

Aquaculture America 2020



*Hawai'i Aquaculture:
A Tradition of Navigating with Innovation,
Technology and Culture*



**February 9-12, 2020
Hawaii Convention Center
Honolulu, Hawaii, USA**

THE NATIONAL CONFERENCE & EXPOSITION OF



NATIONAL
Aquaculture
ASSOCIATION



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Hawaii
Aquaculture &
Aquaponics Association

Hosted By:
**Hawaii Aquaculture &
Aquaponics Association**



Aquaculture America 2020

Aquaculture America Moves Across the Pacific

Aquaculture America combines the US Aquaculture Society, Chapter of WAS, National Aquaculture Association and the Aquaculture Suppliers Association as well as many other Aquaculture groups. Holding the meeting in Hawaii allows Aquaculture America to reach across the Pacific to share with aquaculture throughout the Asian Pacific region. Don't miss this meeting in Paradise!

HAWAII IS THE IDEAL LOCATION FOR A MEETING OF THIS IMPORTANCE!

Hawaii is a destination known and loved around the world. With the meeting in Waikiki on Oahu Island, you can almost walk out of your session and onto the beach! The Hawaii Convention Center is a beautiful convention facility capturing the beauty and charm of the islands with a superior meeting and exhibition space.

Be sure to schedule time before or after the conference to visit the other islands of Hawaii which are very much less developed and offer a wide variety of different forms of Paradise! Whether your interest is volcanoes, nightlife, beaches, lush forests, sports, ocean activities or even the stars - the islands of Hawaii can provide a fantastic, memorable experience. Be sure to visit Maui, Kuauai, Hawaii, Molokai or Lanai for the experience of a lifetime.

AQUACULTURE AMERICA 2020 HAS GREAT RATES AT HOTELS IN WAIKIKI

You will really be able to enjoy the meeting, the warm sun and beautiful beaches because we have some great rates for your stay in Hawaii! See the hotel details on the website.

AQUACULTURE AMERICA 2020 WILL HAVE ONE OF THE LARGEST TRADE SHOWS FOR AQUACULTURE!

Aquaculture America 2020 will draw on the Asia-Pacific region, Canada, USA, Latin America, Europe and the rest of the world to create one of the largest aquaculture trade shows in the world. The exhibition definitely will have one of the widest variety of products of any trade show ever. This is your opportunity to inspect the latest in products and services for the aquaculture industry.

TRADE SHOW CALENDAR

F E B R U A R Y 2 0 2 0

Monday	Tuesday	Wednesday
10	11	12

YOUR FULL CONFERENCE REGISTRATION INCLUDES:

- * Only pre-registered attendees are guaranteed materials
- * Admission to all sessions, seminars and the trade show
- * Admission to the Receptions
- * Happy Hours on Tuesday and Wednesday
- * Conference bag, Abstract Book and Show Directory (except for spouse)
- * Refreshment Breaks
- * 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 2020
Conference Manager
P.O. Box 2302
Valley Center, CA 92082 USA
Tel: +1-760-751-5005
Fax: +1-760-751-5003
Email: worldaqua@was.org

CALL FOR PAPERS – DEADLINE: August 31, 2019

AQUACULTURE AMERICA 2020 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 2020 cannot subsidize registration fees, travel or hotel costs.

No Abstract Book will be printed – a USB Abstract Book will be given to registered attendees.

INSTRUCTIONS FOR PREPARATION OF ABSTRACTS

Expanded Abstract Format - Please refer to the sample.

- 1. 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.
- 2. AUTHOR(S):** The first name should be the presenting author. Use * after the presenting author. Type in upper/lower case.
- 3. ADDRESS AND EMAIL:** Type only the presenting author's institution, address and email. Type in upper/lower case.
- 4. MAXIMUM LENGTH:** One Page
- 5. PAGE SIZE:** Standard 8.5 x 11 inch paper (portrait)
- 6. MARGINS:** 1-inch margin throughout (left/right/top/bottom)
- 7. SPACING:** Single spaced
- 8. PARAGRAPHS:** Paragraphs should be separated by a blank line and should not be indented.
- 9. FONTS:** Character fonts should be 12 point type.
- 10. 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 (2.54 cm)

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

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Frankfort, KY 40601
lmuzinic@csr.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, 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 this country and information exists on their nutritional requirements and practical diet formulations. Many crustaceans require lecithin and cholesterol to be added to their diet, these two nutrients are usually expensive; however, lecithin and cholesterol are very expensive. Since diet costs can be as much as 70% of the total expenses for an aquaculture enterprise, it is imperative that the least expensive diet be determined. The present study was conducted to determine if cholesterol 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 body weight of 0.2 g) red claw, each stocked in a 100 L plastic mesh culture units. Individual units were housed within fiberglass tanks, each containing a 100 L water line. Water was recirculated through physical and mechanical filters. Water temperature was maintained at 27-29°C and lighting was provided by overhead fluorescent ceiling lights on a 12-hour light:dark cycle. Ammonia, nitrite, nitrate, pH, oxygen, temperature, alkalinity, chlorides, and hardness were measured three times per week. The growth performance 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 (2.54 cm)

8.5 inches wide (21.6 cm)

11 inches long (27.94 cm)

1 inch margin (2.54 cm)

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

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

worldaqua@was.org

Aquaculture America 2020 Tentative Program

Emerging issues in shrimp culture
Shrimp genomics
Shrimp health and disease
Shrimp nutrition
Shrimp production systems

Alternative/emerging feed ingredients
Finfish breeding/Broodstock management
Finfish genetics and genomics
Fish nutrition - lipids
Fish nutrition - protein
Fish physiology
Larval finfish nutrition
Larval finfish physiology
Larval finfish production
Live feeds
Nutrient requirements
Pre/probiotics and feed additives
Taurine

Advanced RAS technology
Biosecurity
Emerging disease concerns
Fish transport
Hatchery production and technology
IMTA/3D aquaculture
Pathogen Management
Water quality and effluent management

Aquaponics
Bioflocs
Certification processes (successes and concerns)
Integrated aquaculture systems
Organic aquaculture
Urban aquaculture

Conservation/Restoration aquaculture (finfish)
Conservation/Restoration Aquaculture (shellfish)
Habitat Restoration
Stock enhancement

Abalone
Bass
Catfish
Clams
Eels
Flatfish
Macroalgae
Microalgae
Mussels

Ornamentals
Oysters
Pearl Oysters
Salmonids
Scallops
Sea urchins
Striped bass
Tilapia
Tuna and large pelagic species
Zebrafish/Medaka

Biofouling
Bioinformatics on non-model species
Macroalgae
Marine aquaculture
“Metabolomics, lipidomics, proteomics, transcriptomics”
Microalgae
New and innovative technologies in aquaculture
Offshore aquaculture
Transgenic applications and gene editing in aquaculture

Aquatic Veterinary Medicine
Education
Extension

Aquaculture of native peoples
Coral and marine ornamentals
Epigenetics
Hawaii Institute of Marine Biology
Hawaiian fish ponds
National Energy Laboratory of Hawaii Authority (NELHA)
Ostreid Herpesvirus
Pacific Aquaculture & Coastal Resources Center
Pacific Island aquaculture
Sea Grant/NOAA
Shellfish sanitation

Aquatic Animal Drug Approvals
Aquatic Animal Health
Environmental Issues
Farm Energy Cost Reduction
Federal Agency Town Hall Meeting
Marketing and Promotion
Regulatory Costs
Science and Public Policy
Start Up Aquaculture
Women in Aquaculture



ATTENDEE REGISTRATION FORM

Aquaculture America 2020

February 9 - 12, 2020 – Honolulu, Hawaii

Return address for payments in USD:
AQUACULTURE AMERICA 2020
 Conference Manager
 P.O. Box 2302
 Valley Center, CA 92082 USA
 Tel: +1 760 751 5005
 Fax: +1 760 751 5003
 Email: worldaqua@was.org

Online registration is preferred at 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.

TYPE OF REGISTRATION	Register by January 7, 2020	Register by January 24, 2020	Register after January 24, 2020	
FULL CONFERENCE & TRADE SHOW <small>In order to receive the Pre-Registration discount rate, this form and payment must be received by the date above</small>				* 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. TOTAL REGISTRATION FEE US\$ _____
ASSOCIATION MEMBER RATE*	<input type="checkbox"/> US\$ 435	<input type="checkbox"/> US\$ 535	<input type="checkbox"/> US\$ 635	
STUDENT MEMBER RATE* <small>Include copy of Student I.D.</small>	<input type="checkbox"/> US\$ 225	<input type="checkbox"/> US\$ 225	<input type="checkbox"/> US\$ 290	
Non-Member Rate	<input type="checkbox"/> US\$ 540	<input type="checkbox"/> US\$ 640	<input type="checkbox"/> US\$ 740	
Student Non-Member Rate <small>Include copy of Student I.D. You can join WAS on the reverse side and use the Member Rate.</small>	<input type="checkbox"/> US\$ 295	<input type="checkbox"/> US\$ 295	<input type="checkbox"/> US\$ 365	
<input type="checkbox"/> Spouse Rate <small>Name _____</small>	<input type="checkbox"/> US\$ 335	<input type="checkbox"/> US\$ 395	<input type="checkbox"/> US\$ 495	

TRADE SHOW PASS (Trade show pass is included with the Full Conference Registration)
 Good for 3 days admission to exhibits only – February 10 - 12 US\$ 50 **TOTAL TRADE SHOW PASS** US\$ _____

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

FARM TOURS **TOTAL FARM TOURS** US\$ _____

WORKSHOPS **TOTAL WORKSHOPS** US\$ _____

Do not mail registration after Feb. 1, 2020 or fax after Feb. 1, 2020.
 After Feb 1, 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 19, 2020. 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 19, 2020 or for "no shows". After January 19, 2020, 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 2020**. **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
- | | |
|--|--|
| <input type="checkbox"/> African Chapter of WAS | <input type="checkbox"/> IAFI The International Association of Seafood Professionals |
| <input type="checkbox"/> Americas Tilapia Alliance | <input type="checkbox"/> Indonesian Aquaculture Society |
| <input type="checkbox"/> American Veterinary Medical Association | <input type="checkbox"/> Korean Aquaculture Society |
| <input type="checkbox"/> AQUABIO | <input type="checkbox"/> Korean Society of Fisheries and Sciences (KOSFAS) |
| <input type="checkbox"/> Aquacultural Engineering Society | <input type="checkbox"/> Malaysian Fisheries Society |
| <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"/> Sociedad Brasileira de Acuicultura |
| <input type="checkbox"/> Aquaculture Without Frontiers | <input type="checkbox"/> Society of Aquaculture Professionals (India) |
| <input type="checkbox"/> Asian Fisheries Society | <input type="checkbox"/> South African Aquaculture Society |
| <input type="checkbox"/> China Society of Fisheries | <input type="checkbox"/> Spanish Aquaculture Association (SEA) |
| <input type="checkbox"/> Egyptian Aquaculture Society | <input type="checkbox"/> Striped Bass Growers Association |
| <input type="checkbox"/> European Aquaculture Society | <input type="checkbox"/> US Trout Farmers Association |
| <input type="checkbox"/> Fish Culture Section - AFS | <input type="checkbox"/> World Aquatic Veterinary Medical Association |
| <input type="checkbox"/> Global Aquaculture Alliance | <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 Fax: +1-850-216-2480 Email: naa@thenaa.net Web: 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

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

Tel: +1-225-578-3137 Fax: +1-225-578-3493 Email: judya@was.org

MEMBERSHIP CATEGORY: (Indicate only one)

- Individual** (Electronic JWAS) (USD 65/yr) Applies to an individual only
- Individual** (Printed JWAS) (USD 110/yr) Applies to an individual only
- Individual** (E Access) (USD 45/yr) Applies to an individual only
- Student** (Electronic JWAS) (USD 45/yr) (Copy of Student ID or Signature of Professor required)
- Student** (Printed JWAS) (USD 90/yr) (Copy of Student ID or Signature of Professor required)
- Sustaining** (Electronic JWAS) (USD 105/yr) Applies to any one individual from a company
- Sustaining** (Printed JWAS) (USD 150/yr) Applies to any one individual from a company
- Corporate** (Electronic JWAS) (USD 255/yr) Allows all employees of one company to attend meeting at Member Rate
- Corporate** (Printed JWAS) (USD 300/yr) Allows all employees of one company to attend meeting at Member Rate
- Lifetime** (Electronic JWAS only) (USD 1000 with no chapter) Applies to an individual only

CHAPTER OPTIONS:

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

- Africa**
- 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 _____

Fees for memberships are non-refundable.

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).

Aquaculture America 2020 TOURS



MANY OPPORTUNITIES FOR FARM TOURS

A number of tours will be organized on both Oahu and the Big Island, Hawaii. The details will be on the WAS website as they become ready.

HOTEL

For hotel information see www.was.org

TOURIST EXCURSIONS

There are many wonderful places to visit in Hawaii and things to do. The details and reservation contact information will be available soon on the WAS website.



TENTATIVE SCHEDULE

Sunday, February 9

Registration Open	12:00pm - 5:30pm
Exhibitor Move-in	10:00am - 6:00pm
Poster Set-up	1:00pm - 5:30pm
Welcome	6:00pm - 8:00pm

Monday, February 10

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 - 3:00pm
Refreshment Break	3:00pm - 3:30pm
Sessions	3:30pm - 5:00pm
Happy Hour	5:00pm - 6:00pm
Student Reception	6:00pm - 9:00pm

Tuesday, February 11

Registration Open	8:00am - 5:00pm
Sessions	8:30am - 10:00pm
Refreshment Break	10:00am - 10:30am
Sessions	10:30pm - 12:30pm
Trade Show	10:00am - 6:00pm
Lunch (On your own)	12:30pm - 1:30pm
Sessions	1:30pm - 4:30pm
Poster Session	4:30pm - 6:00pm
Happy Hour	4:30pm - 6:00pm
NAA Auction	6:00pm - 8:00pm
President's Reception	7:00pm - 9:00pm

Wednesday, February 12

Registration Open	8:00am - 3:00pm
Sessions	8:30am - 10:00am
Trade Show	10:00am - 4:00pm
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
Exhibitor Move-out	3:30pm - 7:00pm
Sessions	3:30pm - 5:30pm
Closing Happy Hour	5:30pm - 6:30pm

