Edward Stanley, Matthew Buehler, Aaron Bauer	A new species of Girdled Lizard (Squamata: Cordylidae) from Serra da Neve, Southwestern Angola
20	764	Paul Cupp*	Wet Rock Crevices Impact Egg Deposition and Survival in Green Salamanders, <i>Aneides aeneus</i>
21	654	Laura Kimmel*, Joy Lauffenberger, Allyson Fenwick, Paul Stone	Communal Nesting and Reproductive Phenology of Mediterranean Geckos (<i>Hemidactylus turcicus</i>) at the University of Central Oklahoma
22	386	Miranda Figueras*, Rebecca Cjaza, Amanda Scholz, Russell Burke	Nest Site Selection and Microhabitat Choice in Diamondback Terrapins (<i>Malaclemys terrapin</i>)
23	254	Samantha McPherson*, Joseph Agugliaro, Craig Lind, Terence Farrell	Assessing the Metabolic Cost of Pregnancy in Pygmy Rattlesnakes (<i>Sistrurus miliarius</i>)
24	370	Calum Devaney*, Aaron Bauer	Diet and Reproductive Biology of Angolan Snakes
25	645	Christopher Beachy*, Marlies Carter, Rebecca Penn, Jonathan Bynum, Madison Daniels	Geographic variation in the larval life history of the Southern Two-lined Salamander, <i>Eurycea cirrigera</i> (Caudata, Plethodontidae) in Louisiana and Mississippi
26	274	Christopher Cannon*, Christopher Beachy	Environmental Factors Impacting Alternative Life-history Pathways in a Facultative Paedomorphic Salamander (<i>Notophthalmus viridescens</i>)
27	556	Carol Spencer*, Michelle Koo*, Teresa Mayfield-Meyer, Emily Braker, Mariel Campbell, Carla Cicero, John Demboski, Andrew Doll, Kyndall Hildebrandt, Angela Linn	Arctos: A Collaborative Collection Management Solution

*denotes presenter

Saturday, 27 July, Poster Session II

POSTER #	Abstract #	Presenter	Title
28	359	Micha Petty*	A Primer on Reptiles & Amphibians: A Collection of Educational Nature Bulletins
29	321	Kristopher Pedersen*, Charles Hanifin	Use of Artificial Cover Objects in Studying Snakes: "One Size Fits All" May Not be the Best Approach
30	819	Baker Patrick*	Seasonal Development of Symbiotic Algae on the Carapace of the Painted Turtle (<i>Chrysemys picta</i>)
31	187	Sarah Bauer*, Emilie Ospina, Matthew Allender, John Peterson	Thermal Ecology of <i>Ophidiomyces ophiodiicola</i> , the Cause of Snake Fungal Disease, in Free-Ranging Snakes along a Waterway in Wisconsin
32	41	Lyranda Thiem*, Chris Gienger	Energetic Investment into Egg Retention in the Eastern Musk Turtle
33	283	Christopher Murray*, Javion Lee, Caleb McMahan	Patterns of Morphological Convergence among Members of the Genus <i>Naja</i> with Identification of Ecomorphs
34	333	Thomas Firreno*, Alyson Emory, Corey Roelke, Matthew Fujita	Transcriptomic characterization and evaluation of the bufonid parotoid gland
35	325	Becky Williams*, Jake Richardson	Epithelial Microbiomes of the Tetrodotoxin-bearing Rough-skinned Newt and the Tetrodotoxin-free Pacific Tree Frog in the Same Microhabitat
36			
37	407	Muhammad Rais*, Sidra Ikram, Sumbul Gill, Waseem Ahmad, Muhammad Saeed, Ayesha Akram, Imtiaz Ahmed Khan	Morphological and Ecological Correlates of Anuran Tadpoles in Scrub and Subtropical Pine Forest, Pakistan
38	457	Dana Drake*, Sean Giery	Assessing Drivers of Polymorphism in Egg Masses of Spotted Salamanders (<i>Ambystoma maculatum</i>) in Northeastern USA
39	492	Kirsten Nicholson*, Miranda Goss	Thermal and Foraging Ecology of <i>Nerodia sipedon</i> at Two Insular Sites in Lake Michigan
40	497	Danielle Walkup*, Wade Ryberg, Jarret Kachel, Connor Adams, Shelby Frizzell, Timothy Johnson, Dalton Neuharth, Toby Hibbitts	Out in the Open: Habitat Use, Movements, and Home Ranges in the Spot-tailed Earless Lizard
41	622	Clifford Fontenot*, Logan McCardle	Demographic Patterns of Activity and Road Mortality in a Wetland Snake Assemblage
42	735	Sarah M Wenner*, Katy S Delaney, Melanie A Murphy, Jeanne M Robertson	Estimating spatial patterns of gene flow in the Blainville's horned lizard (<i>Phrynosoma blainvillii</i>) in an urbanized landscape
43	772	Taylor West*, Yatin Kalki, Tristan Schramer, Kevin Wiseman, Douglas Long, Daniel Wylie	Feeding Ecology of the Prairie Kingsnake (<i>Lampropeltis calligaster</i>)
44	803	Tristan Schramer*	Into the Crayfish Burrow: The Ecology of Kirtland's Snake (<i>Clonophis kirtlandii</i>)
45	343	David Adams*, Matthew Gifford	Lizards Modulate Foraging Behavior in Response to Environmental Variation
46	306	Kelsey Reider*, Maureen Donnelly	Occupancy patterns of Andean frogs in the shadow of melting glaciers
47	366	Christina De Jesús Villanueva*, Kathleen McGinley, William Gould, Jason Kolbe	Impact of the Invasive Green Iguana (<i>Iguana iguana</i>) on Puerto Rico's Agricultural Community
48			
49	367	Austin L. Fitzgerald*, Charlotte J. Robinson, Jillian M. Josimovich, Bryan G. Falk, Emma B. Hanslowe, Christina M. Romagosa, Amy A. Yackel Adams, Lea' R. Bonewell, Robert N. Reed	Invasive Species Internship Program in the Greater Everglades Ecosystem: History, Accomplishments, and Outreach
50	688	Gareth Hopkins*, Liz Yoon, Susannah French, Edmund Brodie, Jr.	Non-NaCl based road deicing salts: An underappreciated threat to amphibians?
51	670	Katherine O'Donnell*	Phenology of Adult Breeding and Juvenile Emigration of Flatwoods Salamanders
52	623	John Romansic*, Jonah Piovio-Scott, Allan Pessier	Evaluating the Susceptibility of Native Amphibians from Pacific States to the Pathogenic Fungus <i>Bsal</i> .
53	59	Christopher Schalk*, William Lutterschmidt, J.M. Weidler	Hot Moments and Hot Spots in the Bayou: Patterns of Road Occurrence in a Louisiana Snake Assemblage
54	120	Allison Sacerdote-Velat*, Rachel Santymire, Andrew Gygli, Douglas Keinath, Sinlian Poo, Kristin Hinkson, Elizabeth McKeag	Using dermal cortisol to measure the stress physiology of wild and captive Wyoming toads (<i>Anaxyrus baxteri</i>)

*denotes presenter

Saturday, 27 July, Poster Session II

POSTER #	Abstract #	Presenter	Title
55	134	Shane Siers*, William Pitt, Aaron Shiels, John Eisemann, Larry Clark, Robert Gosnell, Aaron Collins, William Coon, Michael Messaros	Implementation of an Automated Bait Manufacturing and Aerial Delivery System for Landscape-Scale Control of Invasive Brown Treesnakes
56	192	Sinlan Poo*, Kristin Hinkson	Applying Cryopreservation to Anuran Conservation
57	410	Scott Goetz*, Amy Yackel Adams, Shane Siers	Validating performance of an aerially-delivered Brown Treesnake control tool using distance sampling
58	587	William Heyborne*, William Heyborne	Herpetological Inventory of the Grand Staircase Escalante National Monument, Utah, USA
59	112	Kristen Cecala*, Emma Zeitler, Deborah McGrath	Larval anuran development in treated wastewater confers an advantage in the terrestrial environment
60	526	Josh Pierce*, Steve Reichling, Craig Rudolph, Emlyn Smith	Returning the Louisiana Pine Snake to Restored Habitat
61	152	Patrick Barnhart*, Amy Yackel Adams, Eric Hileman, Abbey Feuka, Scott Goeta, Robert Reed, Shane Siers, Melia Nafus	Radio Transmitter Attachment Methods for Thin-Bodied Arboreal Snakes
62	538	Cory Adams*, Daniel Saenz	Impacts of Native and Invasive Leaf Litter on Larval Anuran Behavior
63	686	M. Rockwell Parker*, Shannon A. Richard, Eric A. Tillman, Sanjiv Jayamohan, John S. Humphrey, Paige E. Carrington, Michael L. Avery	Mate searching behaviors in invasive Argentine black and white tegu
64	592	Daniel Saenz*, Toby Hibbitts, Cory Adams	Calling Phenology of the Southern Crawfish Frog (<i>Lithobates areolatus</i>)
65	295	Todd Pierson*	Divergent Reproductive Phenologies in Male Eurycea with Alternative Reproductive Tactics
66	522	Carl Anthony*, Jessica Ryan*, Courtney Thomas, Cari-Ann Hickerson	Behavioral Interactions between Striped and Erythristic Color Morphs of Eastern Red-backed Salamanders, <i>Plethodon cinereus</i>
67	731	Jaedyn Lalonde*, Lindsey Swierk	Impacts of Climatic Factors on Wood Frog (<i>Rana sylvatica</i>) Calling Activity
68	506	Taylor Ashby*, Kristopher Pedersen, Charles Hanifin	Using Glow Sticks to Catch Tiger Salamanders (<i>Ambystoma mavortium tigrinum</i>)
69	451	Nicholas Schiwitz*, Kasey Jobe, Krista Ward, Daniel Saenz, Christopher Schalk	Does Instillation Method Affect Snake Entanglement in Erosion Control Blankets?
70			
71	220	Kasey L. Jobe*, Nick Schiwitz, Krista Ward, Dan Saenz, Christopher M. Schalk	On the Diversity of Erosion Control Products: Implications for Snake Entanglement.
72	651	Coles Ehlers*, John Maerz, Angela Burrow	Creating Plaster Models of the Gopher Frog, <i>Lithobates capito</i>
73			
74	748	William Barichivich*, Mary Brown, Katie O'Donnell, Susan Walls	Forecasting the Timing of Breeding Events in the Ornate Chorus Frog (<i>Pseudacris ornata</i>): Implications for Conservation Status in Florida
75			
76	27	Kate Donlon*, William Peterman	Population Genetics of a Terrestrial Salamander Species Inhabiting Abandoned Mined Lands in Eastern Ohio
77	491	Gavin Jones*, Gavin Munson, Kyson McBride, Joshua Sigg, William Heyborne	Dietary Analysis of Invasive Spiny Softshell Turtles (<i>Apalone spinifera</i>) in Colorado River Tributaries: An Ecological Impact Investigation
78	484	Brooke Perrera*	Movement patterns, thermoregulatory behavior, and population demographics of <i>Sternotherus odoratus</i> (Eastern Musk Turtles) in an urban environment in southeastern Louisiana
79	452	Olivia Brooks*, Ralph Saporito, Sarah Bolton	Maternal provisioning of alkaloid defenses in the dendrobatid poison frog <i>Oophaga granulifera</i>
80	67	Karin Ebey*	Modeling the Effects of Invasive Species on Crocodylian Populations
81	591	Meaghan Clark*, Ralph Saporito, Andres Vega, Jeanne Robertson	Tasting the rainbow: geographic variation in palatability and color pattern in red-eyed treefrogs

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Saturday, 27 July, Poster Session II

POSTER #	Abstract #	Presenter	Title
82	649	Hector Espinosa-Pérez*, Alice Masper, Jose E. Pérez-López	Identification Guide of the Gulf of California Fish Otoliths
83	65	Arturo Acero*, Michelle Scharer Umpierre, Jose Tavera, Monruedee Chaiyapo*	A New Species of Grunt (Lutjaniformes: Haemulidae) from the Puerto Rican Upper Slope
84	652	Layne Freeman*, Diego Elías, Fernando Alda , Prosanta Chakrabarty	Mitogenomic Relationships among Neotropical Cichlids (Heroini: Cichlinae)
85	737	Leo Smith*, Kathleen Smith, Matthew Girard	Copeia Improvements: Open Access, Publication Time, and Other Changes
86	331	Adania Flemming*, Katherine Boole, Sorilis Ruiz Escobar	Broadening diversity in Ichthyology and Herpetology through experiential learning in Natural History Collections
87	278	Kaya Foster*, Subir Shakya, Prosanta Chakrabarty*	Schooling with Fishes: An Interactive Poster of All Fish Families
88	396	Brian Sidlauskas*, Thaddaeus Buser, Adam Summers	Stags of the Sea? Comparisons of Territoriality and Cranial Weapon Morphology in the Fish Subfamily Oligocottinae (Pisces; Cottoidea)
89	610	Samuel Cornelius*, Sunny Scobell, Daniel Gold	Molecular Characterization of Parasites of the Gulf pipefish, <i>Syngnathus scovelli</i>
90	612	Alexandra Krak*, Kenshu Shimada	Geometric morphometric analysis of teeth in the extant megamouth shark, <i>Megachasma pelagios</i> , and its potential paleontological application
91	549	Sam Ghods*, Luke Tornabene	Evolution and Developmental Morphology of Male Deep-Sea Anglerfishes (Teleostei, Ceratioidei): Investigating the Features Enabling Sexual Parasitism.
92			
93	425	Aaron Fronk*, James Albert	The Relationship Between Variation and Diversity in <i>Adontosternarchus</i> (Apteronotidae, Gymnotiformes)
94	681	Mikayla Struble*, Jaida Elcock, Alice Gibb, Cassandra Donatelli, Emily Standen	Burial Kinematics of the Rock Prickleback
95	813	Alvaro Cortes*, Brooke Penaluna , Brian Sidlauskas	Using genetic and morphological data to delineate the species boundaries for two freshwater sculpins, <i>Cottus perplexus</i> and <i>Cottus gulosus</i> .
96	477	Valencia Henderson*, Pamela Hart, Prosanta Chakrabarty	Complete Mitochondrial Genomes of the Southern Cavefish (<i>Typhlichthys subterraneus</i>), Eigenmann's Cavefish (<i>T. eigenmanni</i>), and the Swampfish (<i>Chologaster cornuta</i>)
97	671	Timothy Tricas*, Kelly Boyle	Eavesdropping on the parrotfish crunch: Implications for coral reef monitoring and management
98	540	Amanda Zellmer*, Jeremy Claisse, Chelsea Williams, Stuart Schwab, Daniel Pondella	Predicting Optimal Sites for Ecosystem Restoration Using Stacked-Species Distribution Modeling
99			
100	553	Dahiana Arcila*, Sara Cartwright*	Ichthyology Collection of the Sam Noble Oklahoma Museum of Natural History
101	664	Benjamin Frable*, H.J. Walker, Jr., Philip Hastings	Integration and curation of the orphaned UCLA Ichthyological Collection into the Scripps Institution of Oceanography Marine Vertebrate Collection
102	231	Kelly Hoyer*, Aaron Geheber	Impacts of Stream Temperature Gradient on Reproductive Capacity and Population Densities of Banded Sculpin, <i>Cottus caroliniae</i>
103	475	Melissa Gibbs*, Anna Thornton, Samantha Pasko, Ashley Gamba, Kahri Smith	Patterns of Aerial Respiration in Hypoxic Conditions by Juvenile <i>Pterygoplichthys</i> sp. (Loricariidae)
104	520	Lauran Brewster*, Matthew Ajemian, Breanna DeGroot, Michael McCallister, James Locascio, Laurent Chérubin	Advancing Understanding of Goliath Grouper Behavioural Ecology
105	775	Natasha Hinojosa*, Steven Kessel, Henry Wilson, Gina Clementi, Chuck Knapp	Varied Response of Garden Eels to Potential Predators and Other Large-Bodied Organisms
106	404	Richard D. Durtsche*, Larry Greenberg, Karl Phillipson, Bror Jonsson	Altered Metabolism in Brown Trout and the Likely Effects of Climate Change
107	471	Guillermo Orti*, John Sullivan, John Lundberg, Nathan Lujan, Keylie Gibson, Lily Hughes, Ricardo Betancur-R, Dahiana Arcila	"Big Bang" Theory of Siluroid Global Diversification Revisited with Phylogenomic Data
108	771	John Larrimore*, Michael Sandel, Kayla Fast	Metabarcoding Freshwater Fishes of the Mobile River Basin

*denotes presenter

Saturday, 27 July, Poster Session II

Event Center, Snowbird Center

POSTER #	Abstract #	Presenter	Title
109	824	Erin Schwarzbach* , Mollie Cashner, Rebecca Johansen	Phylogeographic patterns of contemporary populations of <i>Chrosomus Cumberlandensis</i> (Blackside Dace), a federally threatened minnow
110	761	Kelsey Martin* , Greg Stunz	Characterizing Large Predatory Fish Across Gulf of Mexico Habitats: Proposed Methods and Preliminary Results
111	228	Charles W. Olaya-Nieto* , William A. Pérez-Doria, Juan M. Villaiba-Quintero, Ángel L. Martínez-González, Fredys F. Segura-Guevara, Glenys Tordecilla-Petro	Multi-year length-weight relationship of <i>Bocachico Prochilodus magdalenae</i> in the San Jorge River Basin, Colombia
112	607	Fredys F. Segura-Guevara* , Glenys Tordecilla-Petro, Charles W. Olaya-Nieto	Reproductive biology of <i>Chipe Hoplosternum magdalenae</i> in the Ciénaga Grande de Llorica, Colombia
113	638	Iván García-López , Nilson Blanco-López, Glenys Tordecilla-Petro* , Charles W. Olaya-Nieto	Reproductive biology of <i>Cachana Cynopotamus atratoensis</i> in the Ciénaga Grande de Llorica, Colombia
114	818	Emily Neuman* , Matthew Julius	You are what you eat: Impact of food quality on fatty acid in fish
115			
116	211	Sarah Yerrace* , Luke Tornabene, Carole Baldwin, Jordan Casey, Simon Brandl	Using Integrative Taxonomy to Discern Species Boundaries in <i>Risor ruber</i> (Gobiidae)
117	537	Mark Sabaj* , Jose Birindelli	Fossil Doradidae (Siluriformes) revisited
118	543	Jose Birindelli* , Fernando Assega	Testing the monophyly of <i>Anostomoides</i> , with proposal of a new genus of Anostomidae (Characiformes)
119	641	Nureen Ghuznavi* , Dahiana Arcila, Lily Hughes, Ricardo Betancur-R, Guillermo Ortí	Resolving Ancient Fish Radiations with Phylogenomic Data Using Targeted Filtering and Gene Genealogy Interrogation
120	743	Kevin Tang* , Jade Henckel, Christopher Fielitz	Phylogeny of Moray Eels (Anguilliformes: Muraenidae)
121	632	Jason Selwyn* , Ashley Hamilton, Sharon Magnuson, Christopher Bird, J. Derek Hogan	First sequenced genome for a reef goby <i>Coryphopterus personatus</i> (Gobioidae)
122	285	Elizabeth Burke* , Natalia Belfiore	Genetic Characterization of Introduced Populations of the African Jewelfish, <i>Hemichromis letourneuxi</i> , to the Waterways of Florida.
123	143	Emily Kerns* , Kyra Cipolla, Dehiam Gonzalez, Matthew Gilg	Landscape Genetics of a <i>Fundulus</i> spp. Hybrid Zone in Northeastern Florida.
124	794	Patricia Shellhammer* , Michael Sandel	An Aquatic Melting Pot: Mapping Genetic Homogenization Among Bullhead Minnow Populations of the Tenn-Tom Waterway
125	798	Daniel Kimball* , Michael Miniccozzi, Alice Gibb	Bonytail, the Arizona tuna, convergence in muscle and tendon anatomy in scombrids and <i>Gila cypha</i>
126	277	Michael Ghedotti* , Matthew Davis	Anatomy and Evolution of the Greeneye Bioluminescent Organ (Teleostei: Chlorophthalmidae)
127	626	Hannah deKay* , Matthew Davis, W. Leo Smith, Micheal Ghedotti	Morphology and evolution of the luminous roughy bioluminescent organ (Teleostei: Trachichthyidae)
128	625	Tanden Hovey* , Matthew Davis, Michael Ghedotti	Histology of the Opercular Bioluminescent Organ of <i>Astronesthes Snaggletooth</i> Fishes (Teleostei: Somiidae)
129	499	William Bemis* , Katherine Bemis, James Tyler, Eric Hilton	Comparative Anatomy and Ontogeny of Ocean Sunfishes (Tetraodontiformes: Tetraodontoidea: Molidae)
130			
131	209	Jacob Egge* , Tess Olsson, Teagan Haden	A Preliminary Survey of Extraoral Taste Buds in Fishes
132	693	Carmen G. Montana-Schalk* , David Peterson, Christopher M. Schalk	Historical and contemporary assessment of urban stream fish assemblages: taxonomic and functional perspectives
133	675	William A. Pérez-Doria* , Charles W. Olaya-Nieto, Fredys F. Segura-Guevara, Glenys Tordecilla-Petro	Multiannual length-weight relationship of <i>Pacora Plagioscion magdalenae</i> in the San Jorge River Basin, Colombia
134	663	Ángel L. Martínez-González* , Jesús Vargas-González, Fredys F. Segura-Guevara, Glenys Tordecilla-Petro, William A. Pérez-Doria, Charles W. Olaya-Nieto	Length-Weight relationship of <i>Cachagua Trachelyopterus insignis</i> in the Ciénaga de Ayapel, Colombia
135	578	Ángel L. Martínez-González* , Fredys F. Segura-Guevara, Glenys Tordecilla-Petro, William A. Pérez-Doria, Charles W. Olaya-Nieto	Length-Weight relationship of <i>Bagre rayado Pseudoplatystoma magdaleniatum</i> in the San Jorge River, Colombia
136	483	Marvin M. F. Lutnesky* , Sean X. Thimons, Kenwyn R. Craddock	A Preliminary Characterization of Fish Survivorship in Backwater Pools on the Pecos River, New Mexico, USA

*denotes presenter

Oral Presentations - Sunday, 28 July - Morning

ROOM		Ballroom 1 - Cliff Lodge		Ballroom 2 - Cliff Lodge
SESSION/ SYMPOSIUM		ASIH/HL/SSAR Symposium: The Expanding Role of Natural History Collections		ASIH/HL/SSAR Symposium: Citizen Science in Herpetology: Productive Past and Promising Future
MODERATOR		Sarah Huber		Greg Pauly
8:00 AM			701	Gregory Pauly*, Russell Burke* The Diverse Ways that Citizen Scientists have Contributed to Herpetological Research
8:15 AM			695	Enjie Li*, Gregory Pauly, Sophie Parker, John Randall, Brian Brown, Brian Cohen The value of citizen science for urban biodiversity research: An example from the Biodiversity Analysis in Los Angeles (BAILA) Project
8:30 AM	408	Michael Webster* What is the 'Extended Specimen'?	324	Amanda Zellmer*, Gregory Pauly Citizen Science Observations Provide Unique Insight into Salamander Distributions within Urban Environments
8:45 AM	408	Michael Webster* What is the 'Extended Specimen'?	719	Dillon Monroe*, Robert Espinoza Comparison of Traditional and Citizen-Science Datasets for Inferring Distribution and Ecological Niche Patterns of Mediterranean House Geckos in Texas
9:00 AM	300	Eric Hilton*, Gregory Watkins-Colwell, Sarah Huber The Expanding Role of Natural History Collections	692	Toby Hibbitts*, Danielle Walkup, Kevin Skow, Wade Ryberg On the Road Again: Using Citizen Science Data to Understand Patterns of Amphibian and Reptile Road Mortality
9:15 AM	36	Randal Singer* Big Heads or Long Tails: How Every Fish Collection Matters in Collections-Based Biodiversity Research	445	Sean Sterrett*, Rachel Katz, William Fields, Evan Grant The Contribution of Road-based Citizen Science to the Conservation of Pond-breeding Amphibians
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		ASIH/HL/SSAR Symposium: The Expanding Role of Natural History Collections		ASIH/HL/SSAR Symposium: Citizen Science in Herpetology: Productive Past and Promising Future
MODERATOR		Greg Watkins-Colwell		Russell Burke
10:00 AM	148	Katherine Maslenikov* Specimens by the millions: managing large, specialized collections at the University of Washington Fish Collection	376	Bree Putman*, Riley Williams, Greg Pauly Urban to rural gradients in predation and parasitism studied using community science-generated photographs of the Southern Alligator Lizard
10:15 AM	323	Ai Nonaka*, Jeff Milisen, Bruce Mundy, G.David Johnson Blackwater Diving: An Exciting Window into the Planktonic Arena and Its Potential to Enhance the Quality of Larval Fish Collections	53	Robin Maritz*, Luke Verburt, Andre Coetzer, Bryan Maritz Sharing for Science: Social Media Provides New Insights into the Feeding Ecology of African Snakes
10:30 AM	350	Danté Fenolio*, Tracey Sutton Photographic Documentation of Deep-water Fishes by the DEEPEND Consortium on the Gulf of Mexico	752	Travis LaDuc*, Drew Davis, James Christiansen Citizen Science CSI: Better understanding the distribution of an undescribed turtle shell disease condition through citizen observations
10:45 AM	194	Aaron Bauer* Herpetology in a World at War: Natural History Collections and Global Conflict	697	Gregory Pauly*, Richard Smart, Lila Higgins, Lina Goggins-Rendon Studying the Rare: Strategies for Crowdsourcing Observations of Introduced Species and Rarely Observed Natural History Events
11:00 AM	598	Stacy Farina* Reciprocal Value of Museum Vouchers to Collections and to Functional Morphology Research	190	Russell Burke*, Alexandra Kanonik The Special Relationship Between Citizen Science and Turtle Ecological Research
11:15 AM	504	Katherine Bemis*, James Tyler, Edward Stanley, Eric Hilton Dentition of living and fossil Porcupinefishes (Tetraodontiformes: Diodontidae) studied using CT scanning: Implications for systematics of isolated fossil jaws	214	Willem Roosenburg*, Alayna Tokash Using K-12 Classrooms to Head-start Diamond-backed Terrapins and Evaluate Differences in Growth due to Temperature and Behavior
11:30 AM	485	Zachary Randall*, Kevin Love, Edward Stanley, Mark Sabaj, Lawrence Page, David Blackburn oVert: Lessons Learned for High-Throughput Scanning across the Fishes Tree of Life	183	Cameron Barrows* Surveying Lizards with Citizen Scientists to Detect the Effects of Climate Change in the Deserts of Southern California
11:45 AM	708	Julie Winchester*, Doug Boyer, Tim Ryan, Tim McGeary How MorphoSource is Helping Museum Collections to Connect Specimens to 3D and 2D Media and to the Broader World	293	Todd Pierson*, Richard Secrist, Tiffany Beachy, Jason Love, Benjamin Fitzpatrick Monitoring Salamanders in the Great Smoky Mountains: Nearly 20 Years of Citizen Science and the Recent Application of Environmental DNA
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Sunday, 28 July - Morning

ROOM		Ballroom 3 - Cliff Lodge		Primrose A&B - Cliff Lodge
SESSION/ SYMPOSIUM				General Herpetology I
MODERATOR				Kristin Bakkegard
8:00 AM			406	Muhammad Rais*, Sumbul Gill, Muhammad Saeed, Ayesha Akram, Waseem Ahmad Description of Taxonomic and Morphological Characteristics of Tadpole of Murree Hills Frog (<i>Nanorana vicina</i> , [Stoliczka 1872])
8:15 AM			440	Cameron Venable*, Tracy Langkilde Lizard's Exposure to Invasive Ants Affects the Subsequent Consumption of Native Ants
8:30 AM			698	Eveline Emmenegger*, Emma Bueren, Tamara Schroeder, Sharon Clouthier Susceptibility of Native Amphibians from the U.S. Pacific Northwest to an Exotic Fish Rhabdovirus
8:45 AM				
9:00 AM			557	Kristin Bakkegard* A review of the chigger species infecting North American amphibians
9:15 AM			427	Eric Januszkiewicz*, Nicole Chinnici, Thomas LaDuke Detection of Snake Fungal Disease Caused by <i>Ophidiomyces ophidiicola</i> Among Timber Rattlesnakes (<i>Crotalus horridus</i>) in Pennsylvania
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		Amphibian Disease		General Herpetology II
MODERATOR		Alessandro Catenazzi		Shane Siers
10:00 AM	822	Donald McKnight*, Deborah Bower, Lin Schwarzkopf, Ross Alford, Roger Huerlimann, Leah Carr, Kyall Zenger How do epizootics become enzootics? Clues from rainforest frogs	723	Gerardo Carfagno* Behavioral and Developmental Effects of Alternative Pesticides on Two Tadpole Species
10:15 AM	606	Luke Linhoff*, Roberto Ibanez, Brian Gratewicke Exploring individual variation in chytridiomycosis susceptibility within a reintroduction program and the potential for artificial selection	56	Jennifer Deitloff*, Rhiannon McGlone, Katie Fitzgerald, David Savage, Landon Allen Behavioral and Morphological Variation in <i>Plethodon cinereus</i> throughout Pennsylvania
10:30 AM	247	Alessandro Catenazzi* Status of Frog Communities Ravaged by Fungal Disease 15 Years after the Epizootic	657	Colin W. Brocka*, John L. Koprowski Terrestrial Ecology of the Endangered Sonoran Tiger Salamander (<i>Ambystoma mavortium stebbinsi</i>)
10:45 AM	291	Alexa Trujillo*, Eric Hoffman, Guilherme Becker, Anna Savage Spatiotemporal Adaptive Evolution of Immune Genes in a Frog-fungus Disease System	787	Justin Autz*, Jennifer L. Buchanan, Michael S. Mahr, Alexis F.L.A. Powell, Lynnette Sievert, David R. Edds, J. Daren Riedle Distribution and seasonal activity patterns of the Mudpuppy in eastern Kansas
11:00 AM				
11:15 AM	255	Jacob Kerby* An update on the Bsal Task Force	15	Ashley Grimsley*, Cheryl Eamick, Leslie Carpenter, Michael Ingraldi, Daniel Leavitt Comparisons of Reptile Assemblages in Two Subdivisions of the Sonoran Desertscrub Biotic Community
11:30 AM	634	Obed Hernandez-Gomez*, Erin Kenison, Jeffrey Briggler, Rod Williams Captivity-induced changes in the skin microbial communities of hellbenders (<i>Cryptobranchus alleganiensis</i>)	42	Shane Siers*, Amy Yackel Adams, Robert Reed Changes in Behavior Following Ingestion of Large Meals by a Harmful Invasive Snake
11:45 AM	773	Juan Pacheco*, Christopher K Beachy Effects of oral probiotic administration in <i>Ambystoma mexicanum</i> 's as a response to a skin incision before and after metamorphosis.	345	Micha Petty* Innovations in Outreach: Interpreting Herpetofauna to the Public
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Sunday, 28 July - Morning

ROOM		Cottonwood A-D - Snowbird Center		Rendezvous A&B - Snowbird Center
SESSION/ SYMPOSIUM		Ichthyology Genetics		AES Conservation & Management I
MODERATOR		Guillermo Orti		Dean Grubbs
8:00 AM	61	John Denton* , Lei Yang, Shannon Corrigan, Gavin Naylor The thorny skate project: applying NGS technologies and pipelines to a fisheries-targeted species	74	Rachel Skubel* , Meryl Shriver-Rice Multi-dimensional value of sharks influences policy creation and efficacy in the South Florida commercial shark fishery socio-ecological system
8:15 AM	791	Gary Longo* , Krista Nichols, Jameal Samhour, Kelly Andrews, Greg Williams, Laurel Lam, Bonnie Brown, Scott Hamilton A break by the bay: marked population differentiation between lingcod in the eastern Pacific Ocean	10	David Shiffman* Global content analysis of shark conservation coverage in the popular press suggests biases contributing to public misunderstanding
8:30 AM	441	Shannon O'Leary* , Christopher Hollenbeck, Robert Vega, John Gold, David Portnoy Disentangling Demographic, Spatial, and Environmentally-driven Signals in Genomic Data Sets: An Assessment of Southern Flounder, Paralichthys lethostigma.	559	John Carlson* , Andrea Kroetz, Dana Bethea, Tonya Wiley, Dean Grubbs, Jason Osborne, Colin Simpfendorfer Evidence for the onset of recovery of smalltooth sawfish from relative abundance data analyzed within a Bayesian hierarchical model
8:45 AM	342	Pearce Cooper* , Shannon O'Leary, David Portnoy, T. Reid Nelson, Sean Powers An Assessment of Associations between Patterns of Salinity Exposure and Genomic Diversity in a Euryhaline Fish	514	R. Dean Grubbs* , John Carlson, Andrea Kroetz, Mark Bond Comparative Relative Abundance of Smalltooth Sawfish and Coastal Sharks in Two Mangrove Dominated National Parks in Florida and the Bahamas
9:00 AM	142	Matthew Gilg* , Emily Kerns, Natalia Gutierrez, Catherine Kooyomjian, Natasha Hinojosa Dynamic Cohort Analysis Reveals Evidence of Directional Selection in a Killifish Hybrid Zone.	216	Jasmin Graham* , R. Dean Grubbs, John K. Carlson, Andrea Kroetz Analysis of smalltooth sawfish (<i>Pristis pectinata</i>) bycatch risk in Florida
9:15 AM	34	Melanie Paquin* , Morgan Busby, Ashlee Overdick, Ann Matarese Larvae from the Deep: Three Grenadier Species Revealed from Unidentified Larvae	144	Tonya Wiley* , Sonja Fordham, Adam Brame U.S. Restrictions on Sale and Trade of Sawfish Rostra: Room for Improvement
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		Ichthyology Reproduction, Development, and Morphology		AES Conservation & Management II
MODERATOR		Willy Bemis		Guy DuBeck
10:00 AM	796	Mia Adreani* , Casey Benkwitt, Scott Hamilton, Will White, Mark Steele Effects of size-selective fishing on population dynamics of blackeye gobies	215	Anmarie Fearing* , Kelcee Smith, Nigel Downing, Tonya Wiley, Jeff Whitty, Barbara Wueringer, Kevin Feldheim, Peter Kyne, Nicole Phillips Sawfish Saws as a Tool to Assess Genetic Diversity in Historic Largetooth Sawfish (<i>Pristis pristis</i>) Populations
10:15 AM	44	Nancy J. Brown-Peterson* , Andrea J. Leontiou Female Red Snapper Reproductive Parameters on Artificial Reefs: Differences among Structure Types?	730	Peter Kyne* , Rima Jabado, Cassandra Rigby, Dharmadi -, Mauvis Gore, Caroline Pollock, Katelyn Herman, Jessica Cheok, David Ebert, Colin Simpfendorfer, Nicholas Dulvy Extremely high extinction risk in wedgefishes and giant guitarfishes
10:30 AM	225	Charles W. Olaya-Nieto* , Fredys F. Segura-Guevara, William A. Pérez-Doria, Glenys Tordecilla-Petro Reproductive biology of Pacora <i>Plagioscion magdalenae</i> in the San Jorge River Basin, Colombia	609	Madeline Cashion* , Tim Cashion A Global Synthesis of Chondrichthyan Fisheries Catches
10:45 AM	535	Diego Vaz* , Eric Hilton Ontogeny of the Plainfin Midshipmen, <i>Porichthys notatus</i> (Batrachoididae: Batrachoidiformes)	505	Robert Hueter* , Bryan Franks, Christopher Fischer The North Atlantic White Shark Study: Interdisciplinary, International, Collaborative Research on the White Shark in the Western North Atlantic
11:00 AM	163	M Chaise Gilbert* , Alberto Akama, Cristina Cox Fernandes, R Craig Albertson Rapid Changes in Native Cichlid Populations following Anthropogenic Alteration to a Major Clearwater River in the Amazon	153	Karyl Brewster-Geisz* Update on Atlantic Shark Management in the United States
11:15 AM	420	Lawrence Page* , Zachary Randall, Prosanta Chakrabarty, Pamela Hart, Callie Crawford, Brooke Flammang Evolution of Walking in Balitorid Loaches as a Model for Vertebrate Invasion of Land	75	Chelsey Young* , John Carlson The Oceanic Whitetip Shark (<i>Carcharhinus longimanus</i>): Status and Future Directions for Conservation and Recovery under the U.S. Endangered Species Act
11:30 AM	767	Kevin W. Conway* , Cristiano Moreira Do Freshwater Hatchetfishes (Characiformes; Gasteropelecidae) "hear" with the top of their heads?		
11:45 AM	465	Shannon Kuznar* Ontogenetic development of <i>Sphyrna lewini</i> (Chondrichthyes: Sphyrnidae) head morphology	546	Martin Benavides* , Joel Fodrie, Stephen Fegley, Giada Bargione Maximum size changes within North Carolina coastal shark populations over decadal timescales
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Sunday, 28 July - Morning

ROOM		Alpine A,B,C - Snowbird Center		
SESSION/ SYMPOSIUM		AES Physiology I		
MODERATOR		Kim Ritchie		
8:00 AM	821	Kim Ritchie*, Diego Gil-Agudelo, Daniel Conrad, Elliott Mark, Alex Jonguitud, Chris Fischer Antibiotic-Producing Bacterial Symbionts of the White Shark, <i>Carcharodon carcharias</i>		
8:15 AM	208	Shigehiro Kuraku*, Kazuaki Yamaguchi, Mitsumasa Koyanagi, Yuichiro Hara, Akihisa Terakita Whale Shark Visual Ecology Revealed by Genomic and Spectroscopic Analysis		
8:30 AM	133	Margot Angibaud*, Richard Cloutier Skeletal Development and Axial Regionalization of <i>Centroscyllium fabricii</i> (Selachii)		
8:45 AM	517	Gisele Montano*, Karen Steinman, Todd Robeck Development of a Liquid Storage Method and Effect of Cryoprotectants on Semen Collected From Whitespotted Bamboo Sharks (<i>Chiloscyllium plagiosum</i>)		
9:00 AM	685	Alyssa Andres*, Brad Seibel, Emily Slesinger, Grace Saba, Jack Morris, Vincent Saba Metabolic Implications of Rising Temperature and Hypoxia in Three Coastal Shark Species		
9:15 AM	596	Matthew Levendosky*, Molly Lanier, Christine Bedore Effect of Anesthesia Immersion on the Coral Catshark, <i>Atelomycterus marmoratus</i>		
9:30 AM		BREAK		
SESSION/ SYMPOSIUM		AES Physiology II		
MODERATOR		Kady Lyons		
10:00 AM	481	Wm. Kirk Suedmeyer*, Brian Stockinger Clinical hypoidiodinism, goiter and treatment in a group of white spotted bamboo sharks		
10:15 AM	635	Elana Rusnak*, Liza Merly Isolation and Characterization of Acute Phase Reactants in the Nurse Shark, <i>Ginglymostoma cirratum</i>		
10:30 AM	435	Tereza Almeida*, Yuko Ohta, Martin Flajnik, Pedro Esteves, Ana Verissimo Evolution of the adaptive immunity – A new perspective given by Chondrichthyan fishes as basal jawed vertebrates		
10:45 AM	521	Alisa Newton*, Nicole Stacy, Michael Hyatt, Carolyn Cray, Chris Fischer Preliminary Animal Health Assessment Findings for Northwest Atlantic White Sharks (<i>Carcharodon carcharias</i>)		
11:00 AM	380	Lisa Crawford*, Nicholas Fisher, Cheng-Shiuan Lee, Douglas Adams, Maeva Giraud, Anne McElroy Total Mercury and Molecular Responses in North Atlantic White Sharks (<i>Carcharodon carcharias</i>) and Tiger Sharks (<i>Galeocerdo cuvier</i>)		
11:15 AM	400	Jim Gelsleichter*, R. Dean Grubbs, John Carlson Mercury in blood of the endangered smalltooth sawfish, <i>Pristis pectinata</i> .		
11:30 AM	31	Kady Lyons*, Katherine Wynne-Edwards Legacy PCB Contamination Negatively Impacts Osmoregulatory Biomarkers in Pregnant Female Stingrays and their Embryos		
11:45 AM				
12:00 PM		LUNCH		

* denotes presenter

Oral Presentations - Sunday, 28 July - Afternoon

ROOM		Ballroom 1 - Cliff Lodge		Ballroom 2 - Cliff Lodge
SESSION/ SYMPOSIUM		ASIH/HL/SSAR Symposium: The Expanding Role of Natural History Collections		ASIH/HL/SSAR Symposium: Citizen Science in Herpetology: Productive Past and Promising Future
MODERATOR		Eric Hilton		Greg Pauly
1:30 PM	107	Brad Carlson*, Max Lambert, Adam Roddy, Christian Gosser, Charles Mettler, William Robinson Reptile sex ratios in museum collections are associated with climate change and phylogeny	722	Christopher Smith*, Don Becker, Mike Pingleton Citizen Science 2.0: Implementing Bleeding-edge Technologies in Cooperative Biology
1:45 PM	308	Rachel Welicky*, Katie Leslie, Evan Fiorenza, Natalie Mastick, Katherine Maslenikov, Luke Tornabene, Chelsea Wood Natural history collections as time capsules: Assessing a century of change in disease burden and trophic level of marine fishes	205	John Vanek*, Andrew Durso, Kevin Messenger, Christopher Smith, James Van Dyke, Michael Thalman The Only Good Snake is an Identified Snake: The Power of Collective Knowledge
2:00 PM	125	Casey Dillman* Natural history collections as repositories of evolutionary change	12	Andrew Durso*, Rosy Mondardini, Jose Luis Fernandez, Fanny Jones, Marcel Tanner, Christopher Gwilliams, François Grey, Don Becker, Michael Pingleton, Christopher E. Smith, Gabriel Alcoba, François Chappuis, Nicolas Ray, Marcel Salathé, Sharada Prasanna Mohanty, Camille Montalcini, M. Jose Louies, Ulrich Kuch, Brian Lohse, Hanne Epstein, Abiy Tamrat, David Williams, Isabelle Bolon, Rafael Ruiz de Castañeda Snapp: Guiding anti-venom selection with snake-identification imagery analysis based on artificial intelligence and remote collaborative expertise
2:15 PM	37	Sara Ruane* Old Museum Specimens for Modern Molecular Systematics	150	Brian Todd*, Justin Nowakowski, Jonathan Rose, Steven Price Traits Linked to Contemporary Snake Distributions and Their Sensitivity to Human Land Use as Revealed by Citizen Science Data
2:30 PM	166	Nelson Rios* A Blockchain Inspired Model for Natural History Collections Data	577	Wade Ryberg*, Toby Hibbitts, Danielle Walkup, Brandon Bowers, Michelle Lawing Creating the Sauga Network: Using citizen science to enhance Western Massasauga research and conservation
2:45 PM	808	Luiz Rocha* Preserved specimens benefit public education and generate compelling exhibits		Discussion
3:00 PM	BREAK			
SESSION/ SYMPOSIUM		ASIH/HL/SSAR Symposium: The Expanding Role of Natural History Collections		ASIH/HL/SSAR Symposium: Citizen Science in Herpetology: Productive Past and Promising Future
MODERATOR		Eric Hilton		
3:30 PM	394	Brian Sidlauskas* Teaching Ichthyology Online with a Virtual Specimen Collection		Symposium participants' working group sessions
3:45 PM	25	Gregory Watkins-Colwell* Predicting the future of natural history collections and specimen usage		
4:00 PM		Discussion		
4:15 PM		Reception		
4:30 PM				
4:45 PM				

* denotes presenter

Oral Presentations - Sunday, 28 July - Afternoon

ROOM		Ballroom 3 - Cliff Lodge		Primrose A&B - Cliff Lodge
SESSION/ SYMPOSIUM		Session Honoring Contributions and Retirement of Pat Gregory		
MODERATOR		Jackie Litzgus		
1:30 PM	180	Patrick Gregory* Prey-Size vs. Snake-Size Relationships and Variation in Diet in Three Species of Gartersnakes (Thamnophis) on Vancouver Island		
1:45 PM	180	Patrick Gregory* Prey-Size vs. Snake-Size Relationships and Variation in Diet in Three Species of Gartersnakes (Thamnophis) on Vancouver Island		
2:00 PM	644	M. Rockwell Parker*, Christopher R. Friesen, Robert T. Mason Patterns of emergence from a hibernaculum and a possible explanation for known sex differences		
2:15 PM	377	Robert T. Mason*, Leslie Blakemore Reproduction and Anti-microbial Defense in the Red-sided Garter Snake, Thamnophis sirtalis parietalis		
2:30 PM	181	Richard Shine*, Claire Goiran, Cathy Shilton, Gregory Brown Have Sea Snakes Evolved Thicker Skins to Deal with Fouling Organisms?		
2:45 PM	159	Steve Beaupre*, Rod Wittenberg, Larry Kamees Secrets of the Rattlesnake Rattle: An Overlooked Comparative Tool.		
3:00 PM	BREAK			
SESSION/ SYMPOSIUM		Session Honoring Contributions and Retirement of Pat Gregory		
MODERATOR		Jackie Litzgus		
3:30 PM	611	Heather Waye*, Karl Larsen A Retrospective Through the Eyes of His Students		
3:45 PM	4	David Green* Pat disperses to the west, bringing herpetology with him.		
4:00 PM		Open Discussion		
4:15 PM				
4:30 PM		Closing Remarks		

* denotes presenter

Oral Presentations - Sunday, 28 July - Afternoon

ROOM		Cottonwood A-D - Snowbird Center		Rendezvous A&B - Snowbird Center
SESSION/ SYMPOSIUM		Ichthyology Systematics I		AES Conservation & Management III
MODERATOR		Fernando Alda		John Carlson
1:30 PM	434	Luke Tornabene*, David Greenfield, Mark Erdmann Taxonomic explosion in the most diverse genus of marine fishes (Gobiidae: Eviota): is there an end in sight?	122	Kelcee Smith*, Dakus Geeslin Updating the Status of Texas Elasmobranchs for Effective Conservation and Management
1:45 PM	814	Henry Bart*, Ray Schmidt, Joseph Gathua, Dorothy Nyngi A new species of Neobola from the Tana River, Kenya (Actinopterygii: Danionidae)	243	Karla Garces-Garcia*, Javier Tovar-Ávila, Dario Chavez-Arrenquin, Bibiana Vargas-Trejo, Terry Walker, Rob Day Evaluation of Elasmobranchs caught by prawn trawls in the Gulf of California for Vulnerability Analysis (Fishing and Climate change stressors)
2:00 PM	347	William Ludt*, Bruce Collette, Carole Baldwin Osteology of paired and median fins in Hemiramphidae and Exocoetidae with taxonomic comments	461	Brooke Anderson*, Lisa Natanson, James Sulikowski Preliminary Investigation of the Resiliency of Juvenile Porbeagle Sharks to Capture and Handling Techniques
2:15 PM	352	Kyoji Fujiwara*, Hiroyuki Motomura Two undescribed species of the genus Lepadichthys (Gobiesocidae) from southern Japan and the Pitcairn Islands	270	Hannah Medd*, Gretchen Arndt, Deborah Azevedo, Kaitlyn Isaacson, Dan Tabatabai, Steven Cooke, Steven Kessel, Vivian Nguyen, Jacqueline Chapman, Jill Brooks A Multi-pronged and Collaborative Approach to Solving a Conservation Issue: the Plight of the Shore-angled Great Hammerhead (Sphyrna mokarran).
2:30 PM	424	Matthew Davis*, W. Leo Smith Evolution of Ray-finned Fishes into the Deep Sea	507	Alex Hansell*, Tobey Curtis, John Carlson, Enric Cortes, Gavin Fay, Steve Cadrin Stock Assessment of the Lemon Shark (Negaprion brevirostris) in U.S. Waters of the Northwest Atlantic.
2:45 PM	428	Fernando Alda*, Diego Elias, William Ludt, Caleb McMahan, Prosanta Chakrabarty Compared Performance of Hybrid-Target Capture Methods in Resolving the Phylogeny of Heroine Cichlids: Are All Markers Good for All Nodes?	442	Yen-Jun Wang* Using two-sex stage-based matrix model for assessing eagle ray in Ariake Bay, Japan
3:00 PM	BREAK			
SESSION/ SYMPOSIUM		Ichthyology Systematics II		AES Conservation & Management IV/ Behavior
MODERATOR		Ricardo Betancur-R		Jen Wyffels
3:30 PM	132	Ricardo Betancur-R.*, Carmen Pedraza-Marron Genomics to the Rescue: When Mitochondrial DNA and Morphology Conflict on the Species Delimitation of Red Snappers		
3:45 PM	309	Guillermo Orti* FishLife Exons Advance Phylogenomic Studies of Fishes	63	Christian Jones*, William Driggers, Kristin Hannan, Eric Hoffmayer, Diva Amon, Brian Kennedy Deepwater remotely operated vehicle surveys document rare and obscure chondrichthyans in the northern Gulf of Mexico
4:00 PM	156	Dahiana Arcila*, Guillermo Orti, Lily Hughes, Mark Sabaj, Ricardo Betancur-R. Phylogenomic incongruence, hypothesis testing, and taxonomic sampling: The monophyly of characiform fishes	158	Jeremy Vaudo*, Ryan Logan, Lara Souza, Bradley Wetherbee, Mark Sampson, Mahmood Shivji Seasonal Movements and Area Use of Juvenile Smooth Hammerhead Sharks Sphyrna zygaena in the Western North Atlantic Ocean
4:15 PM	793	Michael Sandel*, Andres Aguilar, David Neely, Thaddaeus Buser Phylogenomic Interrelationships and Osteology of Baikal Sculpins with a Comparison of Perciform Adaptive Radiations	706	Hannah Calich*, Jorge Rodriguez, Neil Hammerschlag, Charitha Pattiaratchi, Víctor Eguíluz, Ana Sequeira Big Data Methods Reveal Behavioural Drivers of Shark Movement Patterns
4:30 PM	740	Leo Smith* The Phylogeny and Taxonomy of Scorpionfishes	64	Andrew Nosal*, Daniel Cartamil, Chi Lam, Lyall Bellquist, Noah Ben-Aderet, Conner White, Ryan Logan, Ryan Freedman, Christopher Lowe, Brice Semmens, Philip Hastings Triennial Philopatry in the Eastern North Pacific Soupfin Shark (Galeorhinus galeus)
4:45 PM	482	Lily C. Hughes* Exon-based phylogenomics of the fish clade Ovalentaria	699	Eric Reyier*, Stephanie Watwood, Bonnie Ahr, Joseph Iafate, Douglas Scheidt As Not Seen on Shark Week: Multi-Year Movements of Blacknose, Finetooth, and Sharpnose Sharks in the US South Atlantic

* denotes presenter

Oral Presentations - Sunday, 28 July - Afternoon

ROOM		Alpine A,B,C - Snowbird Center		
SESSION/ SYMPOSIUM		AES Trophic Ecology I		
MODERATOR		Aaron Carlisle		
1:30 PM	636	Matthew Ajemian*, Catherine Lamboy, Ali Ibrahim, Breanna DeGroot, Kimbrough Bassos-Hull, Laurent Cherubin Breaking ground with underwater sound: a novel approach to remotely measure hard prey consumption in durophagous predators		
1:45 PM	530	Lisa Hoopes*, Tonya Clauss, Nicole Browning, Alexa Delaune, Bradley Wetherbee, Mahmood Shivji, Jessica Harvey, Guy Harvey Seasonal Patterns in Stable Isotope and Fatty Acid Profiles of Southern Stingrays (<i>Hypanus americana</i>) at a Popular Tourist Interaction Site		
2:00 PM	165	Emily Seubert*, John Valentine, Sean Powers, Nigel Hussey, Marcus Drymon Not So Stable: Investigating the Trophic Flexibility of Predatory Species Using Stable Isotope Analysis		
2:15 PM	62	Ashley Galloway*, Amanda Barker, Christine Bedore, Doug Adams, Eric Reyier, Jim Gelsleichter, David Portnoy, Bryan Frazier Trophic Ecology of the Scalloped and Carolina Hammerheads in Coastal Waters of the Southeastern U.S.		
2:30 PM	260	Aaron Carlisle*, Sora Kim, Lauren Meyer, Jesse Port, Stephen Scherrer, John O'Sullivan New Insights into the Trophic Ecology of the Cookiecutter Shark (<i>Isistius brasiliensis</i>) from eDNA, Stable Isotope, and Fatty Acid Analysis		
2:45 PM	235	Lauren Meyer*, Charlie Huveneers, Heidi Pethybridge, Peter Nichols, Crystal Beckmann, Barry Bruce, Charlie Huveneers Café or Buffet? Using fatty acids to reveal the generalist diet and coastal habitat use of Australia's white sharks		
3:00 PM	BREAK			
SESSION/ SYMPOSIUM		AES Trophic Ecology II/Ecology		
MODERATOR		Joe Bizzarro		
3:30 PM	694	Johanna Imhoff*, Dean Grubbs Trophic Relationships and Mercury Contamination of Deep Sea Sharks in the Gulf of Mexico		
3:45 PM	456	Joseph J. Bizzarro*, Oliver N. Shipley, Simon C. Brown, Aaron B. Carlisle, Jose Leonardo Castillo-Geniz, David A. Ebert Regional variability in ecological function of eastern North Pacific skates		
4:00 PM	341	Ami Meite*, Chris Fischer, Brett McBride, Fernanda Ubatuba Comprehensive data from live, large sharks at sea: Methods and results of capture, study, release, and funding model by OCEARCH		
4:15 PM				
4:30 PM				
4:45 PM				

* denotes presenter

Presenter Index

A			
Acero, Arturo.....	51	Bougie, Tiffany.....	25
Adams, Cory.....	50	Bowers, Beth.....	24
Adams, David.....	49	Bowers, Brandon.....	39
Adreani, Mia.....	55	Braun, Camrin.....	27
Agan, Justin.....	23	Bressman, Noah.....	27, 33
Agha, Mickey.....	44	Bretzing, Robert.....	36
Ajemian, Matthew.....	27, 60	Brewster, Casey.....	22
AJS O'Connor, David.....	41	Brewster, Luran.....	51
Akers, Nathaniel.....	38	Brewster-Geisz, Karyl.....	55
Alda, Fernando.....	59	Britton, Michael.....	30, 33
Allen, Kaitlin.....	25	Brocka, Colin.....	54
Allen, Larry.....	42	Brodman, Robert.....	29
Almeida, Tereza.....	56	Brooks, George.....	25
Alvarez, Triana.....	36	Brooks, Jill.....	35
Anderson, Brooke.....	59	Brooks, Olivia.....	50
Angeli, Nicole.....	43	Brown-Peterson, Nancy.....	55
Angibaud, Margot.....	56	Brumley, Jacob.....	34
Anthony, Carl.....	50	Buchanan, Jennifer.....	29
Arcila, Dahiana.....	51, 59	Buehler, Matthew.....	25
Arndt, Gretchen.....	35	Buontempo, Michael.....	32
Arrington, Morgan.....	28, 35	Burke, Elizabeth.....	52
Ashby, Taylor.....	50	Burke, Russell.....	53
Assis, Braulio.....	44	Burns, Echelle.....	26
Atkins, Zak.....	39, 40	Burns, Michael.....	45
Atkinson, Matthew.....	25	Burrow, Angela.....	31
Atta, Calder.....	24	Butler, Brett.....	26
Autz, Justin.....	54	Byer, Nathan.....	22, 32
		Byrne, Allison.....	25
B		C	
Baird, Troy.....	39	Caceres, Camila.....	27
Bakkegard, Kristin.....	54	Cahill, Brianna.....	36
Balchan, Neil.....	22	Calich, Hannah.....	59
Bandeira, Suzana.....	32	Campbell, Kaitlyn.....	26
Bangley, Charles.....	31	Cannatella, David.....	29
Barichivich, William.....	50	Cannon, Christopher.....	48
Barker, Amanda.....	27	Cardeñosa, Diego.....	27
Barnhart, Patrick.....	50	Carfagno, Gerardo.....	54
Barrow, Lisa.....	22	Carlisle, Aaron.....	60
Barrows, Cameron.....	53	Carlos, Audrey.....	34
Barry, Shannon.....	35	Carlson, Brad.....	57
Bart, Henry.....	59	Carlson, John.....	55
Basanta, Delia.....	50	Carlson, Taylor.....	32
Bauer, Aaron.....	53	Carnes-Mason, Max.....	33
Bauer, Sarah.....	49	Caruso, Nicholas.....	48
Beachy, Christopher.....	48	Cashion, Madeline.....	55
Beal, Eli.....	33	Castro, Rebecca.....	34
Beaupre, Steve.....	58	Catenazzi, Alessandro.....	54
Bedore, Christine.....	45	Caviedes-Solis, Itzue.....	25
Belasen, Anat.....	23	Cazares, Alexus.....	43
Bell, Rayna.....	43	Cecala, Kristen.....	29, 50
Bellah, John.....	23	Ceríaco, Luis.....	29
Bemis, Katherine.....	34, 53	Chabot, Chris.....	41
Bemis, William.....	46, 47, 52	Childers, Jackie.....	25
Benavides, Martin.....	55	Christodoulides, Nicholas.....	33
Bernt, Maxwell.....	45	Chubak, Benjamin.....	27
Betancur-R., Ricardo.....	59	Chyn, Kristina.....	22
Bevier, Catherine.....	39, 40	Clark, Christopher.....	41
Biffi, Daniella.....	31, 34	Clark, Jaden.....	48
Bigman, Jennifer.....	31	Clark, Meaghan.....	50
Birindelli, Jose.....	52	Claunch, Natalie.....	30, 33
Bizzarro, Joseph.....	60	Clevenstine, Alyssa.....	27
Blackwelder, Cory.....	34	Cobos, Anthony.....	30
Bogisich, Allison.....	29	Conway, Kevin.....	55
Bogolin, Amy.....	32	Cook, Todd.....	35
Bonewell, Lea'.....	39, 40	Cooper, Pearce.....	55
Bosak, John.....	39	Cornelius, Samuel.....	51

Presenter Index

Cornell, Brittany.....	37	Findley, Kearstin.....	33	51
Cornwall, Maggie.....	32	Firreno, Thomas.....	23, 49	23, 49
Corrigan, Shannon.....	27	Fisher, Robert.....	39	33
Cortes, Alvaro.....	51	Fitzgerald, Katie.....	32	50
Corush, Joel.....	41	Fitzgerald, Austin.....	49	49
Crawford, Lisa.....	56	Fleming, Kelsey.....	26	
Crowell, Hayley.....	30	Flemming, Adania.....	46, 47, 51	
Crump, Marty.....	38	Fontenelle, Joao.....	27	
Cupp, Paul.....	48	Fontenot, Clifford.....	49	
Currie, Kathleen.....	48	Ford, Jessica.....	44	
		Foster, Kaya.....	51	
D		Foster, Kimberly.....	27	
Dain, Jonathan.....	48	Frable, Benjamin.....	51	
Daly-Engel, Toby.....	28	Franks, Bryan.....	31	
D'Amore, Domenic.....	36	Freeman, Layne.....	51	
Davis, Matthew.....	59	Frishkoff, Luke.....	44	
Dawdy, Ashley.....	35	Fronk, Aaron.....	51	
Dawson, Dominique.....	34	Fujita, Matthew.....	22	
De Jesús Villanueva, Christina.....	49	Fujiwara, Kyoji.....	59	
Deacy, Bethany.....	28			
DeArmon, Emily.....	24	G		
Dedman, Simon.....	27	Gade, Meaghan.....	23	
Deitloff, Jennifer.....	54	Gallaher, Bannon.....	23	
DeKay, Hannah.....	52	Galloway, Ashley.....	60	
Denton, John.....	55	Garces-Garcia, Karla.....	59	
Devaney, Calum.....	48	Gardiner, Jayne.....	36, 41	
Dickson, Matthew.....	30	Gardner, Jennifer.....	34	
Dillman, Casey.....	57	Garrett, Chance.....	27	
Disotell, Nastasia.....	34	Gastelum, Jacob.....	48	
Donaldson, Terry.....	46, 47	Gavrielides, George.....	27	
Donlon, Kate.....	50	Gelsleichter, Jim.....	36, 56	
Donnelly, Maureen.....	38	Ghedotti, Michael.....	52	
Drake, Dana.....	49	Ghods, Sam.....	51	
Drymon, Marcus.....	31	Ghuznavi, Nureen.....	52	
Durso, Andrew.....	57	Gibbs, Melissa.....	51	
Durtsche, Richard.....	51	Gibson, Sarah.....	45	
		Gilbert, Chaise.....	55	
E		Gilg, Matthew.....	55	
Earl, Julia.....	38	Giovannetti, Victor.....	42	
Eastis, Anna.....	34, 46, 47	Girard, Matthew.....	27	
Ebeling-Whited, Kelsie.....	41	Godwin, Cody.....	33	
Ebert, Sarah.....	43	Goetz, Scott.....	50	
Ebey, Karin.....	50	Gomez-Buckley, Marta.....	31	
Eckman, Colin.....	32	Gonzales, Sebastian.....	22	
Egan, Joshua.....	42	Goode, Matt.....	43	
EGge, Jacob.....	52	Gotsch, Parker.....	32	
Ehlers, Coles.....	50	Gottscho, Andrew.....	26	
Eliás, Diego.....	24	Grabowsky, Emily.....	39	
Ely, Erica.....	32	Graham, Jasmin.....	55	
Emmenegger, Eveline.....	54	Grajal-Puche, Alejandro.....	26	
Engler, Heather.....	37	Green, David.....	58	
Ensminger, David.....	44	Gregory, Patrick.....	56	
Espinosa-Pérez, Hector.....	51	Grimsley, Ashley.....	54	
Estes-Zumpf, Wendy.....	30	Grisnik, Matthew.....	39	
		Grubbs, Dean.....	55	
F		Grundler, Maggie.....	48	
Farina, Stacy.....	53	Gumm, Jennifer.....	41	
Farrell, Terence.....	43	Gutierrez, Andres.....	29	njmn
Fast, Kayla.....	46, 47			
Faughnan, Donald.....	35	H		
Fearing, Annmarie.....	55	Hall, Brianna.....	31	
Fellows, Sam.....	29	Halstead, Brian.....	43	
Feltmann, Andrew.....	32	Han, Donglin.....	23	
Fenolio, Danté.....	53	Hanscom, Ryan.....	33	
Fenwick, Allyson.....	44	Hansell, Alex.....	59	
Fields, Andrew.....	27	Hantak, Maggie.....	26	
Figueras, Miranda.....	48	Harrington, Sean.....	26	

Presenter Index

Hart, Pamela.....	34	Karwacki, Emily.....	25
Harvey, Tanner.....	44	Kase, Anna.....	39
Hayes, Malorie.....	23	Kattawar, Jerry.....	24, 34
Heinicke, Matthew.....	39	Kearney, Maureen.....	38
Henderson, Max.....	48	Keller, Bryan.....	24
Henderson, Valencia.....	51	Kelley, Allison.....	31
Hengstebeck, Kodiak.....	22	Kelley, Meghan.....	39, 48
Hernandez-Gomez, Obed.....	54	Kelly, Audrey.....	32
Herr, Mark.....	25	Kepas, Megen.....	36
Hewes, Amanda.....	29	Kerby, Jacob.....	54
Hews, Diana.....	39	Kerns, Emily.....	52
Heyborne, William.....	50	Kim, JinKoo.....	46, 47
Hibbitts, Toby.....	53	Kimball, Daniel.....	52
Hileman, Eric.....	26	Kimmel, Laura.....	48
Hilton, Eric.....	53	Klabacka, Randy.....	25
Hinojosa, Natasha.....	51	Klawinski, Paul.....	44
Hobbs, Jessica.....	36	Klimley, Peter.....	36, 41
Hoffman, Eric.....	26	Klocke, Blake.....	54
Hoffmann, Sarah.....	41	Kobisk, Ashley.....	22
Hogan, Derek.....	42	Koehler, Paige.....	35
Holding, Matthew.....	22, 36	Koo, Michelle.....	39, 40
Hollingsworth, Bradford.....	26	Kraft, Derek.....	27
Hoopes, Lisa.....	36, 60	Krak, Alexandra.....	51
Hopkins, Andrew.....	23	Kroetz, Andrea.....	31
Hopkins, Gareth.....	49	Krolow, Aaron.....	34
Hovey, Tanden.....	52	Kross, Chelsea.....	31
Howell, Hunter.....	25	Kubicek, Kole.....	24, 34
Hoyer, Kelly.....	51	Kuchta, Shawn.....	39, 40
Hromada, Steven.....	26	Kudla, Nathan.....	22
Huerta, Diego.....	43	Kupferberg, Sarah.....	29
Hueter, Robert.....	55	Kuraka, Shigehiro.....	36, 56
Hughes, Lily.....	59	Kuznar, Shannon.....	55
Huie, Jonathan.....	27	Kwiatkowski, Matthew.....	37, 39, 40
Hunt, Elizabeth.....	45	Kyne, Peter.....	55
Hylton, Sarah.....	41		
		L	
I		Ladin, Emily.....	34
Imhoff, Johanna.....	60	LaDuc, Travis.....	53
Ingram, Callie.....	34	Laforest, Krista.....	36
Innamorato, Kathryn.....	42	Lalonde, Jaedyn.....	50
Isaac, Krone.....	26	Lamb, Jennifer.....	37
Ivey, Kathleen.....	30	Lange, Zachary.....	22
Izumiyama, Michael.....	26	Larrimore, John.....	51
		Larsen, Matthew.....	35, 46, 47
J		Larson, Halee.....	35
Jang, SeoHa.....	41	Larson, Kristen.....	25
Januszkiewicz, Eric.....	54	Lassiter, Elliot.....	25
Jiménez-Rosenberg, Sylvia.....	46, 47	Leache, Adam.....	26
Jobe, Kasey.....	39, 40, 50	Lehman, Ryan.....	27
Johnson, David.....	45	Lehtinen, Richard.....	38
Johnson, Josiah.....	32	Levendosky, Matthew.....	56
Jones, Christian.....	59	Li, Enjie.....	53
Jones, Gavin.....	50	Lindeman, Peter.....	39
Jones, Katherine.....	48	Linhoff, Luke.....	54
Jones, Kenny.....	31	Lips, Karen.....	38
Jones, Leonard.....	26	Litmer, Allison.....	33
Josimovich, Jillian.....	43	Little, Aimee.....	36
Jreidini, Nathalie.....	39, 40	Livingston, Michaela.....	36
Juarez, Bryan.....	37	Longo, Gary.....	55
		Lopez, Keira.....	37
K		Lovich, Robert.....	39
Kacev, Dovi.....	41	Lowe, Christopher.....	41
Kajiura, Stephen.....	45	Ludt, William.....	59
Kamees, Larry.....	30	Lutnesky, Marvin.....	52
Karraker, Nancy.....	30	Lyons, Kady.....	56b

Presenter Index

M		N	
Macek, Amanda.....	35	Nacy, Joseph.....	25
Mackessy, Stephen.....	44	Nafus, Melia.....	43
MacLaren, Andrew.....	25	Nanjappa, Priya.....	38
Maerz, John.....	29	Nash, Ann-Elizabeth.....	39
Maglia, Anne.....	43	Nave-Powers, Laurel.....	34
Mahr, Michael.....	22	Neldner, Heather.....	39, 40
Maile, Alex.....	33	Nelson, Lindsey.....	24
Main, Jennifer.....	27	Neuharth, Dalton.....	22
Mann, Justin.....	41	Neuman, Emily.....	52
Manning, Rachel.....	34	Newton, Alisa.....	36, 56
Marchio, Elizabeth.....	31	Newton, Kyle.....	45
Marens, Madeline.....	35	Nicholson, Kirsten.....	49
Maritz, Robin.....	53	Nickerson, Max.....	29
Marques, Mariana.....	48	Nielsen, Stuart.....	39, 40, 48
Marsh, David.....	29	Nneji, Lotanna.....	26
Marshall, Thomas.....	25	Nonaka, Ai.....	53
Martin, Amanda.....	44	Nosal, Andrew.....	59
Martin, Bradley.....	26	Noss, Clay.....	26
Martin, Katherine.....	23	Nowakowski, Justin.....	38
Martin, Kelsey.....	24, 52	Nowicki, Rob.....	46, 47
Martin, Rene.....	27	O	
Martínez-González, Angel.....	45, 52	O'Donnell, Katherine.....	49
Martin-Krikorian, Lindsey.....	37	Ogborn, Ken.....	35
Martins, Mariana.....	35	Okuyama, Kentaro.....	37
Maslenikov, Katherine.....	53	Olaya-Nieto, Charles.....	52, 55
Mason, Robert.....	58	O'Leary, Shannon.....	55
Mauger, Laurie.....	37	Olson, Emily.....	46, 47
Mausteller, Emily.....	22	Ortí, Guillermo.....	51, 59
May, Zachary.....	24	Osmanski, Austin.....	25
McCain, Margaret.....	24	Owen, Dustin.....	22
McClelland, Sara.....	30, 48	P	
McCormack, John.....	29	Pacheco, Juan.....	54
McIvor, Ashlie.....	36	Page, Lawrence.....	55
McKnight, Donald.....	54	Page, Robert.....	39, 40
McPherson, Samantha.....	48	Palen, Wendy.....	38
McQuigg, Jessica.....	32	Palmrose, Kristin.....	35
Medd, Hannah.....	59	Pandey, Deb.....	39
Meese, Emily.....	41	Papastamatiou, Yannis.....	41
Meite, Ami.....	60	Paquin, Melanie.....	55
Melo, Bruno.....	46, 47	Parandhaman, Anjana.....	25
Meredith, Tricia.....	45	Parker, Rockwell.....	50, 58
Meyer, Alexandra.....	24	Patrick, Baker.....	49
Meyer, Lauren.....	36, 60	Pauly, Gregory.....	53
Million, Kara.....	24	Pedersen, Kristopher.....	49
Minicozzi, Michael.....	41	Peele, Emily.....	24
Mirkin, Stephen.....	23	Pérez-Doria, William.....	41, 52
Mitchell, Blake.....	34	Perrera, Brooke.....	50
Mitchell, Corey.....	39, 40	Peterson, Cheston.....	31
Moniz, Haley.....	23	Peterson, John.....	39
Monroe, Dillon.....	53	Peterson, Mark.....	42
Montana-Schalk, Carmen.....	52	Peterson, Rose.....	24
Montano, Gisele.....	56	Petty, Micha.....	49, 54
Morgan, Clark.....	27	Phillips, Jackson.....	23
Moyer, Joshua.....	34	Phillips, Nicole.....	27
Mulder, Kevin.....	26	Pierce, Josh.....	50
Mull, Christopher.....	28	Pierson, Todd.....	50, 53
Munoz, Martha.....	43	Pinion, Amanda.....	24, 34
Murdoch, Matthew.....	32	Plylar, Helen.....	36
Murphy, Mason.....	39	Poo, Sinlan.....	38, 50
Murray, Alexander.....	26	Portik, Daniel.....	22
Murray, Christopher.....	49	Powers, Andrew.....	32
Muse, Lindy.....	32	Prates, Ivan.....	26
Muths, Erin.....	30	Putman, Bree.....	53
Myers, Edward.....	39, 40		

Presenter Index

R			
Rabosky, Alison	43	Sherman, Andrew	34
Rainey, Howard	23	Shields-Estrada, Analisa	23
Rais, Muhammad	49, 54	Shiffman, David	55
Ramirez, Andrea	32	Shine, Richard	58
Randall, Zachary	53	Sidlauskas, Brian	51, 57
Reddy, Deran	29	Siegel, Dustin	29, 36
Reichert, Amber	35	Siers, Shane	50, 54
Reider, Kelsey	49	Silva-Garay, Lorena	24
Reyier, Eric	59	Singer, Randal	53
Rezac, Calvin	31	Sinopoli, Daniel	27
Rhoads, Dustin	25	Skelton, Zachary	30
Richard, Molly	33	Skubel, Rachel	34, 55
Richmond, Jonathan	26	Smith, Cara	22
Rider, Mitchell	35	Smith, Christopher	57
Rios, Nelson	57	Smith, Jaime	33
Rissler, Leslie	38	Smith, Kelcee	59
Ritchie, Kim	56	Smith, Leo	51, 59
Rivera, Danielle	26	Smukall, Matthew	28
Robertson, Ross	46, 47	Sparkman, Graceann	36
Rocha, Luiz	57	Spencer, Carol	48
Rodríguez-Velázquez, Adolfo	23	Sporre, Megan	26
Romansic, John	38, 49	Stepanova, Natasha	33
Roosenburg, Willem	53	Sternes, Phillip	35
Rose, Jonathan	38	Sterrett, Sean	53
Rosenblatt, Adam	44	Stewart, Donald	42
Rosenblum, Erica	38	Strange, Carly	42
Rothermel, Betsie	30	Strasburg, Miranda	22
Rothstein, Andrew	25	Struble, Mikayla	41, 51
Row, Kristopher	26	Suedmeyer, Wm	56
Royal, Ethan	25	Sullivan, Sarah	36
Ruane, Sara	57	Sumarli, Alexandra	25
Rubin, Margaret	48	Swenson, John	24, 35
Ruddy, Braden	41	Swift, Dominic	24
Rupp, Ariana	23		
Ruppert, Krista	22	T	
Rusnak, Elana	56	Tan, Milton	45
Ruther, Ellery	22	Tang, Kevin	52
Ryba, Megan	33	Tapondjou, Walter	25
Ryberg, Wade	57	Tarvin, Rebecca	38
Ryu, JungHwa	46, 47	Telemeco, Rory	44
		Terry, Jennifer	48
		Tetzlaff, Sasha	30
		Thiem, Lyrandia	49
S		Thompson, Cassandra	33
Sabaj, Mark	52	Thompson, Ken	45
Sabando, Maria	36	Thompson, Michelle	38
Sacerdote-Velat, Allison	49	Tingle, Jessica	32
Saenz, Daniel	50	Todd, Brian	57
Sandel, Michael	59	Tordecilla-Petro, Glenys	42
Santos, Theresa	35	Tornabene, Luke	59
Savage, Anna	54	Tracy, Claire	23
Schaaf, Amanda	35	Trejo, Aline	34
Schalk, Christopher	39, 40, 49	Tricas, Timothy	45, 51
Schellhammer, Patricia	52	Trujillo, Alexa	54
Schwitz, Nicholas	44	Tucker, Mary	33
Schmidt, Ray	45	Turner, Thomas	42
Schramer, Tristan	49	Tylan, Catherine	30
Schwarzbach, Erin	52		
Schwieterman, Gail	24	U	
Scott, Goetz	43	Urgiles, Veronica	29
Segura-Guevara, Fredys	42, 52		
Selwyn, Jason	52	V	
Seubert, Emily	60	Valenzuela, Nicole	43
Shaffer, Brad	29	Vanek, John	32, 57
Shaw, Rachel	31	Vargas-González, Jesús	42
Shea-Vantine, Caitlin	36	Vaudo, Jeremy	59
Shepack, Alexander	25	Vaz, Diego	55
Shepard, Donald	26		

Presenter Index

Venable, Cameron.....	54
Verkamp, Hannah.....	28
Vesy, Miranda.....	50
Vick, Calvin.....	33
Villinger, Katrin.....	35
Vincent, Bridget.....	34
Virgin, Emily.....	44

W

Waddle, Anthony.....	22
Wagner, Graham.....	42
Walkowski, Whitney.....	33
Walkup, Danielle.....	49
Wallen, Julia.....	34
Walls, Susan.....	39
Wang, Yen-Jun.....	59
Ward, Sarah.....	34
Wargat, Bryanna.....	35
Wasley, McKenzie.....	32
Watanabe, Yuuki.....	41
Watkins-Colwell, Gregory.....	57
Watters, Jessa.....	39
Waye, Heather.....	48, 58
Webb, Alison.....	33
Weber, Nick.....	24
Weber, Rebecca.....	32
Webster, Michael.....	53
Weideli, Ornella.....	24
Weixler, Amelia.....	33
Welch, Brooke.....	35
Welicky, Rachel.....	57
Wen, Florence.....	22
Wenner, Sarah.....	49
West, Taylor.....	49
Westphal, Michael.....	29
Wharton, Jim.....	46, 47
White, Clemency.....	31
White, Connor.....	41
White, Mary.....	44
Whitfield, Steven.....	30
Wichman, Dylan.....	27
Wicks, Abby.....	41
Wiley, Tonya.....	55
Wilkinson, Jeffery.....	48
Wilkinson, Krystan.....	35
Williams, Becky.....	49
Williams, Dean.....	43
Williams, Emily.....	36
Wilson, Hannah.....	48
Winchester, Julie.....	53
Windmiller, Bryan.....	30
Wingar, Jessica.....	36
Wisell, Christine.....	37
Wishingrad, Van.....	44
Work, Kirsten.....	42
Wyffels, Jennifer.....	28

Y

Yackel Adams, Amy.....	39, 40
Yamaguchi, Atsuko.....	27
Yamauchi, Jessica.....	26
Yerrace, Sarah.....	52
Yopak, Kara.....	41
Young, Chelsey.....	55
Young, Joy.....	41

Z

Zani, Peter.....	39
Zellmer, Amanda.....	51, 53
Zender, Casey.....	35
Zurow, Kiara.....	48

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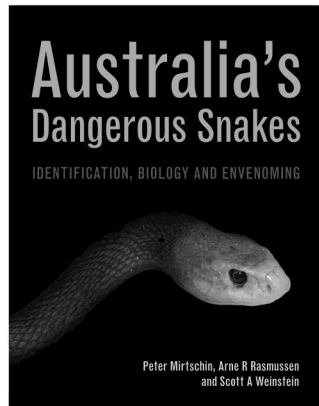
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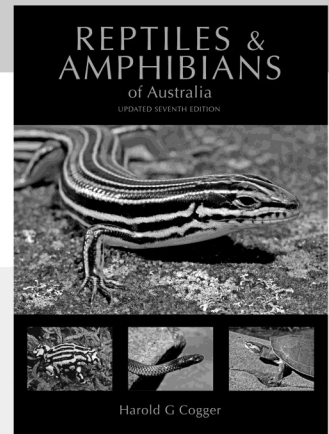
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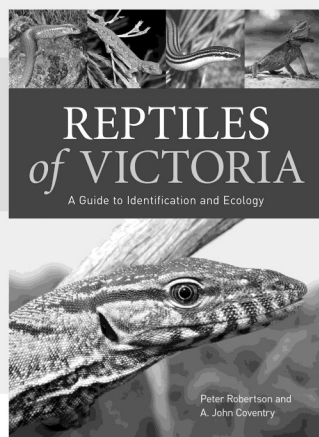
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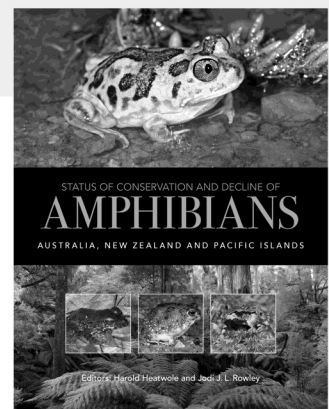
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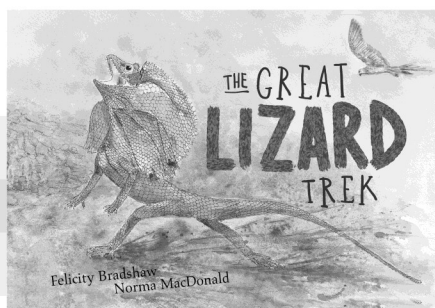
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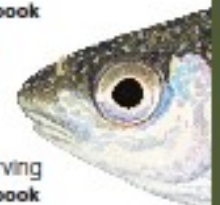


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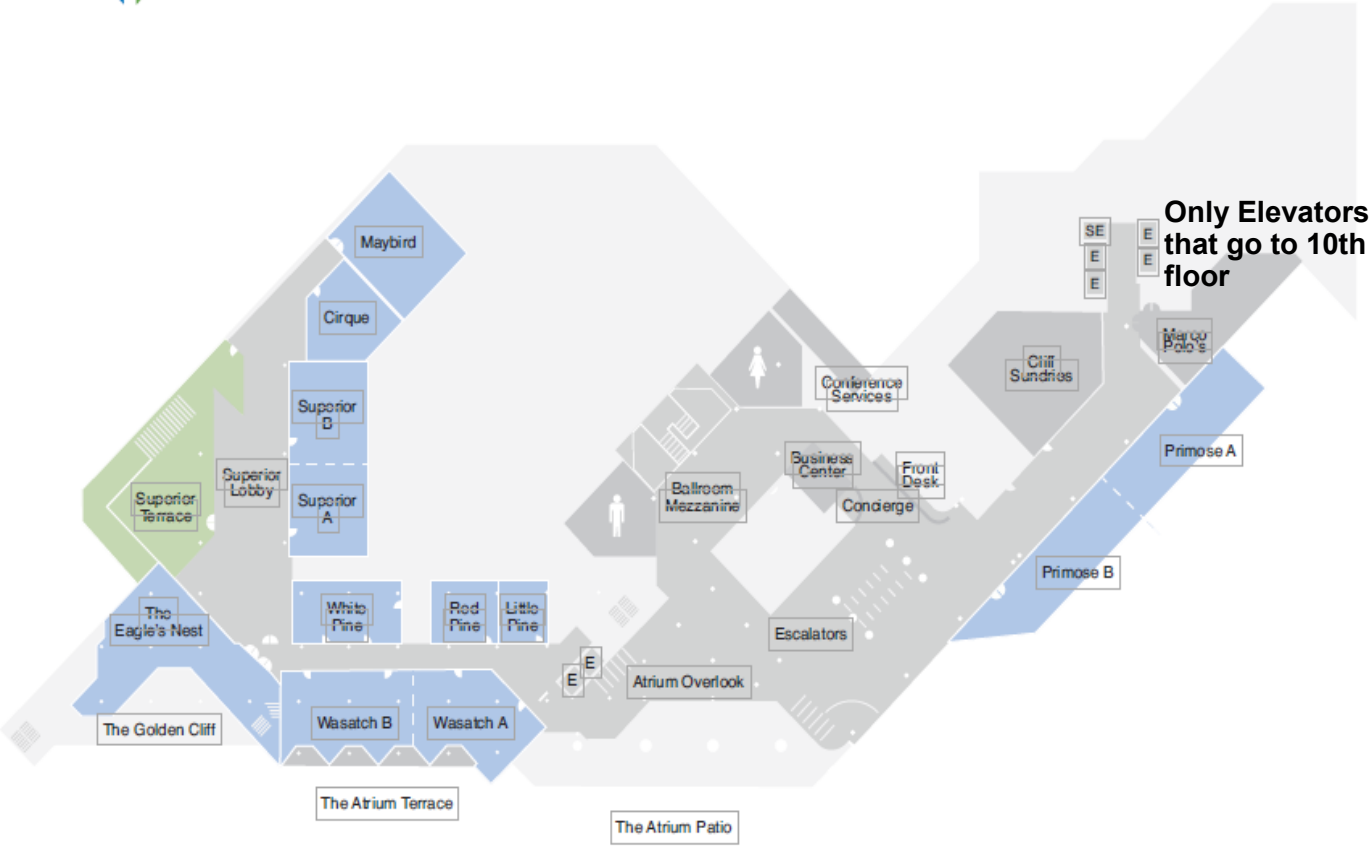
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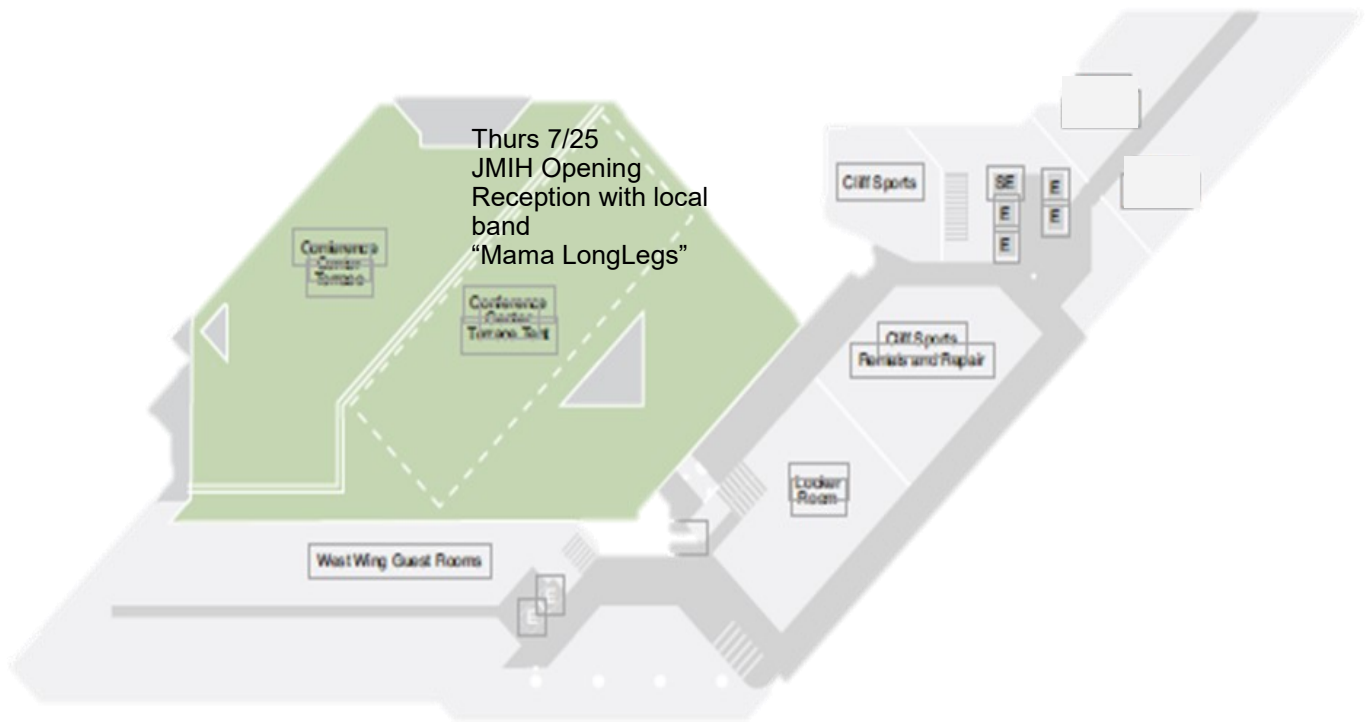
The Cliff Lodge Lobby Level



Snowbird Resort - The Cliff Lodge



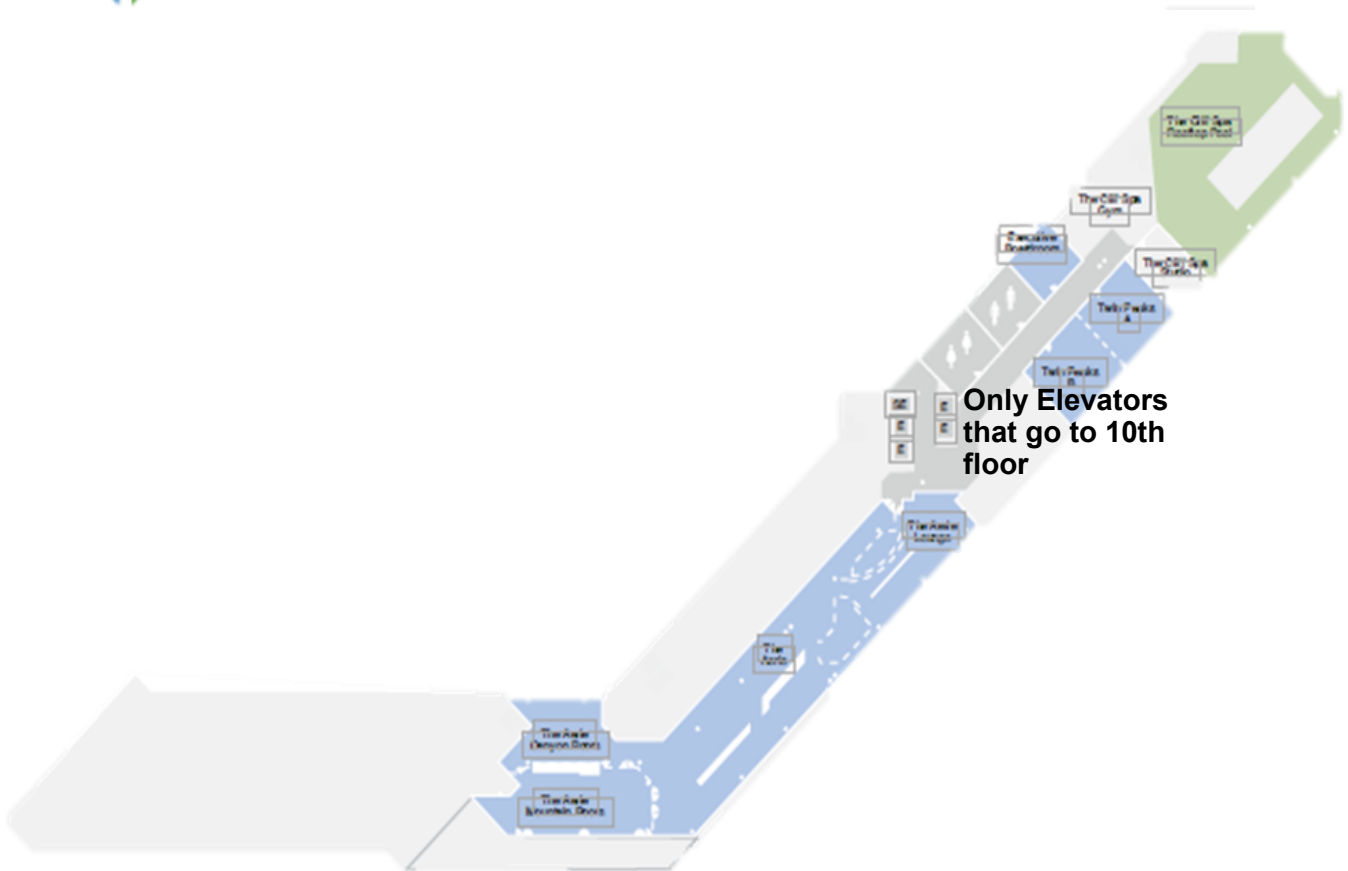
The Cliff Lodge Level I



Snowbird Resort - The Cliff Lodge



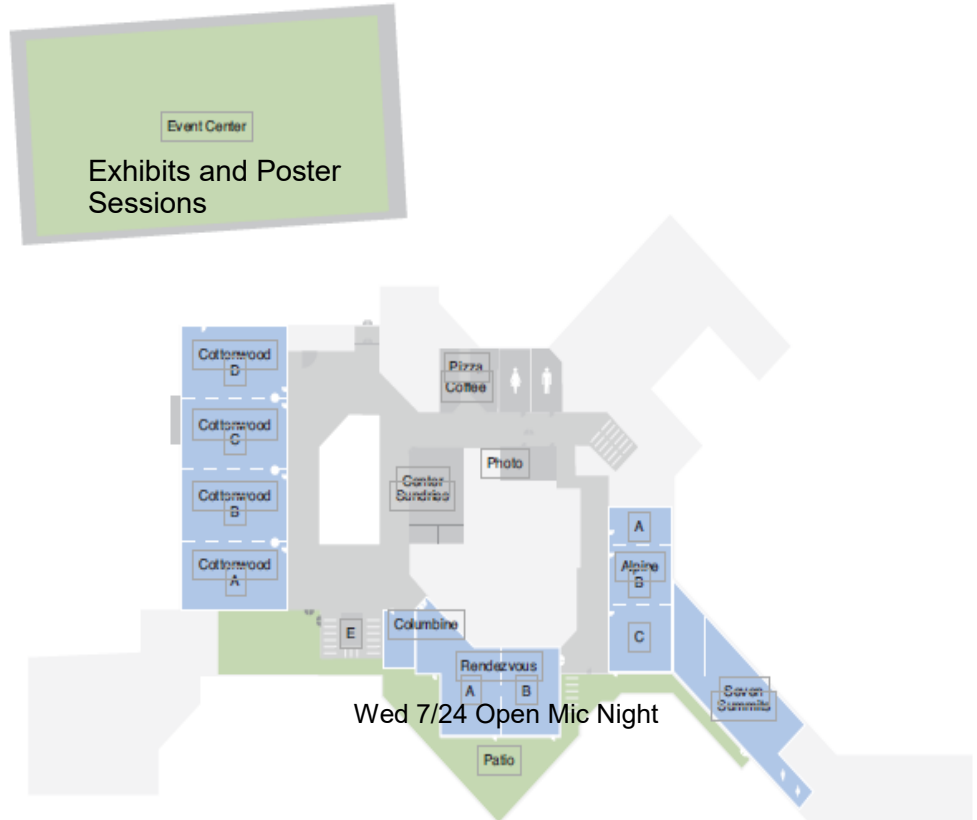
The Cliff Lodge Level



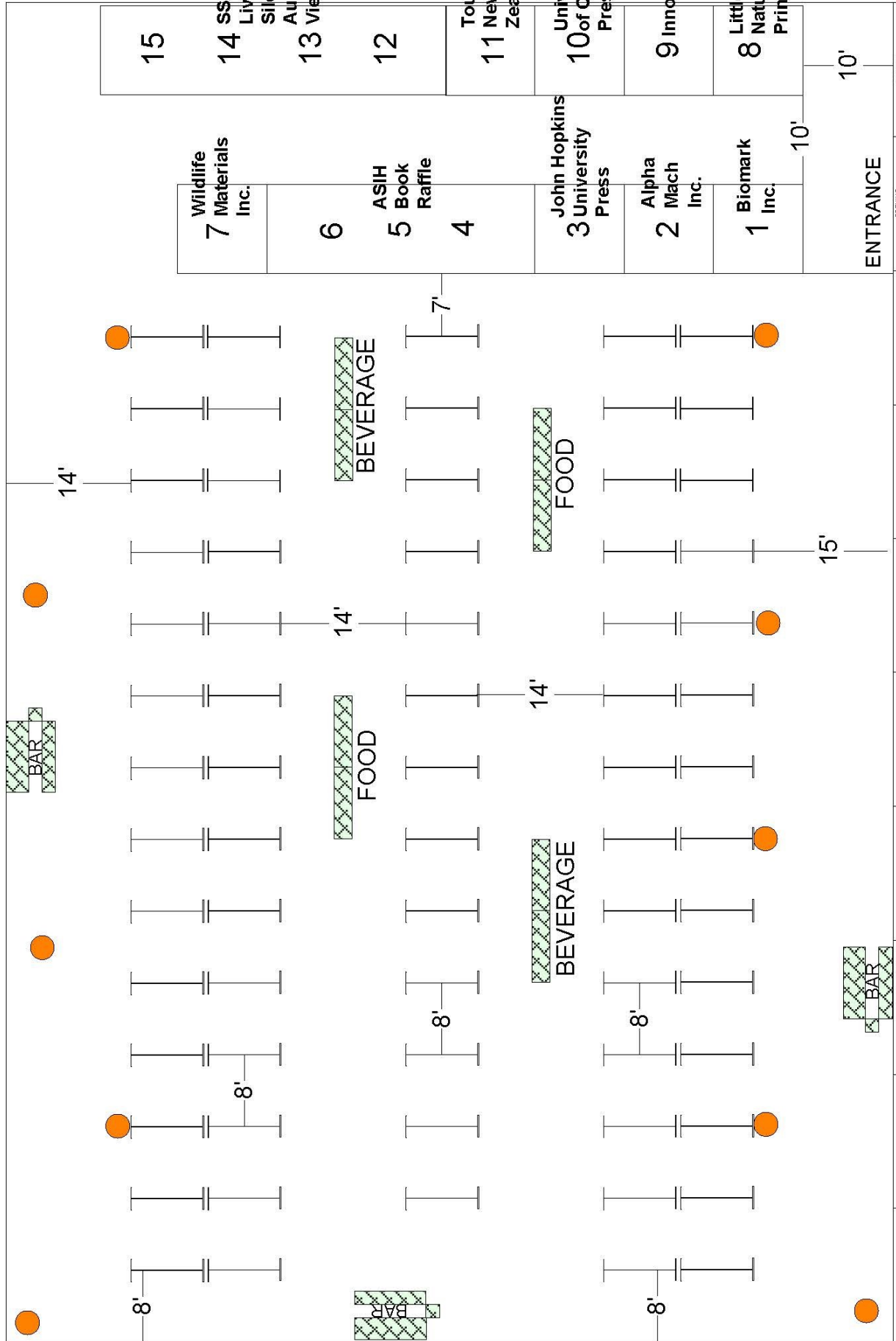
The Snowbird Center



Snowbird Center Level 2 & 3 The Lodge at Snowbird



- 150' -



JOINT MEETING OF ICHTHYOLOGISTS & HERPETOLOGISTS
SNOWBIRD RESORT - EVENT CENTER
JULY 25 - 27, 2019

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