Seafood Extension Specialist

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Photo Evelyn Watts

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EXTENSION

SEAFOOD HACCP WORKSHOPS

Due to restrictions with COVID-19, the LSU AgCenter and Louisiana Sea Grant Seafood Extension Specialist partnered with Virginia Tech Seafood AREC to offer two Segment 2 Virtual Seafood HACCP workshops in the spring of 2021. One workshop was offered in English and the second in Spanish. Fourteen seafood processors hailing from not just Louisiana and Virginia but around the globe, attended. Based on an impact survey completed by participants, all attendees felt their knowledge and their confidence in completing duties associated with the presented material increased. The workshops were on January 29 and March 26, 2021.

Segment 2 virtual Seafood HACCP participants on January 29, 2021.
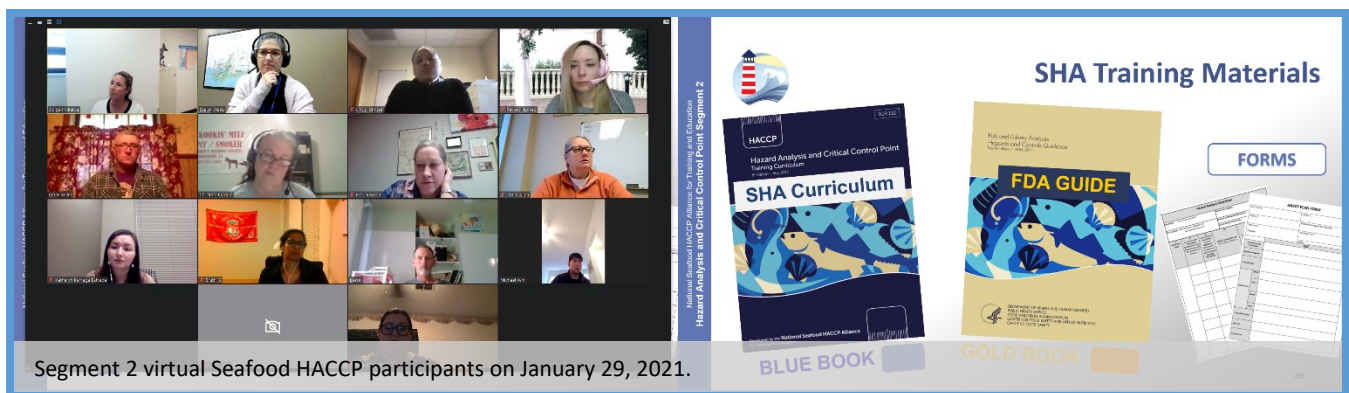
PRESENTATIONS

- **Watts, E.** Innovation in Seafood Packaging—Opportunities and Limitations. Laitram Machinery Educational Series. February 2021. International. Online: https://vimeo.com/512261369/7f46e07f75.

FACT SHEETS AND WHITE PAPERS

- **Watts, E.** Icing Practices and Catfish Quality. Louisiana Fisheries Forward. 2021. White paper Online: https://www.lafisheriesforward.org/wp-content/uploads/2021/03/LFF_Catfish-White-Paper-FINAL.pdf.

MAGAZINE ARTICLES

- **Watts, E.** & Xu, W. 2021. Extension brief: Providing Educational Support During a Public Health Emergency. *Louisiana Agriculture*, 64(1):29. Online: https://www.lsuagcenter.com/~/media/system/4/c/f/4/4cf4a8dd5e5e2247dc34e3477325969c/vol641_laagmag_winter2021_final_adapdf.pdf.

- Sand, C. & **Watts, E.** 2021. Packaging Protects Seafood. *Food Technology*. Online: https://www.ift.org/news-and-publications/food-technology-magazine/issues/2021/june/columns/packaging-protect-seafood-quality.

VIDEOS

- Evelyn Watts: Keeping Louisiana Seafood Safe. LSU AgCenter. March 26, 2021. **Contributor**. Online: https://www.youtube.com/watch?v=qKxkx85Qdo.

Evelyn Watts visiting crawfish peeling facility in Eunice LA (Photo Communications LSU AgCenter).

- LSU AgCenter Virtual Crawfish Boil. LSU AgCenter. March 2,2021. **Contributor**. Online: https://www.youtube.com/watch?v=_ndzx1cnbCU.

- Stay for the Seafood – Jefferson Parish. Louisiana Sea Grant & LSU AgCenter. January 26,2021. **Contributor**. Online: https://www.youtube.com/watch?v=TX0CQe9Vjgs&feature=youtu.be.

- Stay for the Seafood – Lake Charles. Louisiana Sea Grant & LSU AgCenter. January 26,2021. **Contributor**. Online: https://www.youtube.com/watch?v=O8sOwxp7Zno.

- Stay for the Seafood – Lafourche/Terrebonne. Louisiana Sea Grant & LSU AgCenter. January 26,2021. **Contributor**. Online: https://www.youtube.com/watch?v=TJ8PKlmdmRA&feature=youtu.be.

RESEARCH

MICROBIOLOGICAL QUALITY AND *SALMONELLA* PREVALENCE IN WILD-CAUGHT CATFISH FROM SMALL LOUISIANA WILD-CAUGHT CATFISH PROCESSORS
By K. Parraga, C. Escalante, & E. Watts

Under a mandate from the U.S. Congress in 2015, the U.S. Department of Agriculture (USDA) published the rule "Mandatory inspection of fish of the order Siluriformes and products derived from such fish." Since 2017, the Food Safety Inspection Service (FSIS) started inspecting Siluriform fish products. The FSIS is analyzing samples to determine national baseline prevalence of *Salmonella* on raw product. The objective of this study was to determine microbiological quality and *Salmonella* prevalence in catfish harvested from small Louisiana wild-caught catfish processors.

Catfish fillet samples were collected from nine processing facilities in Louisiana. Samples were collected once a month from January 2018 to December 2019. Fillets were evaluated for aerobic mesophilic bacteria (AB) (AOAC, 2002), total coliforms, *E. coli* (AOAC 2018.13), *Staphylococcus aureus* (AOAC 2014.05), and *Salmonella* spp. and plated in duplicate. For *Salmonella* spp., USDA methodology was followed. *Salmonella* spp. suspect colonies were confirmed and sequenced by the full-length 16s method. Phylogenetic analysis was based on maximum likelihood (ML) using nucleotide sequences of the 16S region of samples that tested positive for *Salmonella* spp. and other *Salmonella*-related sequences available in the GenBank. ML analysis was conducted using the CIPRES Science Gateway portal, version 3.3.

During 2018 and 2019, 489 samples were collected from nine wild-caught catfish facilities located in Louisiana from the northeast (1), central (3), southwest (3), and southeast (2) regions. The microbial profile for AB, *E. coli,* total coliforms and *Staphylococcus aureus* showed no significant difference during the two years of catfish fillet collection. Significant differences were found by region having the highest counts of AB and coliforms in the northeast region, and for *Staphylococcus aureus* in the southeast region. From the 489 samples, 33 samples were suspected positive for *Salmonella* spp., from those samples 26 were confirmed as *Salmonella* spp.

The results of this study showed that raw wild-caught catfish fillet microbial quality for AB, *E. coli*, coliforms, and *Staphylococcus aureus* were within the recommended limits for raw fresh fish (Table 1). On the other hand, *Salmonella* prevalence during the study was 5.32% in wild-caught catfish. The most putative common species found was *S. enterica,* sub-species *enterica* with more than 95% of percent identity (Figure 1)*.*

Table 1. Aerobic mesophilic, *E. coli*, total coliforms, and *Staphylococcus aureus* counts (Log CFU/g) in raw wild-caught catfish fillet collected from January 2018 to December 2019.

Microorganism	Average ±S.D. (Log CFU/g*)	Range (Log CFU/g*)
Aerobic Mesophilic	5.01±0.70	2.78-6.77
E. coli	0.58±0.89	<0.30-3.62
Total Coliforms	2.16±0.77	<0.30-4.15
Staphylococcus aureus	0.73±1.02	<0.30-3.91

*Log CFU/g: Logarithmic Colony Forming Units per gram of sample

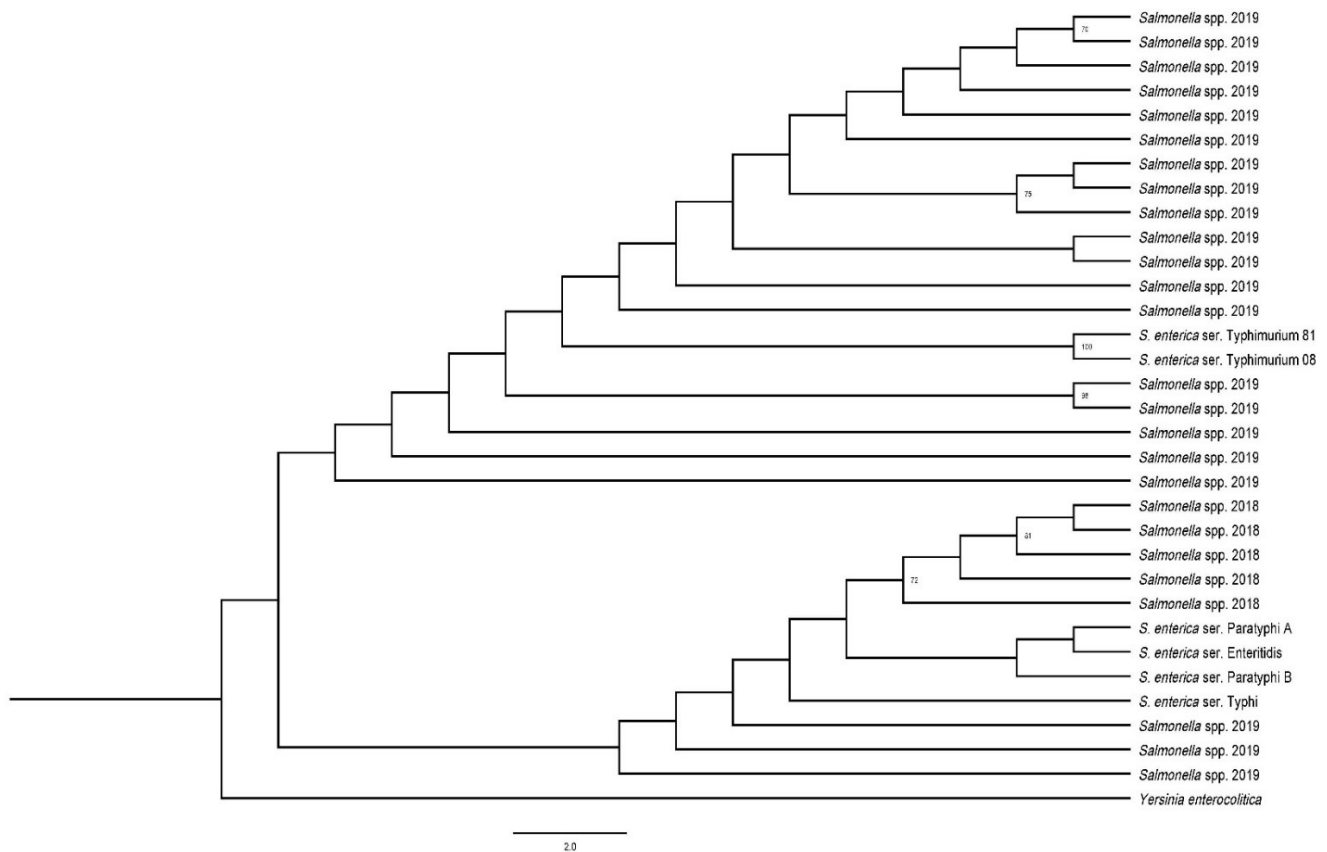Katheryn Parraga, M.S. conducting seafood sample analysis (Photo by Evelyn Watts).

Figure 1. Maximum likelihood-based phylogenic analysis using putative 16S regions for Salmonella spp. from raw wild-caught catfish fillets (*Salmonella* spp. 2018 and 2019) and other selected Salmonella spp. (*S. enterica* ser Typhimurium 82, *S. enterica* ser. Typhimurium 08, *S. enterica* ser. Paratyphi A, *S. enterica* ser. Enteritidis, *S. enterica* ser Paratyphi B, *S. enterica* ser. Typhi, and *Yersinia enterocolitica*) from the GenBank. Yersinia enterocolitica was used as an outgroup. The final tree is a consensus after executing 1000 bootstraps interferences. Bootstrap support values are shown. Values under 70 were deleted.

TEACHING

In the spring 2020 semester, Drs. Watts and Xu were invited to lecture the HACCP section of the course Foods of Animal Origin (ANSC 2053).

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