World Aquaculture 2021
#AquacultureNow

May 24-27, 2022
Mérida, Mexico

Centro Internacional de Congresos de Yucatán, CIC

Annual global meeting of the World Aquaculture Society

International Rates

WA2021 will be an In-Person Event! Please get vaccinated so we can have a free-flowing meeting!

WAS Premier Sponsors
The World Aquaculture Society is the organization of professionals in the most important field in the world, with members of more than 100 countries. Its annual conference is recognized globally as the most relevant for the exchange of knowledge, technology, innovation and professional network training. During WA2022 there will be the participation of the Food and Agriculture Organization of the United Nations (FAO) and other international organizations. There will be multiple presentations, workshops, business meetings, trade exhibition, art gallery, technical visits to farms and process plants in the region, and various events dedicated to building professional networks.

Mérida is distinguished for being one of the most beautiful cities in the world, as well as being considered one of the jewels of Latin America. With a wonderful climate, friendly and hospitable people, located in the State of Yucatan, cradle of the Mayan culture; It has various tourist attractions, among which are archaeological centers, beaches, large haciendas and majestic cenotes.

The Yucatan International Congress Center is an ecologically responsible building, equipped with state-of-the-art technology, built under the LEED Green Building certification system, it has “El Cenote” inside it, an underwater river that makes it unique in the world.

Due to the richness of its natural and hydrological resources, Mexico is considered one of the countries with the greatest aquaculture potential in the world. It is an honor for Mexico and a great opportunity that Mérida will become the capital of aquaculture during 2022. This event is expected to be a watershed in the evolution of the activity not only in the peninsula but throughout the country. #AquacultureNow.

WA2022 is inviting the national and international organisations and societies to hold their seminar, workshop and meetings during the event in Merida.

Stay in touch with the program developments for WORLD AQUACULTURE 2021 through our Web Page at: www.was.org
Sessions and workshops at World Aquaculture 2021 will cover all aspects of aquaculture in the Latin American and Caribbean region as well as the rest of the world. Sample topics will include:

- Abalone
- Advances in alternative feed ingredients
- Advances in live feeds for larviculture
- Algae and macrophytes
- Amphibian and Reptile Aquaculture
- Animal health and Welfare
- Aquaculture and Circular Economy
- Aquaculture business incubator
- Aquaculture for the future
- Aquaponics and Integrated Aquaculture– Agriculture Systems
- Aquatic veterinary health capacity
- Arid land Aquaculture
- Barramundi, Seabass & Seabream
- Bio-floc Systems
- Biotechnology
- Biotechnology products from the sea: Pharma, Additives, Protein Sources
- Breeding & Genetics
- Cage-culture
- Carpet Shells
- Carps
- Catfish
- Certification and legislation
- Clams (including Giant Clams)
- Climate change, adaptation, resilience
- Cobia
- Coldwater Species - General
- Commercial Species. Shrimp, Tilapia, Oyster, Tuna
- Country Specific Sessions (eg 2008 Norway)
- Crabs & Lobsters
- Crayfish & Freshwater Prawn
- Development of national aquaculture technology
- Development, Welfare and Poverty Alleviation (AwF)
- Diseases
- Drugs and Chemotherapeutics
- Economics & Management
- Ecosystems approach
- Education, Extension, Technology Transfer & Workforce Development (AquaEd)
- Eels
- Embryology
- Emerging Issues
- Emerging Species
- Enhancement, Stocking & Ranching
- Environment and Biodiversity and Climate Change
- Energy-alternative sources and conservation
- Engineering
- Financing and investment
- Finfish Broodstock Maturation
- Fish Health
- Fish Meal and Oil (IFFO)
- Flatfish
- Food Safety, Inspections and Audits
- Food security
- Freshwater fish: Catfish, trout, Pejelagarto
- Atractosteus tropicus
- Freshwater crustaceans: Cherax crayfish, Procambarus crawfish, Macrobrachium spp.
- Freshwater Species - General
- The future of integrated aquaculture
- General Aquaculture
- Genetic Improvement Programs for commercially important aquaculture species
- Grouper & Snapper
- Hatchery & Larvae Management
- Hatchery and Nursery
- Health - food and well-being
- Immunology
- Information Technology in Aquaculture
- Innovation and High Techs
- Integrated Multi-trophic Aquaculture
- Investment funds and financing mechanisms for aquaculture
- Korean Aquaculture Session
- Macroalgae
- Marine Fish: Red drum, Cobia, Snapper, Totoaba, Groupers
- Marketing & Trade
- Markets and media
- Milkfish
- Mollusks: Bivalves (Scallops, Penshell), Octopus
- Mollusc Broodstock and Hatchery
- Mollusc Cultivation
- Mullets
- Mussels
- Nutrition & Feed
- Ocean acidification
- Octopus and Cuttlefish
- Offshore Aquaculture
- Omics tools for Aquaculture
- Organic Aquaculture
- Ornaments
- Other Marine Fish
- Oyster
- Pacific & Indigenous Aquaculture
- Pangasius, Clarias & Ictalurus
- Pearl and Queen Conch Culture
- 3rd International Symposium on Perch and Bass
- Physiology, Morphology & Histology
- Plankton Culture
- Policy & Regulations
- Polyculture
- Pond Culture
- Prebiotics and Probiotics
- Processing Technology
- Product Quality
- Production systems
- Raceway Systems
- Recirculating Systems
- Regularization in aquaculture planning
- Reservoir based and Lake Aquaculture
- Salmonids
- Scallops
- Sea cucumbers
- Sea urchins
- Seafood & Health (GILLS)
- Seaweeds and Algae
- Shrimp Farm Design and Management
- Shrimp Feeding and Nutrition
- Shrimp Genetics, Broodstock and Hatchery Management
- Shrimp pathology and biosafety
- Snappers
- Socioeconomics
- Spatial Planning, Regulation and Zoning
- Species with potential for Expansion. Marine Fish (Seriola), Pacific Oyster
- Species with potential for economic development
- Standards & Certification
- Sturgeons
- Supply chain
- Sustainable Development of Aquaculture
- Tilapia
- Trade
- Trouts
- Tuna
- Urban aquaculture
- Value Chain Development
- Warm water Species – General
- Wastage Utilisation
- Water Quality and Usage
- Women in Aquaculture
- Workforce development
- Yellowtails, Amberjacks, etc
- Zebrafish

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**YOUR FULL CONFERENCE REGISTRATION INCLUDES:**

- Admission to all sessions, seminars and the trade show.
- Admission to the Receptions.
- Conference bag and Show Directory(except for spouse)
- 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.
- Only pre-registered attendees are guaranteed materials

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**World Aquaculture 2021**

**FOR MORE INFORMATION:**

World Aquaculture 2021
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
www.was.org

**REGISTER EARLY AND SAVE!**
CALL FOR PAPERS – DEADLINE: May 1, 2022

WORLD AQUACULTURE 2021 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 15 minutes for a presentation, plus 5 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. WORLD AQUACULTURE 2021 cannot subsidize registration fees, travel or hotel costs.

No Abstract Book will be printed – an Abstract Book will be available online.

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) 1 inch margin (2.54 cm) 8.5 inches wide (21.6 cm)

6. MARGINS: 1-inch margin throughout (left/right/top/bottom) 1 inch margin (2.54 cm)

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. The reduced figures and tables should be included in the abstract in camera-ready form.

1. TITLE OF PAPER:

   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@dcr.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 temperature, and lack of a larval stage, red claw may be the best candidate for a United States. Red claw are only being investigated as an aquaculture species in the country as much information exists on their nutritional requirements and practical diet formulations. Many crustaceans require lecithin and cholesteral to be added to their diet, these two nutrients are expensive. Since diet costs can be as much as 70% of the expenses for an aquaculture enterprise, it is imperative that the least expensive diet formulation can meet the nutrient requirements of the species. The present study was conducted to determine a practical diet for red claw crayfish.

   An 8-week feeding trial was conducted in a recirculating system with newly-hatched juvenile red claw (mean weight of 0.2 g) red claw, each stocked in individual fiberglass tanks, each containing a water line. Water was recirculated through biological and mechanical filters. Water temperature was maintained at 27-29°C and lighting was provided by overhead fluorescent ceiling lights in a 14:10 hour light:dark cycle. Ammonia, nitrite, dissolved oxygen, temperature, alkalinity, chlorides, and pH were measured three times per week. The goal of this study was to examine the effects of growth performance of newly-hatched juvenile red claw when fed 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.

   *Corresponding author.

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

<table>
<thead>
<tr>
<th>Diet</th>
<th>Menhaden Fish</th>
<th>Soybean Meal</th>
<th>Shrimp Meal</th>
<th>Wheat Flour</th>
<th>Menhaden Fish Meal</th>
<th>Soybean Meal</th>
<th>Shrimp Meal</th>
<th>Wheat Flour</th>
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<tbody>
<tr>
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<td>25.0</td>
<td>35.0</td>
<td>10.0</td>
<td>30.0</td>
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<td>15.0</td>
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<td>10.0</td>
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<td>10.0</td>
<td>30.0</td>
<td>10.0</td>
<td>15.0</td>
<td>25.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

   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).

<table>
<thead>
<tr>
<th>Diet</th>
<th>Final weight (g)</th>
<th>Percentage weight gain (%)</th>
<th>Specific growth rate (SGR)</th>
<th>Percentage survival (%)</th>
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<tbody>
<tr>
<td>1</td>
<td>16.7</td>
<td>35.0</td>
<td>0.95</td>
<td>86.0</td>
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<tr>
<td>2</td>
<td>17.5</td>
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<td>0.95</td>
<td>86.0</td>
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<tr>
<td>3</td>
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<td>35.0</td>
<td>0.95</td>
<td>86.0</td>
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<tr>
<td>4</td>
<td>19.1</td>
<td>35.0</td>
<td>0.95</td>
<td>86.0</td>
</tr>
</tbody>
</table>

   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:

   worldaqu@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 ________________________________
- City ______________________ State/Prov ______________________ Country ______________________

**Mailing Information:** Email ______________________

Postal Address ______________________

- City ______________________ State / Prov ______________________ Postal Code ______________________ Country ______________________
- Phone ______________________ Fax ______________________

Title: (circle one) Dr. Mr. Ms. Mrs.

**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.

<table>
<thead>
<tr>
<th>Type of Registration</th>
<th>Register by April 15, 2022</th>
<th>Register after April 15, 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Conference &amp; Trade Show</td>
<td>US$ 275</td>
<td>US$ 375</td>
</tr>
<tr>
<td>WAS/CHAPTER Member Rate*</td>
<td>US$ 115</td>
<td>US$ 155</td>
</tr>
<tr>
<td>WAS/CHAPTER Student Member Rate*</td>
<td>US$ 370</td>
<td>US$ 470</td>
</tr>
<tr>
<td>Non-Member Rate</td>
<td>US$ 145</td>
<td>US$ 185</td>
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</tbody>
</table>

*To qualify for Member Rate you must complete the Association Memberships section on the reverse side.

**Trade Show Pass** (Trade show pass is included with the Full Conference Registration)

- Good for 3 days admission to exhibits only – November 9, 10, 11
- US$ 50

**Workshops & Tours – TBA**

**Membership Dues** – Enter amount from Membership Application on other side if applicable.

- Total Membership Dues US$ ______

- Do not mail registration after April 1, 2022 or fax after April 1.
- After April 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 April 1, 2022. 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 April 1, 2022 or for “no shows”. After April 1, 2022, 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 WORLD AQUACULTURE 2021. For bank transfer details, contact us.

- Check # ______________________ Visa __ Mastercard __ American Express __ Discover __ Diners Club __
- Exp. Date ______________________

- Name on Card ______________________ Date ______________________ Signature ______________________

- Credit Card Billing Address ______________________
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

AFFILIATE MEMBERSHIPS:
☐ Aquabio  ☐ Indonesian Aquaculture Society
☐ Aquaculture Association of Canada  ☐ Korean Aquaculture Society
☐ Aquaculture Association of South Africa  ☐ Korean Society of Fisheries and Sciences (KOSFAS)
☐ Aquaculture Without Frontiers  ☐ Malaysian Fisheries Society
☐ Asian Fisheries Society  ☐ Sociedad Brasileira de Acuicultura
☐ China Society of Fisheries  ☐ Society of Aquaculture Professionals (India)
☐ Egyptian Aquaculture Society  ☐ South African Aquaculture Society
☐ European Aquaculture Society  ☐ Spanish Aquaculture Association (SEA)
☐ Global Aquaculture Alliance
☐ IAFI The International Association of Seafood Professionals

MEMBERSHIP APPLICATIONS  ☐ NEW APPLICATION  ☐ RENEWAL

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 (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)
☐ Sustaining (Electronic JWAS) (USD 105/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
☐ Lifetime (Electronic JWAS only) (USD 1000 with no chapter) Applies to an individual only
☐ Lifetime (Electronic JWAS only) (USD 1100 with one 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 __________

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

Fees for memberships are non-refundable.

Please enter this amount under “Membership Dues” section on opposite side of this form.
MANY OPPORTUNITIES FOR FARM TOURS
Some very special tours will be arranged. Details to be provided later – check our website for updates.

HOTELS
We have arranged a wide range of quality accommodations at special rates. Please check the website for hotel details.

<table>
<thead>
<tr>
<th>TRADE SHOW SCHEDULE</th>
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<tbody>
<tr>
<td>MAY 25</td>
</tr>
<tr>
<td>10:00 - 18:30</td>
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<tr>
<td>MAY 26</td>
</tr>
<tr>
<td>10:00 - 18:30</td>
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<tr>
<td>MAY 27</td>
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<tr>
<td>10:00 - 16:30</td>
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</tbody>
</table>

Centro Nacional de Congress de Yucatan CIC
(Av.Cupules y Av. Colón Centro, C.P. 97000 - Mérida)
# Tentative Schedule

## Tuesday May 24
- Open registration and exhibition setup: 10:00 - 17:00
- WAS / LACC inauguration and awards: 17:00 - 19:00
- Welcome drink: 19:15 - 21:00

## Wednesday May 25
- Registration: 7:30 - 17:00
- Sessions: 9:00 - 11:00
- Exhibition and refreshments and posters: 11:00 - 11:40
- Plenary 1: 11:40 - 12:20
- Panel 1: 12:20 - 13:00
- Lunch (own expense): 13:00 - 14:30
- Sessions - Panel 2: 14:30 - 16:10
- Exhibition and refreshments and posters: 16:10 - 16:30
- Sessions - Panel 2: 16:30 - 17:30
- Happy Hour and posters and prizes of Mexican aquaculture: 17:30 - 19:00
- Student forum and reception: 19:00 - 21:00

## Thursday May 26
- Registration: 7:30 - 17:00
- Sessions – Panel 3: 9:00 - 11:00
- Exhibition and refreshments and posters: 11:00 - 11:40
- Plenary 2: 11:40 - 12:20
- Panel 3: 12:20 - 13:00
- Lunch (by individual account): 13:00 - 14:30
- Sessions - Panel 4: 14:30 - 16:10
- Exhibition and refreshments and posters: 16:10 - 16:30
- Sessions - Panel 4: 16:30 - 17:30
- Happy Hour and posters and prizes of Mexican aquaculture: 17:30 - 19:00
- President’s reception: 19:00 - 21:00

## Friday May 27
- Registration: 7:30 - 17:00
- Sessions: 9:00 - 11:30
- Exhibition and refreshments and posters: 11:00 - 11:20
- Session – Panel 5: 11:20 - 12:00
- Panel 5: 12:00 - 13:00
- Lunch (by individual account): 13:00 - 14:30
- Sessions - panel 6: 14:30 - 16:10
- Exhibition and refreshments and posters: 16:10 - 16:30
- Sessions - panel 6: 16:30 - 17:30