**SOUTH DAKOTA ACADEMY OF SCIENCE**

*For the Promotion of Science Teaching, Research and Service*

# [***http://www.sdaos.org***](http://www.sdaos.org)

#

**103rd Annual Meeting**

**April 11, 12 and 13, 2019**

**Arrowood** **Cedar Shore Conference Center**

**Oacoma, SD**

The 104rd Annual Meeting of the South Dakota Academy of Science hosted by Mount Marty College will be held at the **Arrowood** **Cedar Shore Conference Center**, **April 11, 12 and 13, 2019.**

The Annual Meeting will open Friday morning with symposia that will continue throughout the day followed by the annual banquet. Contributed papers, and poster sessions are scheduled for Saturday. Papers and posters from South Dakota scientists and students in all areas of engineering, science and mathematics are welcome.

**Undergraduate and Graduate Students**

Your oral presentation or poster may be included in an oral presentation or poster judging competition and be awarded a monetary prize sponsored by the North Central Regional Sun Grant Center. First prize = $300; Second prize = $200; Third prize = $100. Oral presentations are scheduled for Saturday morning and posters for Saturday afternoon. Past first place winners are not eligible to compete. See the *Proceedings Submission Form* (below) to indicate your desire to be included in the judging. See http:sdaos.org for competition guidelines.

Authors presenting papers and/or posters must submit their abstracts and *Proceedings Submission**Form* **by March 15, 2019**. The author or one co-author must be a member of the South Dakota Academy of Science and register to present at the annual meeting, paying all applicable fees and membership dues. In addition to new submissions, all posters and oral presentations listed in the 2018 Annual Meeting Program may be resubmitted for presentation in 2019; however, only those not published in 2018 may be considered for publication in the 2019 *Proceedings*.

**To pre-register, please download, complete and mail the Registration Form(see below). Early bird registration ends 15 March.** For additional information, including membership, visit the SDAS Web Site at [**http://sdaos.org**](http://sdaos.org)

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|   | Tentative Meeting Schedule |   |
| Thursday, April 11 | Friday, April 12 | Saturday, April 13 |
| TBA Exec Council Dinner | 8:00 am Registration | 8:00 am Registration |
| TBA Exec Council Meeting | 9:00 am Symposia | 8:00 am Oral Presentation Sessions |
|   | NOON Lunch | 10:00 am Poster Presentations |
|   | 1:00 pm Drug Symposium | NOON Lunch |
|   | 5:00 pm Mixer | 1:00 pm Business Meeting |
|   | 6:00 pm Banquet | 2:00 pm Oral Presentation Sessions |
|   | 7:00 pm Plenary Address |   |

**Registration Form**

**2019 South Dakota Academy of Science** **Annual Meeting**

**April 11-April 13, Arrowood Cedar Shores, Oacoma, SD**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Institution/Agency \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Department or Area\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mailing Address\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City/ State/Zip Code\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Telephone (business) (\_\_\_\_)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ E-mail\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please select (circle) membership category and $$ amounts below:

Note: Fellows of the South Dakota Academy of Science are Life Members and do not need to pay membership dues or the Annual Meeting registration fee. We request that Life Members submit a registration form for planning purposes along with their payment for Banquet costs.

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| --- | --- | --- |
|  | General Members | Students and High School Teachers |
|  | --Early Bird RegistrationDeadlineMarch 15  | ------Onsite Registration and after March 15 | ---Early Bird RegistrationDeadlineMarch 15  | ------Onsite Registration and after March 15 |
| Membership Dues\* | $25.00 | $25.00 | $10.00 | $10.00 |
| Meeting Registration Fee\* | $65.00 | $100.00 | $20.00 | $25.00 |
| Banquet (Friday Evening) | $25.00 | $45.00 | $25.00 | $45.00 |
| Total | $ | $ | $ | $ |
| \*Payment of Membership Dues and Meeting Registration Fee is required of all presenters and attendees.---Meeting Registration Fee includes Friday breaks & pre-banquet mixer & Saturday breaks & lunch.Will you attend the lunch on Saturday (included in Registration Fee)? YES\_\_\_\_ NO\_\_\_\_Any dietary restrictions?\_\_\_\_\_\_\_ Explain:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |

TOTAL AMOUNT ENCLOSED………………………$\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Paid: by Cash \_\_\_\_\_\_\_\_\_ by Check \_\_\_\_\_\_\_\_\_\_ Check No. \_\_\_\_\_\_\_\_\_ Rcd by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Make checks payable to SDAS.**

**Forms received without accompanying payment will not be eligible for early bird discounts.**

**To register and pay, go to** [**https://sdaos.org**](https://sdaos.org) **OR send Registration Form and payment by US mail to:**

Dr. Jeff Palmer, Treasurer, South Dakota Academy of Science

College of Arts and Sciences-SC

Dakota State University, 820 N. Washington Ave.

Madison, SD 57042

**Motel Accommodations**

Arrowwood Cedar Shore Resort – (605) 734-6376 or (888) 697-6363

A Bridge View Inn – 115 N. River St. – Chamberlain, 605- 234-5566

Allen’s Hillside Motel – 502 E King St – Chamberlain, 605- 734-5591/ 800-435-5591

AmericInn Lodge & Suites – Exit 265 – Chamberlain, 605-734-0985 / 800-634-3444

Baymont Inn & Suites – Exit 260 – Oacoma 605-234-1667

Bel Aire Motel – King Street – Chamberlain, 605-234-5595

Arrowwood at Cedar Shore & Cabins– Exit 260 – Oacoma, 605-734-6376

Econo Lodge – Exit 260 – Oacoma, 605-734-4100

Howard Johnson Inns and Suites – Exit 260 – Oacoma, 605-234-4222

Lee’s Motor Inn – Best Western – King Street – Chamberlain, 605- 734-5575

Quailty Inn – Exit 260 – Oacoma, 605-734-5593

Super 8 – Exit 263 – Chamberlain, 605-734-6548

**Bed & Breakfasts, Lodges**

Jim & Patsy’s Bed & Breakfast – Kimball, 605-778-6492

Thunderstik Lodge – Thunderstik Road (south of Chamberlain), 605-734-5106

For state rates see <http://www.state.sd.us/boa/staterates.htm>

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**TO SUBMIT AN ABSTRACT (of a contributed paper or poster)**

1) Presenters must register for and attend the SDAS Meeting. Registration for the SDAS includes paying both SDAS dues and meeting registration fees.

2) Please use the Abstract Format Guidelines (below) to complete your abstract.

3) Send a completed *Proceedings Submission Form* (**in MS Word**) and your abstract (**in MS Word**) as attachments to an email to **rotatina@dwu.edu**. **Do not send pdfs**.

**Deadline for abstract submissions is March 15, 2019.**

#### ABSTRACT FORMAT GUIDELINES

TITLE OF PAPER: Brief and descriptive.

NAME, ADDRESS, AND AFFILIATION OF AUTHOR(S):

1. If there are multiple authors, designate the presenter with an ‘\*’. The corresponding author is the person to contact for questions, revisions, page charges, invoices, etc.

2. Indicate any undergraduate presenters with a ‘UG’ behind their name and an ‘\*’.

ABSTRACT:

1. Approximately 250 words or less, single-spaced.

2. Written for as general an audience as possible with a statement of purpose for the project and a brief description of methods and results.

3. An abstract is a report of research results; thus, it should be written in past tense.

**Example Abstract**

**The cost of capturing prey: measuring largemouth bass foraging activity using glycolytic enzymes (lactate dehydrogenase)**

**T. M. SelchandugUG\* and S. R. Chipps**

USGS South Dakota Cooperative Fish & Wildlife Research Unit

Department of Wildlife and Fisheries Sciences

South Dakota State University

Brookings, SD 57007

Corresponding author email: steve.chipps@sdstate.edu

ABSTRACT

# We used muscle-derived lactate dehydrogenase (LDH) to measure effects of prey size on anaerobic foraging activity by largemouth bass (*Micropterus salmoides*). Largemouth bass (240 to 303 mm total length, TL) were fed bluegill (*Lepomis macrochirus*) prey (33 to 85 mm TL) in laboratory feeding trials (760 L tanks). Prey selectivity experiments showed that small bluegills with a prey-to-predator length ratio (P:PR) < 0.20 were strongly preferred (> 85%) over larger (P:PR > 0.25) individuals. Largemouth bass activity, as indexed by LDH, increased with increasing bluegill length and was 24% higher in bass feeding on large (P:PR = 0.30) compared to small (P:PR = 0.13) prey. Moreover, bioenergetics modeling revealed that food consumption was appreciably underestimated (29 to 33%) for largemouth bass foraging on large bluegills (P:PR = 0.25 and 0.30), implying that activity costs vary with prey size, consistent with LDH measurements. These findings highlight the importance of prey size on foraging costs by piscivores and the difficulties of accounting for activity level in bioenergetics models.

# *Proceedings Submission Form*

Please complete one form for EACH submission and email it as an attachment to **rotatina@dwu.edu**.

NOTE: Presenters must register for and attend the SDAS Annual Meeting. Registration for the SDAS includes paying both SDAS dues and meeting registration fees.

|  |  |
| --- | --- |
| Abstract Title: |  |
| Authors (please indicate presenter with an \*, UG for undergraduates): |  |
| Corresponding Author:(i.e., contact person, responsible for page charges ) |  |
| Affiliation:Mailing Address: |  |
| Phone number:Email:Advisor’s Email: |  |

I/We plan to **present** (underline choice): ORAL PRESENTATION (Saturday Morning/Afternoon)

 36” x 48” POSTER (Saturday Morning)

I/We plan to **publish** (underline one): TITLE ONLY ABSTRACT ONLY FULL PAPER

 If you plan to **publish** a full paper in the *Proceedings*, please follow the *Instructions for Authors* available at **http://sdaos.org.** **The deadline for submission of full papers is July 15, 2019**. Page charges will be $20- $25 per page, based on the number of pages in the final, galley proof. At least one author must be a current member of the Academy.

**Poster Presentation Judging**

Undergraduate and graduate student posters may be entered into the Poster Presentation Judging. Monetary awards sponsored by the North Central Regional Sun Grant Center will be given to the top three posters. Past first place winners are not eligible. See http:sdaos.org for competition guidelines.

1) Do you wish to have your poster judged as part of the **Poster Presentation Judging**? YES NO

**Oral Presentation Judging**

Undergraduate and graduate student oral presentations may be entered into the Oral Presentation Judging. Monetary awards sponsored by the North Central Regional Sun Grant Center will be given to the top three oral presentations. Past first place winners are not eligible. See http:sdaos.org for competition guidelines.

2) Do you wish to have your presentation judged as part of the **Oral Presentation Judging**? YES NO

**Inclusion of Presentation in Symposium**

3) Do you wish to have this presentation included in the **SDAS Fellows Symposium**? YES NO

(Presenters are limited to Fellows of the SD Academy of Science)

4) Do you wish to have this presentation included in the **Physics Symposium**. YES NO

The local arrangements committee and the *Proceedings* editor will decide on acceptability of contributed papers. Subsequently, authors will be notified of acceptance. Symposium presenters must register for the meeting ($60 **early bird** registration fee includes lunch and snacks) and become members of the Academy. All paper and poster presenters, and meeting attendees must register for the annual meeting and become members of the Academy, paying all applicable registration fees and membership dues.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_