

# AQUACULTURE AMERICA 2024



## Setting the Table for U.S. Aquaculture

FEBRUARY 18-21, 2024

San Antonio Marriott Rivercenter  
San Antonio, Texas

SPONSORED BY:

NATIONAL  
**Aquaculture**  
ASSOCIATION



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Aquaculture Suppliers Association

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World Aquatic Veterinary Medical Association  
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In Cooperation with: Texas Aquaculture Association



# AQUACULTURE AMERICA 2024 RETURNS TO SAN ANTONIO

**AQUACULTURE AMERICA 2024** returns to one of the favorite tourist spots in the world for the only major national aquaculture conference and exposition held in the U.S. The U.S. Aquaculture Society (formerly U.S. Chapter of WAS) joins with National Aquaculture Association and the Aquaculture Suppliers Association to produce the annual Aquaculture America meetings. These sponsors are joined by the annual meetings of Aquacultural Engineering Society, US Trout Farmers Association and many more associations to make Aquaculture America 2024 the one meeting in the U.S. that you don't want to miss!

## **A CRITICAL TRADE SHOW FOR AQUACULTURISTS!**

AQUACULTURE AMERICA 2024 will have the largest aquaculture trade show in the Western Hemisphere and one of the largest anywhere in the world with nearly 200 booths! This is your opportunity to inspect the latest in products and services for the aquaculture industry. It is the place to visit current suppliers and make new contacts. To keep ahead and to keep profits building, you need to keep pace with the technological advancements in the industry - and AQUACULTURE AMERICA 2024 is the place to do it!

**Stay in touch with the program developments for AQUACULTURE AMERICA 2024 through our Web Page at:**

**[www.was.org](http://www.was.org)**

## **SAN ANTONIO— RIVERWALK, ENTERTAINMENT, EATING AND HISTORY!**

AQUACULTURE AMERICA 2024 is the place to learn about the latest in aquaculture, see the newest technology in the trade show and have a great time in the many fantastic restaurants, bars and entertainment sites in San Antonio.

## **EXPANDED PRODUCER PROGRAM**

Aquaculture America is known for the high quality of its Producer Program organized by National Aquaculture Association. AQUACULTURE AMERICA 2024 will continue to expand the size and scope of the producer program to address all of the issues facing producers in the U.S. as well as around the world. Topics Include:

### Aqua Tools:

- Siting and Environmental Management
- Aquatic Animal Health
- Aquatic Invasive Species
- Clean Water Act
- Commercial Aquaculture Health Program Standards
- Endangered Species Act
- Federal Agency Town Hall

### Nutrition and Food Safety

- Lacey Act
- Marketing
- Regulatory Issues
- Science/Public Policy
- Start-up Aquaculture
- Therapeutic Drug Approval





# TECHNICAL PROGRAM COVERS THE LATEST RESEARCH

The U.S. Aquaculture Society will put together an extensive technical program featuring special sessions, contributed papers and workshops on all of the species and issues facing aquaculturists around the country and throughout the world. Sample topics:

## **Biotechnology/Biogenetics**

Crustacean genetics/selection/genomics  
Finfish genetics/selection/genomics  
Shellfish genetics/selection/genomics  
Genetically modified organisms  
Microbiome  
Gen/Transcript/Prote-omics

## **Conservation/Management/ Stock Enhancement**

Conservation/restoration aquaculture  
Stock enhancement  
AZA-Aquarium and Zoo Association

## **Crustaceans**

*Species*  
Crawfish  
*L. vannamei*  
*Macrobrachium sp.*  
Shrimp health and disease  
Shrimp production

## **Economics/Marketing**

Aquaculture economics  
Certification  
Consumer perceptions of farm-raised seafood  
Marketing  
Risk management

## **Engineering**

Aquaponics  
Bioflocs  
Biofouling  
Biofuels  
Effluent waste management  
Recirculating aquaculture system technology  
System modelling  
Wireless/automated technologies in aquaculture

## **Finfish**

*Species*  
Baitfish  
Catfish/catfish hybrids  
Cleaner fish  
Flatfish  
Gar/paddlefish/bowfin  
Largemouth bass  
Marine fish  
Mullet  
Percids  
Salmonids  
Striped bass/striped bass hybrids  
Sturgeon  
Tilapia  
Tuna  
Zebrafish  
Finfish husbandry/production

## **Food Safety**

Seafood safety  
Shellfish safety

## **Health/Disease**

Aquaculture drugs  
Aquatic animal veterinary medicine  
Aquatic animal health  
Biosecurity  
Crustacean diseases  
Finfish diseases  
Immunology/stress  
Mucosal health  
Preventative medicine strategies  
Shellfish diseases  
Vaccines  
Viral diseases  
Welfare

## **Nutrition**

Alternative feeds  
Feed ingredients  
Feed supplements and gut health  
Nutrition – protein  
Nutrition – lipids  
Nutrient requirements  
Live feeds  
Pond fertilization  
Prebiotics/probiotics

## **Other Sessions**

Aquaculture education, extension, technology transfer  
Disaster relief  
Diversity and Inclusion in Aquaculture  
Ecology/environment  
Endangered species  
History of aquaculture  
Invasive species  
Ocean acidification  
Organic aquaculture  
Outreach  
Physiology  
Public Perceptions

## **Other Species**

Macroalgae  
Alligator  
Amphibians  
Echinoderms  
Eels  
Ornamentals

## **Regulations/Policies/Permitting**

## **Federal Actions Supporting U.S. Aquaculture**

## **Workforce Development**

## **Drug Approval**

## **Regulatory costs**

## **USDA Veterinary Services**

## **Aquaculture 101**

## **State Aquaculture Leasing Programs**

## **Risk Management and Catastrophic**

## **Natural Disaster Assistance**

## **Smart Farm Siting and Environmental Management**

## **Reproduction**

Broodstock propagation/management  
Crustacean reproduction  
Finfish reproduction  
Hatchery technology  
Larval culture  
Shellfish reproduction

## **Shellfish**

*Species*  
Abalone  
Freshwater mussels  
Mussels/clams/geoducks  
Oysters  
Scallops  
Shellfish husbandry/production

## **Systems**

Cage culture  
In-pond raceways/split-ponds  
Integrated multi trophic aquaculture  
Non-traditional aquaculture  
Offshore aquaculture  
Pond culture  
Raceway culture  
Recirculating aquaculture  
Recreational/ornamental  
Small scale aquaculture  
Urban aquaculture

## **Water Quality/Chemistry**

Algal blooms  
Instrumentation  
Management  
Methodology  
Nitrogen waste management  
Toxins/contaminants  
Wireless/automated technologies in aquaculture

# CALL FOR PAPERS – DEADLINE: September 29, 2023

AQUACULTURE AMERICA 2024 encourages the submission of high quality oral and poster presentations. We strongly encourage authors to consider poster presentations because poster sessions will be an integral part of the program. Papers submitted for “oral presentation only” may not be accepted as oral presentations due to the limited number of available time slots.

All abstracts must be in English – the official language of the conference.

Each oral presenter shall be entitled to no more than 12 minutes for a presentation, plus 3 minutes for questions. Authors of studies involving proprietary products or formulations should present this information in workshops or the trade show. Oral presentations should use Power Point. Slides, overhead projectors and video players will not be available or allowed.

All presenters are required to pay their own registration accommodation and travel expenses.

AQUACULTURE AMERICA 2024 cannot subsidize registration fees, travel or hotel costs.

## INSTRUCTIONS FOR PREPARATION OF ABSTRACTS

Expanded Abstract Format - Please refer to the sample.

- TITLE OF PAPER:** The abstract title is printed in CAPITAL LETTERS, with the exception of scientific names which should be Upper/lower case and *italicized* (see example). Scientific names should not be preceded or followed by commas or parentheses or other markings.
- AUTHOR(S):** The first name should be the presenting author. Use \* after the presenting author. Type in upper/lower case.
- ADDRESS AND EMAIL:** Type only the presenting author's institution, address and email. Type in upper/lower case.
- MAXIMUM LENGTH:** One Page
- PAGE SIZE:** Standard 8.5 x 11 inch paper (portrait)
- MARGINS:** 1-inch margin throughout (left/right/top/bottom)
- SPACING:** Single spaced
- PARAGRAPHS:** Paragraphs should be separated by a blank line and should not be indented.
- FONTS:** Character fonts should be 12 point type.
- FIGURES & TABLES:** Figures and tables are highly recommended. They should be reduced to the appropriate size for a one page abstract and should be clearly readable at the reduced size in black print only. The reduced figures and tables should be included in the abstract in camera-ready form.

**1 inch margin**

**EVALUATION OF JUVENILE AUSTRALIAN RED CLAW CRAYFISH *Cherax quadricarinatus* FED PRACTICAL DIETS WITH AND WITHOUT SUPPLEMENTAL LECITHIN AND/OR CHOLESTEROL**

Laura A. Muzinic\*, Kenneth R. Thompson, Tracey Christian, Carl D. Webster, Lukas Manomaitis, and David B. Rouse

Aquaculture Research Center  
Kentucky State University  
Frankfort, KY 40601  
lmuzinic@der.net

Red claw crayfish (*Cherax quadricarinatus*) are one of more than a hundred species of Australian freshwater crayfish. However, because of its rapid growth rate, ease of spawning, wide tolerance for dissolved oxygen, and lack of a larval stage, red claw may be the best candidate for aquaculture in the United States. Red claw are only being investigated as an aquaculture species in the country and no information exists on their nutritional requirements and practical diet formulations. In many crustaceans, lecithin and cholesterol to be added to their diet, these two nutrients are usually found in fish meal, but lecithin and cholesterol are very expensive. Since diet costs can be as much as 20% of the total expenses for an aquaculture enterprise, it is imperative that the least expensive diet that meets the nutrient requirements of the species. The present study was conducted to determine if cholesterol and/or lecithin needs to be added to a practical diet for red claw crayfish.

An 8-week feeding trial was conducted in a recirculating water system with newly-hatched juvenile (mean weight of 0.2 g) red claw, each stocked in a 10-gallon plastic mesh culture units. Individual units were placed within fiberglass tanks, each having a vertical overflow water line. Water was recirculated through biological and mechanical filters. Water temperature was maintained at 27-29°C and light was provided by overhead fluorescent ceiling lights on a 12-hour light:dark cycle. Ammonia, nitrite, nitrate, pH, oxygen, temperature, alkalinity, chlorophyll *a*, and dissolved oxygen were measured three times per week. The goal of the study was to examine the effects of growth performance of newly-hatched juvenile red claw when fed four practical diets with or without cholesterol and lecithin. Other practical diets included menhaden fish meal, soybean meal, shrimp meal, wheat flour, vitamin and mineral mix, pellet binder, cod liver oil, and corn oil (Table 1).

After 8 weeks, red claw crayfish fed a practical diet without cholesterol (Diet 3) had significantly ( $P < 0.05$ ) lower final weight, percentage weight gain, and specific growth rate (SGR) compared to crayfish fed all other diets (Table 2). These results indicate that a practical diet containing 2% cod liver oil and 1% corn oil and having no lecithin appears to be sufficient and that lecithin may not be necessary for juvenile red claw diets.

**1 inch margin**

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11 inches long

1 inch margin

1 inch margin

SAMPLE

TABLE 1. Formulation of experimental diets fed to red claw crayfish.

	Diet			
	1	2	3	4
Menhaden FM	25.0	25.0	25.0	25.0
Soybean Meal	35.0	35.0	35.0	44.5
Lecithin 0.5	0.0	0.5	0.0	
Cholesterol	1.0	1.0	0.0	0.0
Other	38.5	39.0	39.5	30.5

TABLE 2. Final weight, percentage weight gain, specific growth rate (SGR), and percentage survival of red claw crayfish fed four practical diets. Means in a column with different letters were significantly different ( $P < 0.05$ )

	Diet			
	1	2	3	4
Final weight (g)	6.97a	6.00a	3.64b	5.11a
Weight gain (%)	3384a	2897a	1717b	2454a
SGR (%/day)	5.74a	5.66a	4.68b	5.41a
Survival (%)	76.0	64.0	56.0	80.0

## PLEASE SUBMIT YOUR ABSTRACT ONLINE

Submit your abstract via the internet at the meeting website.  
Follow the complete instructions on the website for online submission.

[www.was.org](http://www.was.org)

If you are unable to submit your abstract online, contact the Conference Manager for alternative methods at:

[worldaqua@was.org](mailto:worldaqua@was.org)



**ATTENDEE REGISTRATION FORM**  
**AQUACULTURE AMERICA 2024**  
**February 18-21, 2024 – San Antonio, Texas**

*Return address for payments in USD:*  
**AQUACULTURE AMERICA 2024**  
 Conference Manager  
 P.O. Box 2302  
 Valley Center, CA 92082 USA  
 Fax: +1 760 751 5003  
 Email: worldaqua@was.org

Online registration is preferred at [www.was.org](http://www.was.org) OR fax or mail both sides with payment. Use one form per person.

PLEASE PRINT CLEARLY OR TYPE ALL REQUESTED INFORMATION

**BADGE INFORMATION:** (As you want your name badge to read – No titles, please)

First Name \_\_\_\_\_ SURNAME (FAMILY NAME) \_\_\_\_\_

Company or Institution \_\_\_\_\_  
 (Limited to 40 Letters & Spaces)

City \_\_\_\_\_ State/Prov \_\_\_\_\_ Country \_\_\_\_\_

**MAILING INFORMATION:** Email \_\_\_\_\_  
 (please include email address)

Postal Address \_\_\_\_\_

City \_\_\_\_\_ State / Prov \_\_\_\_\_ Postal Code \_\_\_\_\_ Country \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_ Title: (circle one) Dr. Mr. Ms. Mrs.  
 (Include country and city code) (Include country and city code)

**REGISTRATION FEES:** In order to receive the discount rates as listed below, this form and payment must be received by the date listed. See brochure for what is included in registration fees.

<b>TYPE OF REGISTRATION</b>	<b>Register by January 26, 2024</b>	<b>Register by February 9, 2024</b>	<b>Register after February 9, 2024</b>	* To qualify for Member Rate you <u>must</u> complete the Association Memberships section on the reverse side.  ● ● ● ● ● ● ● ●  Trade Show is <u>included</u> in the Full Conference Registration Rate.  <b>TOTAL REGISTRATION FEE</b> US\$ _____
<b>FULL CONFERENCE &amp; TRADE SHOW</b> <small>In order to receive the Pre-Registration discount rate, this form and payment must be received by the date above</small>				
<b>MEMBER RATE*</b> <b>STUDENT MEMBER RATE*</b> <small>Include copy of Student I.D.</small>	<input type="checkbox"/> US\$ 495 <input type="checkbox"/> US\$ 270	<input type="checkbox"/> US\$ 595 <input type="checkbox"/> US\$ 270	<input type="checkbox"/> US\$ 695 <input type="checkbox"/> US\$ 325	
<b>Non-Member Rate</b> <b>Student Non-Member Rate</b> <small>Include copy of Student I.D.</small> <i>You can join WAS on the reverse side and use the Member</i>	<input type="checkbox"/> US\$ 590 <input type="checkbox"/> US\$ 330	<input type="checkbox"/> US\$ 690 <input type="checkbox"/> US\$ 330	<input type="checkbox"/> US\$ 790 <input type="checkbox"/> US\$ 390	
<input type="checkbox"/> <b>Spouse Rate</b> – <i>must accompany a full registration</i> Name _____	<input type="checkbox"/> US\$ 395	<input type="checkbox"/> US\$ 495	<input type="checkbox"/> US\$ 595	

**TRADE SHOW PASS** (Trade show pass is included with the Full Conference Registration)  
 Good for 3 days admission to exhibits only – February 19, 20, 21  US\$ 50 **TOTAL TRADE SHOW PASS** US\$ \_\_\_\_\_

**INDUSTRY TOURS –**  
 Information To Come

**MEMBERSHIP DUES** – Enter amount from Membership Application on other side if applicable. **TOTAL MEMBERSHIP DUES** US\$ \_\_\_\_\_

**Do not mail registration after Feb. 10, 2024 or fax after Feb. 15.**  
**After Feb. 15, bring this form with you to register at the show.**

**➔ TOTAL AMOUNT US\$** \_\_\_\_\_

**Registration Confirmation and Receipt will be emailed after processing.**

**CANCELLATION POLICY:** Cancellation of registration must be received - in writing - no later than January 15, 2024. Refunds for registration fees will be subject to a 20% handling fee. Refunds are processed after the conference. No refund will be made for cancellations received after January 15, 2024 or for "no shows". After January 15, 2024, no refunds will be made for professional or personal emergencies, flight cancellations, denied visa, weather related cancellation or other travel emergencies. Fees for memberships are non-refundable.

**PAYMENT METHOD:** All fees must be paid to the order of **AQUACULTURE AMERICA 2021**. For bank transfer details, contact us.

Check # \_\_\_\_\_  Visa  Mastercard  American Express  Discover  Diners Club  
 Card # \_\_\_\_\_ Sec Code \_\_\_\_\_ Expiration Date \_\_\_\_\_  
 Name on Card \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_  
 Credit Card Billing Address \_\_\_\_\_

## REGISTRATION FORM - SIDE 2

Name \_\_\_\_\_

**ASSOCIATION MEMBERSHIPS:** Please check all boxes for associations for which you are a current member. Membership in any of those associations qualifies you for the Member Rate\* on the Registration Fees. You can join an association at any time before registering to qualify for the Member Rate.

- MEMBERSHIPS:**    WAS    USAS    APC    Korean    LACC    African Chapter
- |  |   |
|--|---|
| <input type="checkbox"/> Aquacultural Engineering Society        | <input type="checkbox"/> Global Seafood Alliance                      |
| <input type="checkbox"/> Aquaculture Association of Canada       | <input type="checkbox"/> National Aquaculture Association             |
| <input type="checkbox"/> Aquaculture Association of South Africa | <input type="checkbox"/> National Shellfisheries Association          |
| <input type="checkbox"/> Aquaculture Feed Industry Association   | <input type="checkbox"/> World Aquatic Veterinary Medical Association |
| <input type="checkbox"/> Fish Culture Section - AFS              | <input type="checkbox"/> Zebrafish Husbandry Association              |

**MEMBERSHIP APPLICATIONS**    NEW APPLICATION    RENEWAL

### NATIONAL AQUACULTURE ASSOCIATION (NAA)

For details on the different types of memberships and options, please contact the NAA home office at:

**Tel: +1-850-216-2400   Email: [naa@thenaa.net](mailto:naa@thenaa.net)   Web: [thenaa.net](http://thenaa.net)**

Individual Memberships: Individuals, growers, partnerships and corporations who engage in the practice of and who derive a portion of their income from aquaculture. Silver, Gold and Platinum members also derive income from aquaculture, but wish to increase their support of the NAA.

\_\_\_\_\_ Individual: \$250

\_\_\_\_\_ Silver: \$1,000 to \$2,499

\_\_\_\_\_ Gold: \$2,500 to \$4,999

\_\_\_\_\_ Platinum: \$5,000 and above

**Total Amount for NAA Membership   USD \_\_\_\_\_**

*Fees for memberships are non-refundable.*

*Please enter this amount under "Membership Dues" section on opposite side of this form.*

### WORLD AQUACULTURE SOCIETY (WAS) APPLICATION   [www.was.org](http://www.was.org)

For details on the different types of memberships and options, please contact the WAS home office at

**Tel: +1-225-347-5408   Fax: +1-225-347-5408   Email: [judya@was.org](mailto:judya@was.org)**

**MEMBERSHIP CATEGORY:** (Indicate only one)

- Individual** (USD 90/yr) Applies to an individual only
- Full Student** (USD 45/yr) Has all benefits and rights of regular membership including voting for all candidates on the ballot (Copy of Student ID or Signature of Professor required)
- Comp Student** (No charge) Has all benefits of regular membership but voting only allowed is for the Student Director and not for the full ballot. (Copy of Student ID or Signature of Professor required)
- Sustaining** (USD 155/yr) Applies to any one individual from a company
- Corporate** (USD 295/yr) Allows all employees of one company to attend meeting at Member Rate
- Lifetime** (USD 1400 with one chapter) Applies to an individual only

\*\*Discounted rates available for individuals in countries based on World Bank List of Low Income Economies. Must sign-up on website only for this category.

*Fees for memberships are non-refundable.*

**CHAPTER OPTIONS:**

*One chapter included in membership. Mark the chapter you choose.*

- African Chapter**
- Asian Pacific**
- Korea**
- Latin American/Caribbean**
- United States (USAS)**
- None** (deduct USD 5)

*You can add extra Chapters for USD 5*

**Total Amount for WAS Membership   USD \_\_\_\_\_**

*Please enter this amount under "Membership Dues" section on opposite side of this form.*

***For membership in other associations, please contact them directly.  
If you need a phone number, contact the Conference Manager (+1-760-751-5005).***



# INDUSTRY TOURS AND EXTRAS

## TO BE ANNOUNCED



## HOTELS

We have arranged a block of rooms with very special rates at San Antonio Marriott Rivercenter.  
Booking Information on website.

## YOUR FULL CONFERENCE REGISTRATION INCLUDES:

- ❖ Only pre-registered attendees are guaranteed materials
- ❖ Admission to all sessions, seminars and the trade show.
- ❖ Admission to the President's Reception.
- ❖ Conference Bag and Show Directory. Abstract Book on website.
- ❖ Refreshment Breaks and Cash Bar Happy Hour.
- ❖ Students receive the full registration package plus the Student Reception. To qualify for the student rate, a copy of your student I.D. is required.



## FOR MORE INFORMATION: AQUACULTURE AMERICA 2024

Conference Manager

P.O. Box 2302 • Valley Center, CA 92082 USA

Fax: +1-760-751-5003 • [worldaqua@was.org](mailto:worldaqua@was.org)

## TENTATIVE SCHEDULE

### *Sunday, February 18*

Registration Open	11:00am - 5:30pm
Exhibitor Move-in	11:00am - 6:00pm
Poster Set-up	1:00pm - 5:30pm

### *Monday, February 19*

Registration Open	7:30am - 5:00pm
Plenary Session	8:30am - 10:00am
Exhibitor Move-in	8:00am - 10:00am
Poster Set-up	8:00am - 10:00am
Refreshment Break	10:00am - 11:00am
Trade Show & Posters Open	10:00am - 6:00pm
Sessions	11:00am - 12:30pm
Lunch (On your own)	12:30pm - 1:30pm
Sessions	1:30pm - 4:30pm
Poster & Happy Hour	4:30pm - 5:30pm
President's Reception	6:30pm - 9:00pm

### *Tuesday, February 20*

Registration Open	8:00am - 5:00pm
Sessions	8:30am - 10:00pm
Refreshment Break	10:00am - 10:30am
Sessions	10:30pm - 12:30pm
Trade Show & Posters Open	10:00am - 6:00pm
Lunch (On your own)	12:30pm - 1:30pm
Sessions	1:30pm - 5:00pm
Poster & Happy Hour	5:00pm - 6:00pm
NAA Auction	6:00pm - 8:00pm
Student Reception	7:30pm - 9:30pm

### *Wednesday, February 21*

Registration Open	8:00am - 3:00pm
Sessions	8:30am - 10:00am
Trade Show & Posters Open	10:00am - 1:30pm
Refreshment Break	10:00am - 11:00am
Sessions	11:00am - 12:30am
Lunch (On your own)	12:30pm - 1:30pm
Sessions	1:30pm - 3:00pm
Refreshment Break	3:00pm - 3:30pm
Sessions	3:30pm - 5:00pm
Closing Happy Hour	5:00pm - 6:00pm

