HOOKED ON DATA

Unraveling Social Media Conversations on Midwest Fishes

Illinois-Indiana Sea Grant; Purdue University; USDA: National Institute of Food and Agriculture

EXPERT REVIEWED

HOOKED ON DATA: UNRAVELING SOCIAL MEDIA CONVERSATIONS ON MIDWEST FISHES

The U.S. aquaculture sector is committed to delivering high-quality fish products to foster public trust and consumer acceptance of aquaculture practices. In contrast to other forms of animal protein production, where farming is widely accepted, fish and seafood continue to be subject to public scrutiny, particularly in comparisons between wild-caught and farm-raised sources. Many prominent fish species can be found in the Midwest region of the United States including Bluegill (*Lepomis macrochirus*), Largemouth Bass (*Micropterus nigricans*), Walleye (*Sander vitreus*), Yellow Perch (*Perca flavescens*), and Rainbow Trout (*Oncorhynchus mykiss*), which is non-native but introduced species. These five fishes hold considerable recreational, cultural and economic significance, and are valued both as sources of food and for their role in recreational fishing.

STUDY PURPOSE

A study funded by USDA's North Central Regional Aquaculture Center (NCRAC) analyzed public sentiment toward the five fishes to offer valuable insights for industry stakeholders, policymakers, and conservation organizations with vested interests in the management and conservation of these fishes . The study aimed to assess public attitudes on these five fish speices by examining content shared on various social media platforms, providing additional "big data" that could help guide policy decisions, regulations and guidelines relating to seafood and fisheries.

This research bulletin presents a summary of the principal findings derived from the sentiment analysis focused on five prominent fishes (Bluegill, Largemouth Bass, Walleye, Rainbow Trout, and Yellow Perch) from the Midwest region of the United States.

METHODS

The analysis was conducted using the online media intelligence and analytical tool, Quid, designed for monitoring and interpreting online content. Quid scrapes all relevant online posts and comments within a determined date range to extract the text from eligible post or comment and all subsequent replies. The scraped data are then parameterized based on a series of included and excluded terms. Social media posts in the U.S. were collected over a four-year period from July 1, 2020 through July 1, 2024, to evaluate public discourse surrounding the selected five fishes. Online sources included forums, X (formerly Twitter), news outlets, networks, blogs, Facebook, Instagram, YouTube, and consumer/professional review platforms.

A targeted dataset was constructed using both inclusionary and exclusionary search terms relevant to the fishes in question. Additional sub-searches were performed to distinguish references to each fish in the context of "farmed" and "wild" origins. Some terminologies associated with the fishes included 'fishing,' 'jigging,' 'catch,' 'good,' 'eat,' 'essential,' 'like,' 'favorite,' 'fake,' 'escape,' 'stuffed,' 'fear,' etc.

Mention counts were extracted by counting the number of times a keyword appeared in the collected posts originating from the Uni ted States. Mentions are generally snippets specific to an included term, and in some instances, there was more than one included term mentioned in a single post. The collected data were then analyzed to determine sentiment, categorizing each post as positive, negative, or neutral. A net sentiment score was calculated as a ratio of net volume of positive and negative counts as percentage of total. The weekly scores range from -100% to +100%; a score of above zero indicates positive sentiment but a score exceeding +50% is generally interpreted as a strong indication of positive public sentiment toward the fish.

STUDY HIGHLIGHTS

From July 2020 to June 2024, we collected 732,200 total social media mentions of the five fishes. Bluegill, Largemouth Bass and Rainbow Trout had average weekly mentions that ranged from 375 to 772 mentions per week over the study period. Walleye had the most social media engagement, with average mentions ranging from 1,582 to 2,128 per week over the study period. Yellow Perch had the lowest engagement of the species studied (see Figure 1).

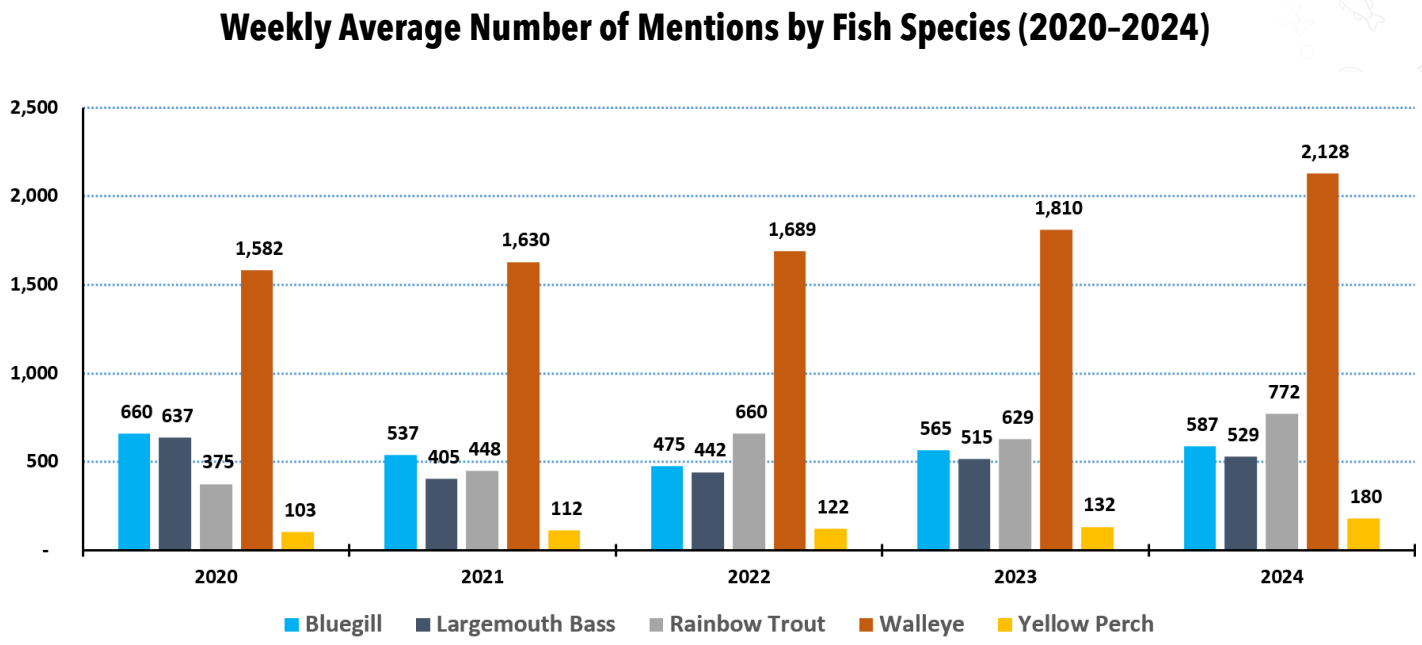

Figure 1. *Weekly Average Number of Mentions*

Public sentiment toward the fishes was predominantly positive. Overall, net sentiment scores for all species exceeded 50%, with the notable exceptions of wild Largemouth Bass and wild Yellow Perch, which received scores of 37% and 36%, respectively (see Figure 2).

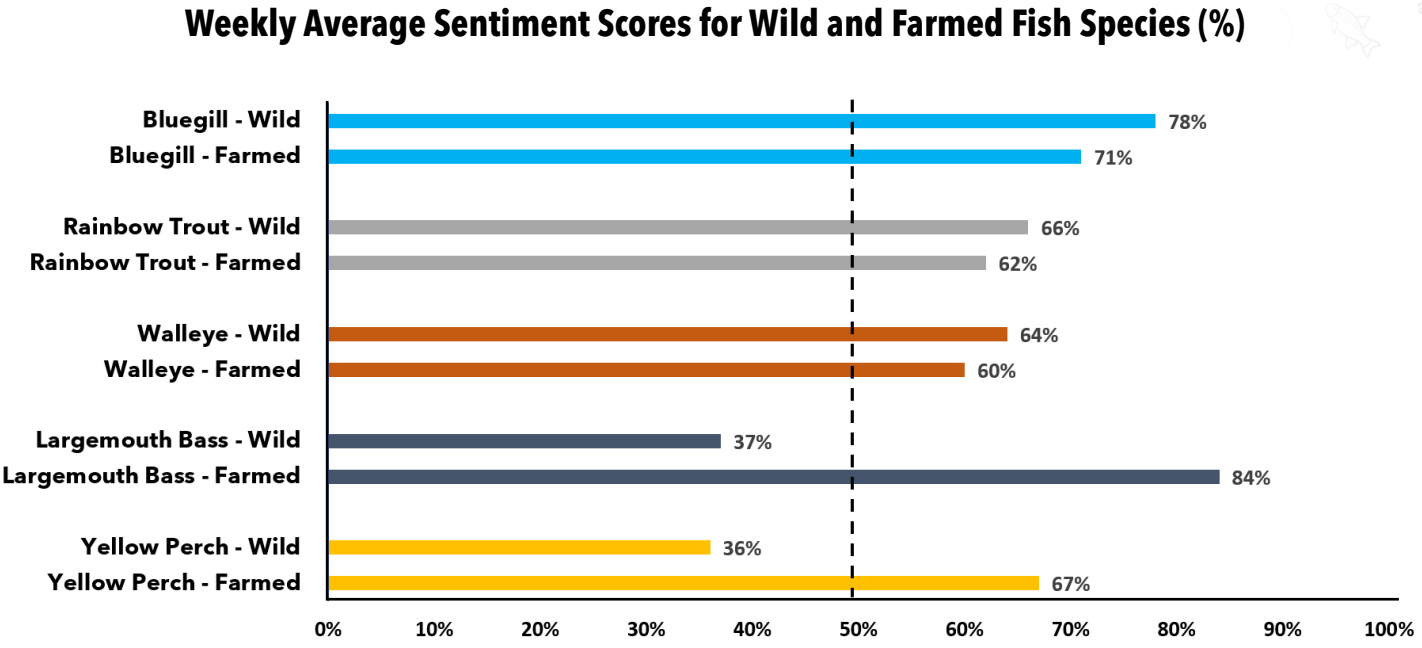

Figure 2. *Weekly Average Sentiment (%)*

A key finding was that farmed fish consistently received higher net sentiment scores of at least 60% compared to their wild counterparts, suggesting a more favorable public perception of farmed fish (aquaculture) practices when discussed in the context of food.

FISH-SPECIFIC HIGHLIGHTS

The U.S. aquaculture sector is committed to delivering high-quality fish products to foster public trust and consumer acceptance of aquaculture practices. In contrast to other forms of animal protein production, where farming is widely accepted, fish and seafood continue to be subject to public scrutiny, particularly in comparisons between wild-caught and farm-raised sources. Many prominent fish species can be found in the Midwest region of the United States including Bluegill (*Lepomis macrochirus*), Largemouth Bass (*Micropterus nigricans*), Walleye (*Sander vitreus*), Yellow Perch (*Perca flavescens*), and Rainbow Trout (*Oncorhynchus mykiss*), which is non-native but introduced species. These five fishes hold considerable recreational, cultural and economic significance, and are valued both as sources of food and for their role in recreational fishing.

WALLEYE

- The most talked-about fish, with average weekly mentions of 1,768 over the 4-year study period, indicating its popularity among anglers and seafood consumers (see Figure 1).
- Wild Walleye was viewed slightly more favorably (64% positive net sentiment) than farmed Walleye (60%) (see Figure 2).
- More mentions were generally observed around the summer months.
- Neither wild-caught nor farmed Walleye were frequently discussed in a negative light. Walleye was commonly discussed in the context of fishing, catching and eating.
- A negative term that was associated with Walleye was 'mushy.'

Photo courtesy The University of Wisconsin-Stevens Point, Northern Aquaculture Demonstration Facility

BLUEGILL

- People generally posted positively about Bluegill, especially during the summer, paticularly in July.
- Total average mentions ranged from 475 to 660 per week over the study period. Higher mentions were observed in 2020 (see Figure 1).
- Both farmed and wild Bluegill were viewed positively with average positive net sentiment of 71% and 78% respectively (see Figure 2).
- Online chatter frequently mentioned 'fishing,' 'catching,' and 'nice bluegill'. There was also frequent mention of the pace of fishing bluegill as being 'slow.'

Photo courtesy The University of Wisconsin-Stevens Point, Northern Aquaculture Demonstration Facility

LARGEMOUTH BASS

- Discussions about Largemouth Bass were mostly positive with an average range of 405 in 2021 to 637 in 2020 (see Figure 1). The average across the study period was 506 mentions per week.
- There were more discussions regarding difficulty of catching Largemouth Bass compared to any other species examined.
- Other terminologies associated with Largemouth Bass included 'catching,' 'bait,'and 'meals.'
- Farmed Largemouth Bass received over two times more positive sentiment (84%) compared to their wild counterpart (37%) with a few +100% net sentiment recorded in 2020 (see Figure 2).

Photo courtesy Kentucky Department of Fish & Wildlife Resources

RAINBOW TROUT

- Mentions of Rainbow Trout increased over the study period from an average of 375 mentions per week in 2020 to 772 per week in 2024 (see Figure 1). The average over the 4-year period was 577 per week.
- Wild Rainbow Trout was viewed slightly more favorably (66% positive net sentiment) than farmed Rainbow Trout (62%) (see Figure 2).
- Overall, net sentiment of farmed Rainbow Trout rose 46% from 2020 to 2024 but wild Rainbow Trout experienced a 14% fall in net sentiment over the same period.
- Words commonly associated with Rainbow Trout mentions included 'fresh,' 'dry,' 'eat,' and 'taste.'
- The top terms associated with Rainbow Trout fishing were 'catch,' and 'eat.'
- Negative comments associated with Rainbow Trout related to anatomical issues including skeletal deformities and its nutritional value.

Photo courtesy Mike Searcy

YELLOW PERCH

- Yellow Perch were mentioned less but generally viewed positively with average weekly mentions ranging from 103 in 2020 to 180 in 2024, an increase of about 75% over the 4-year study period (see Figure 1). The average weekly mentions over the period was 130.
- Common terminologies associated with Yellow Perch was in the context of catching - 'limits,' and 'Lake Erie.'
- 'Walleye' frequently showed up in posts about Yellow Perch.
- There was little discussion about farmed and wild.
- Farmed Yellow Perch received almost two times the positive net sentiment (67%) compared to wild Yellow Perch (36%) (see Figure 2)

Photo courtesy Nicole Wright, Ohio Sea Grant, The Ohio State University

KEY THEMES IN PUBLIC DISCOURSE

- **Eating & Cooking:** Mentions of Walleye, Rainbow Trout, and Yellow Perch frequently included discussions on taste, cooking methods, and consumption habits.
- **Fishing & Recreation:** Bluegill, Largemouth Bass, and Walleye were often mentioned in the context of fishing tournaments, angler experiences, and catch rates.
- **Sustainability and Conservation:** Some negative discussions centered around overfishing concerns, habitat destruction, and regulations related to these fishes.
- **Regulatory Discussions:** Mentions of Yellow Perch included references to fishing limits and conservation policies, reflecting the fishes' management in certain areas.

CONCLUSION

Public interest in Midwest fishes remains strong, with notable enthusiasm for Walleye, Bluegill, Largemouth Bass and Rainbow Trout. People talked positively about these fish on social media but while there is a general interest in the fishes, there was not much discussion about whether they are farmed or wild. However, farmed fish received relatively higher sentiment scores. Discussions around wild-caught fish indicated a need for continued engagement in sustainability efforts and public education.

By leveraging sentiment analysis, aquaculture and the sporting fishing industry stakeholders can enhance consumer trust, promote responsible fishing, and adapt to evolving market demands. The information from the study can help improve fishery management and ensure these fishes continue to thrive both for recreation and as a food source.

RECOMMENDATIONS FOR STAKEHOLDERS

In light of the analyzed public sentiment, stakeholders should consider several key recommendations to improve public perception and support for the Midwest fish industry.

Enhancing Public Perception and Engagement

To foster a more favorable view of the industry, a greater emphasis should be placed on public education. This includes increasing awareness of sustainable fishing practices and the environmental benefits of controlled aquaculture. By highlighting how farmed fishes can alleviate pressure on wild populations, the industry can improve consumer perception and enhance marketability. This can be achieved by sharing positive narratives about Midwest fish through digital platforms, which could feature information on health benefits, recipes, and recreational fishing experiences. Additionally, to build consumer trust, stakeholders must proactively address concerns about overfishing and conservation efforts, demonstrating a clear commitment to responsible resource management.

Strategy and Policy Adaptations

To stay ahead of evolving consumer preferences, both the industry and policymakers should continuously track public sentiment data. This real-time social media feedback and sentiment analysis should be used to inform and adjust regulations and marketing strategies. This will ensure that stakeholder actions remain aligned with public expectations and market dynamics. Stakeholders can anticipate changes in the market and adapt their approaches to ensure the long-term sustainability and success of the industry.

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END NOTES

i Smith, M.L., Quagrainie, K.K., & Widmar, N.O. (January, 2025). "Measuring interest in Fish found in the US North Central Region through Online Media." (under review).

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