



World Aquaculture 2020

Next Generation Aquaculture
Innovation and Sustainability
Will Feed the World

June 8-12, 2020

SingEx, Singapore

The Annual International Conference & Exposition of
World Aquaculture Society

Hosted by
Agri-Food & Veterinary Authority

Conference Sponsor
Temasek Polytechnic, NTU, NUS,
James Cook Un. Nanyang polytechnik

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Aquaculture Engineering Society
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WorldFish



WORLD AQUACULTURE VISITS SINGAPORE FOR THE FIRST TIME

WORLD AQUACULTURE 2020 will be held in Singapore with involvement from countries throughout the Asian-Pacific region and around the world. Aquaculture is rapidly growing in the Asian-Pacific region and increasingly being integrated into the Singapore food systems; therefore 2020 is the perfect time for the world aquaculture community to focus on Singapore.

A major international trade show at WORLD AQUACULTURE 2020 is the place to learn about the latest aquaculture technologies presented by exhibitors from around the world.

***Stay in touch with the program developments for
WORLD AQUACULTURE 2020 through our Web Page at: www.was.org***

FANTASTIC TOURIST OPPORTUNITIES

Singapore is an island state with a population of over 5 million. With limited land and sea space for fish farming, the country is heavily reliant on imported seafood. Despite this, Singapore has a small and increasingly important food fish farming industry which accounts for 10% of local food fish consumption. Food fish farms in Singapore produce a variety of tropical aquaculture species such as barramundi, snappers, pompanos, groupers, mullets and milkfish and Singapore is also the world's top exporter of ornamental fish. The Economist Intelligence Unit's Global Food Security Index 2018 has ranked Singapore No. 1 when it comes to ensuring that its citizens have access to safe and nutritious food at affordable prices.

SPECIAL PRODUCER PROGRAM

World Aquaculture 2020 will have many special Producer Sessions to address Producer's concerns from around the Asia-Pacific region.



TECHNICAL PROGRAM COVERS THE LATEST RESEARCH

Sessions and workshops at World Aquaculture 2020 will cover all aspects of aquaculture in the Asia-Pacific region as well as the rest of the world. Sample topics will include:

| | | |
|---|---|---|
| Abalone | Energy-alternative sources and conservation | Plankton Culture |
| Algae and macrophytes | Engineering | Policy & Regulations |
| Amphibian and Reptile Aquaculture | Financing and investment | Polyculture |
| Animal health and Welfare | Finfish Broodstock Maturation | Pond Culture |
| Aquaponics and Integrated Aquaculture- Agriculture Systems | Fish Health | Prebiotics and Probiotics |
| Aquatic veterinary health capacity | Fish Meal and Oil (IFFO) | Processing Technology |
| Arid land Aquaculture | Flatfish | Product Quality |
| Barramundi, Seabass & Seabream | Food Safety, Inspections and Audits | Production systems |
| Bio-floc Systems | Food security | Raceway Systems |
| Biosecurity | Freshwater Species - General | Recirculating Systems |
| Biotechnology | General Aquaculture | Reservoir based and Lake Aquaculture |
| Breeding & Genetics | Grouper & Snapper | Salmonids |
| Cage-culture | Hatchery & Larvae Management | Scallops |
| Carpet Shells | Hatchery and Nursery | Sea cucumbers |
| Carps | Immunology | Sea urchins |
| Catfish | Information Technology in Aquaculture | Seafood & Health (GILLS) |
| Certification and legislation | Innovation and High Techs | Seaweeds and Algae |
| Clams (including Giant Clams) | Integrated Multi-trophic Aquaculture | Shrimp Farm Design and Management |
| Climate change, adaptation, resilience | Investment in Aquaculture | Shrimp Feeding and Nutrition |
| Cobia | Korean Aquaculture Session | Shrimp Genetics, Broodstock and Hatchery Management |
| Coldwater Species - General | Marketing & Trade | Shrimp pathology and biosecurity |
| Country Specific Sessions (eg 2008 Norway) | Milkfish | Snappers |
| Crabs & Lobsters | Mollusc Broodstock and Hatchery | Socioeconomics |
| Crayfish & Freshwater Prawn | Mollusc Cultivation | Spatial Planning, Regulation and Zoning |
| Development, Welfare and Poverty Alleviation (AwF) | Mulletts | Standards & Certification |
| Diseases | Mussels | Sturgeons |
| Drugs and Chemotherapeutics | Nutrition & Feed | Sustainable Development of Aquaculture |
| Economics & Management | Ocean acidification | Tilapia |
| Ecosystems approach | Octopus and Cuttlefish | Trade |
| Education, Extension, Technology Transfer & Workforce Development (AquaEd) | Offshore Aquaculture | Trouts |
| Eels | Omics tools for Aquaculture | Tuna |
| Embryology | Organic Aquaculture | Urban aquaculture |
| Emerging Issues | Ornamentals | Value Chain Development |
| Emerging Species | Other Marine Fish | Warm water Species – General |
| Enhancement, Stocking & Ranching | Oyster | Wastage Utilisation |
| Environment and Biodiversity and Climate Change | Pacific & Indigenous Aquaculture | Water Quality and Usage |
| | Pangasius, Clarias & Ictalurus | Women in Aquaculture |
| | Pearl and Queen Conch Culture | Yellowtails, Amberjacks, etc |
| | Perch | Zebrafish |
| | Physiology, Morphology & Histology | |

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



FOR MORE INFORMATION:

**World Aquaculture 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

www.was.org

REGISTER EARLY AND SAVE!

CALL FOR PAPERS – DEADLINE: December 1, 2019

WORLD AQUACULTURE 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 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 2020 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)
- 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. 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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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 tolerance, and dissolved oxygen 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 not included; 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 nutrient requirements of the species. 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 aquaculture system with newly-hatched juvenile (mean weight of 0.2 g) red claw, each stocked in 100 L plastic mesh culture units. Individual units were placed within fiberglass tanks, each containing an aerator and water line. Water was recirculated through chemical 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, oxygen, temperature, alkalinity, chlorides, and pH were measured three times per week. The growth performance was used 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)

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



WORLD AQUACULTURE 2020

June 8 - 12, 2020

Register online at: www.was.org

Return address for payments in USD:
 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 April 26, 2020 | Register by May 26, 2020 | Register after May 26, 2020 | * 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. |
|--|--|--|--|--|
| FULL CONFERENCE & TRADE SHOW In order to receive the Pre-Registration discount rate, this form and payment must be received by the date above | | | | |
| WAS/CHAPTER MEMBER RATE* <input type="checkbox"/> | US\$ 495 | US\$ 595 | US\$ 695 | ● ● ● ● ● ● ● ● Trade Show is <u>included</u> in the Full Conference Registration Rate. |
| WAS/CHAPTER STUDENT MEMBER RATE* Include copy of Student I.D. | <input type="checkbox"/> US\$ 295 | <input type="checkbox"/> US\$ 295 | <input type="checkbox"/> US\$ 350 | |
| Non-Member Rate Student Non-Member Rate Include copy of Student I.D. <i>You can join WAS on the reverse side and use the Member Rate.</i> | <input type="checkbox"/> US\$ 590 <input type="checkbox"/> US\$ 395 | <input type="checkbox"/> US\$ 690 <input type="checkbox"/> US\$ 395 | <input type="checkbox"/> US\$ 790 <input type="checkbox"/> US\$ 445 | |
| <input type="checkbox"/> Spouse Rate – must accompany a full registration Name _____ | <input type="checkbox"/> US\$ 385 | <input type="checkbox"/> US\$ 485 | <input type="checkbox"/> US\$ 585 | TOTAL REGISTRATION FEE US\$ _____ |

TRADE SHOW PASS (Trade show pass is included with the Full Conference Registration)
 Good for 5 days admission to exhibits only – June 9, 10, 11 US\$ 50 **TOTAL TRADE SHOW PASS** US\$ _____

WORKSHOPS & TOURS – TBA

TOTAL US\$ _____

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

Do not mail registration after May 15, 2020 or fax after May 15. After May 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 April 20, 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 April 20, 2020 or for "no shows". After April 20, 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 **WORLD AQUACULTURE 2020**. For bank transfer details, contact us.

Check # _____ Visa Mastercard American Express Discover Diners Club

Card # _____ 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

AFFILIATE MEMBERSHIPS:

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

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** (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.

- 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).*

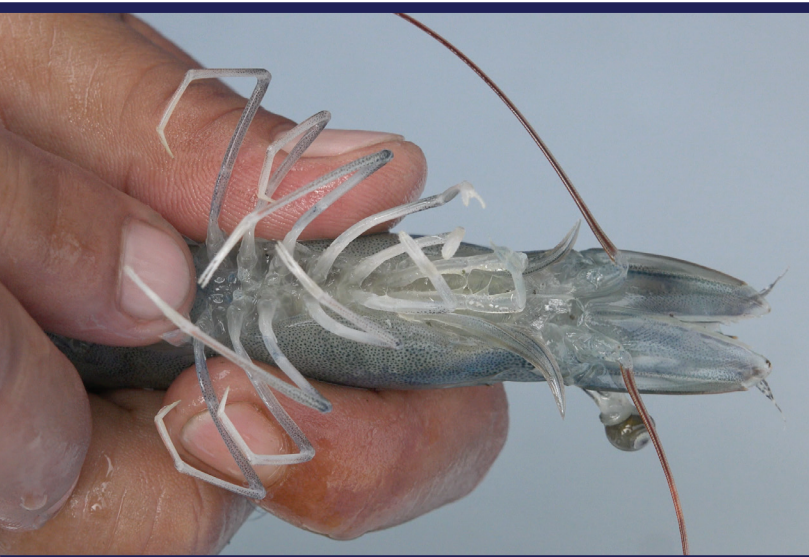
MANY OPPORTUNITIES FOR FARM TOURS

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.

| TRADE SHOW SCHEDULE | | |
|--------------------------------|---------------------------------|---------------------------------|
| JUNE 9 10:00 - 18:00 | JUNE 10 10:00 - 18:00 | JUNE 11 10:00 - 16:00 |



TENTATIVE SCHEDULE

Monday, June 8

| | |
|-------------------|---------------|
| Registration Open | Noon – 18:00 |
| Exhibitor Move-in | Noon – 18:00 |
| Poster Set-up | 13:00 – 17:30 |
| Welcome drink | 17:00 – 19:00 |

Tuesday, June 9

| | |
|--------------------------------|---------------|
| Registration Open | 7:30 – 17:00 |
| Welcome and award | 9:00 – 09:15 |
| Plenary Session (2x30 minutes) | 9:15 – 10:15 |
| Opening ceremony | 10:15 – 10:45 |
| Exhibitor Move-in | 8:00 – 10:00 |
| Poster Set-up | 8:00 – 10:00 |
| Official opening exhibition | 10:45 – 10:50 |
| Refreshment Break | 10:45 – 11:15 |
| Trade Show & Posters Open | 10:00 – 18:00 |
| Sessions | 11:15 – 12:55 |
| Lunch (On your own) | 12:55 – 14:00 |
| Sessions | 14:00 – 15:40 |
| Refreshment Break | 15:40 – 16:00 |
| Sessions | 16:00 – 17:00 |
| Happy Hour & Poster Session | 17:00 – 18:00 |
| Student Reception | 19:00 – 21:00 |

Wednesday, June 10

| | |
|-----------------------------|---------------|
| Registration Open | 7:30 – 17:00 |
| Sessions | 9:00 – 10:40 |
| Refreshment Break | 10:40 – 11:00 |
| Trade Show & Posters Open | 10:00 – 18:00 |
| Sessions | 11:00 – 12:40 |
| Lunch (On your own) | 12:40 – 14:00 |
| Sessions | 14:00 – 15:40 |
| Refreshment Break | 15:40 – 16:00 |
| Sessions | 16:00 – 17:00 |
| Happy Hour & Poster Session | 17:00 – 18:00 |
| WAS-APC Members meeting | 17:00 – 18:00 |

Thursday, June 11

| | |
|---------------------------|---------------|
| Registration Open | 7:30 – 17:00 |
| Sessions | 9:00 – 10:40 |
| Refreshment Break | 10:40 – 11:00 |
| Trade Show & Posters Open | 10:00 – 16:00 |
| Sessions | 11:00 – 12:40 |
| Lunch (On your own) | 12:40 – 14:00 |
| Sessions | 14:00 – 15:40 |
| Refreshment Break | 15:40 – 16:00 |
| Sessions | 16:00 – 17:40 |
| Poster Out take down | 17:40 – 18:00 |
| Exhibit Move-out | 16:00 – 19:00 |
| President's Reception | 18:00 – 21:30 |

Friday, June 12

| | |
|---------------------|---------------|
| Registration Open | 7:30 – 17:00 |
| Sessions | 9:00 – 10:40 |
| Refreshment Break | 10:40 – 11:00 |
| Posters Open | 10:00 – 16:30 |
| Sessions | 11:00 – 12:40 |
| Lunch (On your own) | 12:40 – 14:00 |
| Sessions | 14:00 – 15:40 |
| Refreshment Break | 15:40 – 16:00 |
| Sessions | 16:00 – 17:40 |

