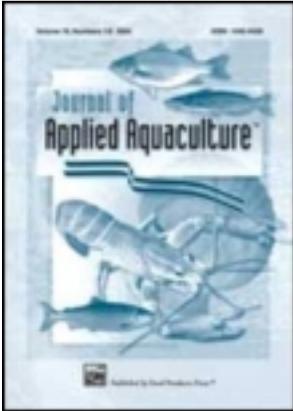


This article was downloaded by: [Kentucky State University]

On: 27 November 2012, At: 08:11

Publisher: Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Applied Aquaculture

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/wjaa20>

Characteristics of Baitfish Retailers in Kentucky: Evidence of a Market to Support a Regional Industry

Tiffany Ogunsanya^a & Siddhartha Dasgupta^a

^a Aquaculture Research Center, Kentucky State University, Frankfort, Kentucky, USA

Version of record first published: 06 Jun 2009.

To cite this article: Tiffany Ogunsanya & Siddhartha Dasgupta (2009): Characteristics of Baitfish Retailers in Kentucky: Evidence of a Market to Support a Regional Industry, *Journal of Applied Aquaculture*, 21:2, 120-127

To link to this article: <http://dx.doi.org/10.1080/10454430902892925>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Characteristics of Baitfish Retailers in Kentucky: Evidence of a Market to Support a Regional Industry

TIFFANY OGUNSANYA and SIDDHARTHA DASGUPTA

Aquaculture Research Center, Kentucky State University, Frankfort, Kentucky, USA

*Bait shops in Kentucky and surrounding states rely primarily on large-scale suppliers for baitfish. However, these suppliers provide specific species and sizes of fish. This creates a potential market where small-scale producers could supply bait shops with uncommon species and size combinations of baitfish. This study describes baitfish and bait crayfish marketing parameters in Kentucky by reporting results of a survey that elicited marketing information from local baitfish dealers. The results showed 94% of the respondents were interested in purchasing baitfish from local producers. The types of baitfish wanted by these bait dealers from local suppliers included rosy red minnows (*Pimephales promelas*), catfish (*Ictalurus punctatus*), and large golden shiners (*Notemigonus crysoleucas*). The survey provided evidence of significant niche marketing opportunities in baitfish in states such as Kentucky, where baitfish production is not a major industry.*

KEYWORDS *baitfish, Kentucky, small-scale, survey*

INTRODUCTION

Baitfish production, ranking in the top four largest aquaculture industries in the United States for sales, has proven to be a very profitable enterprise

The authors are grateful to three anonymous reviewers for their comments and suggestions that have improved this manuscript. The authors are also grateful to the USDA CSREES Evans-Allen Program (Project No. KYX-80-06-16A) for funding this study.

Address correspondence to Siddhartha Dasgupta at Aquaculture Research Center, Kentucky State University, 400 East Main Street, Frankfort, KY 40601, USA. E-mail: siddhartha.dasgupta@kysu.edu

(Engle & Stone, 1996). According to the 2005 Census of Aquaculture, there were a total of 257 baitfish farms in the United States with a value of \$38 million in sales (USDA, 2005). During 2005, Arkansas, Minnesota, and Wisconsin led the nation with \$20 million, \$4 million, and \$3 million in baitfish sales, respectively (USDA, 2005). Arkansas, the leader in this industry, has a long history of baitfish culture and is the primary baitfish source for all neighboring states, including Kentucky (Engle & Stone, 2003).

Kentucky and surrounding states such as Indiana, Tennessee, and West Virginia, do not have a large baitfish production industry. It is difficult for small-scale baitfish enterprises in these states to survive in a marketing climate where large-scale, out-of-state bait suppliers, mostly out of Arkansas, have dominated the industry for a long period of time. However, since these large suppliers prefer specific baitfish species and sizes, there is potential for having small-scale producers supplying a niche market with uncommon species and size combinations of baitfish (Wurts, 2000). In recent times, the baitfish industry has experienced an increase in operating costs due to higher land values, higher labor costs, higher fuel costs, etc. (Engle, Stone & Park, 2000). These increases make it less profitable for out-of-state suppliers to sell fish in "non baitfish states," such as Kentucky, giving a competitive advantage to local baitfish producers.

This paper reports results from a Kentucky survey that elicited information on the purchasing habits of local bait shops and the potential baitfish products they would like to buy, if available. The survey also investigated the niche marketing possibility of baitfish in Kentucky. In addition, price data and market seasonality information were also deduced by the survey. This information is vital as a preliminary analysis for developing a small-scale baitfish production industry in traditionally non-baitfish states such as Kentucky. All reference to crayfish in this paper is in the context of fish bait.

MATERIALS AND METHODS

A total of 94 bait retailers in Kentucky were surveyed, out of which 47 (50% response rate) provided the data discussed in this paper. Retailers that completed the survey were located in 31 counties, out of the 120 counties in Kentucky. These counties covered a wide region of the state and included popular sport fishing areas such as Lake Cumberland and the Land Between the Lakes. Most respondents were surveyed by telephone; only one bait shop completed the questionnaire via fax.

A list of survey questions appears in Table 1. The survey inquired about the types of baitfish sold, the size of baitfish, and the shop's buying and selling prices. For convenience, different size classes of fish and crayfish sold at retail bait shops were placed in the following categories: tiny (2.54–3.81 cm; grader size 12–14); small (5.08–7.62 cm; grader size 14–18);

TABLE 1 Survey Questions

-
1. What species of baitfish do you sell?
 2. Do you have baitfish species other than fathead minnows, golden shiners, goldfish, or crayfish?
 3. What are the sizes of each species of baitfish?
 4. What are the buying prices for each baitfish species?
 5. What volume of fish is purchased per order?
 6. What is the selling price for each baitfish species?
 7. What is the selling price for each size class of baitfish species?
 8. What months of the year do you purchase baitfish?
 9. What months of the year are baitfish in high demand among your customers?
 10. Would you purchase baitfish from local producers? (Yes/No)
 11. Are there species of baitfish you would like to sell that you do not currently have? (Yes/No)
 12. If "Yes" to question 11, what species of baitfish and corresponding size classes would you like to have?
-

medium (10.16–12.70 cm; grader size 21–27); and large (15.24 cm or bigger; grader size > 29) (Jensen, 1990). The survey also inquired about the volume of live bait purchased per order for each shop.

Since bait transactions usually coincide with sport fishing seasons, the survey found the months that were "in-season" for baitfish sales in Kentucky. In addition, there were questions regarding the willingness of retail shops to purchase baitfish from local producers. Finally, the survey elicited information on certain species or size classes of baitfish and crayfish for which there was a demand but limited supply.

RESULTS

Of the retail bait shops surveyed, 4% were pay lakes, 15% were located at marinas and resorts, and 81% were classified as "other shops." Table 2 lists the main types of baitfish and crayfish sold, which included fathead minnows

TABLE 2 Summary of Baitfish/Crayfish Marketing Data Obtained by a Survey of 47 Bait Retailers in Kentucky

Types of baitfish sold	Number of respondents (percentage)
Fathead minnows	35 (74%)
Golden shiners	24 (51%)
Goldfish	9 (19%)
Live crayfish	9 (19%)
Frozen crayfish	4 (9%)
Channel catfish	1 (2%)
Shad	1 (2%)
Sucker	3 (6%)
Bluegill	1 (2%)
Chub	3 (6%)
Common carp	1 (2%)

(*Pimephales promelas*; 74% of the shops); golden shiners (*Notemigonus crysoleucas*; 51% of the shops); goldfish (*Carassius auratus*; 19% of the shops); live crayfish (*Procambrionus clarkii*; 19% of the shops); and “other” baitfish (19% of the shops). The category “other” constituted fish such as channel catfish (*Ictalurus punctatus*; 2% of shops); shad (*Alosa* spp.; 2% of shops); suckers (*Catostomus* spp.; 6% of shops); bluegill (*Lepomis macrochirus*; 2% of shops); chub (*Semotilus* spp.; 6% of shops); and common carp (*Cyprinus carpio*; 2% of shops). Only 9% of the surveyed bait shops sold frozen crayfish.

Table 3 reports the percentage of respondents that sold baitfish/crayfish of specific size classes. For example, 43%, 55%, and 3% of the respondents that sold fathead minnows indicated selling tiny, small, and medium-sized minnows, respectively. Of the shops that sold golden shiners, 4%, 36%, 38%, and 22% sold tiny, small, medium, and large fish, respectively. Similarly, 5%, 37%, 37%, and 21% of goldfish-selling retailers sold tiny, small, medium, and large fish, respectively. In addition, 22%, 33%, 26%, and 19% of live crayfish sellers sold tiny, small, medium, and large crustaceans, respectively. Table 3 shows that one bait retailer carried large channel catfish, one had medium-sized shad, three had large suckers, one had medium-sized bluegill, three had small chubs, and one had medium-sized common carp.

Table 4 reports the buying prices for baitfish/crayfish. On average, bait shops paid \$0.86/doz for minnows (standard deviation = \$0.24/doz), with a price range from \$0.58/doz to \$1.00/doz. Golden shiner prices were unavailable in “cost per dozen” units; the average price suppliers charged for golden shiners was \$16.50/kg (standard deviation = \$4.71/kg), with a range from \$12.10/kg to \$24.20/kg. Similarly, buying price for goldfish was \$10.63/kg, on average, (standard deviation = \$4.44/kg) with a range from

TABLE 3 Number of Respondents (Percentage) Indicating that they Sell Baitfish and Crayfish of the Following Size Classes

	Size classes of baitfish and crayfish			
	2.54–3.81 cm “Tiny”	5.08–7.62 cm “Small”	10.16–12.70 cm “Medium”	≥15.24 cm “Large”
Fathead minnows	17 (43%)	22 (55%)	1 (3%)	0 (0%)
Golden shiners	2 (4%)	16 (36%)	17 (38%)	10 (22%)
Goldfish	1 (5.0%)	7 (37%)	7 (37%)	4 (21%)
Live crayfish	6 (22%)	9 (33%)	7 (26%)	5 (19%)
Channel catfish				1 (1 ¹)
Shad			1 (1 ¹)	
Suckers				3 (1 ¹)
Bluegill			1 (1 ¹)	
Chub		3 (1 ¹)		
Common carp			1 (1 ¹)	

¹Percentage results were not provided because of the paucity of respondents in these categories.

TABLE 4 Baitfish/Crayfish Prices

	Units	Average price (\pm std. dev.)	Range
Purchase price:			
Fathead minnows	\$/dozen	\$0.86 (\pm \$0.24)	\$0.58 – \$1.00
Golden shiners	\$/kg	\$16.50 (\pm \$4.71)	\$12.10 – \$24.20
Goldfish	\$/kg	\$10.63 (\pm \$4.44)	\$5.50 – \$13.20
Live crayfish	\$/kg	\$13.20 (C^1)	(C^1)
Selling price:			
Fathead minnows	\$/dozen	\$1.64 (\pm \$1.85)	\$0.50 – \$10.80
Golden shiners	\$/dozen	\$4.33 (\pm \$5.07)	\$0.90 – \$24.00
Goldfish	\$/dozen	\$10.89 (\pm \$6.29)	\$5.50 – \$24.00
Live crayfish	\$/dozen	\$6.52 (\pm \$7.34)	\$2.00 – \$24.00

¹Only one observation was obtained for crayfish purchase price.

\$5.50/kg to \$13.20/kg. Only one observation was obtained for live crayfish purchase price: \$13.20/kg.

Table 4 reports the selling prices of baitfish/crayfish for the retailers. The average selling price for fathead minnows was \$1.64/doz (standard deviation = \$1.85/doz), with a price range from \$0.50/doz to \$10.80/doz. Golden shiners were sold at an average price of \$4.33/doz (standard deviation = \$5.07/doz) with a price range from \$0.90/doz to \$24.00/doz. The average price for goldfish was \$10.89/doz (standard deviation = \$6.29/doz). The selling price of goldfish ranged from \$5.50/doz to \$24.00/doz. Live crayfish were sold at \$6.52/doz, on average, (standard deviation = \$7.34/doz), and the price ranged from \$2.00/doz to \$24.00/doz.

Only limited information on size-differentiated selling prices of baitfish was obtained through the survey. For example, the average selling prices (\pm standard deviation) for tiny, small, and medium fathead minnows were \$0.82/doz \pm \$0.12/doz (N = 3), \$1.28/doz \pm \$0.45 (N = 3), and \$2.00/doz (N = 1), respectively. The average selling prices for tiny, small, medium, and large golden shiners were \$.95/doz (N = 1), \$2.45/doz \pm \$2.37/doz (N = 4), \$3.80/doz \pm \$3.60/doz (N = 4), and \$1.60/doz (N = 1), respectively. The selling prices based on fish size were unavailable for other types of baitfish/crayfish.

The volume of baitfish/crayfish (per order) purchased by bait shops was another piece of information obtained through the survey. Fourteen respondents (34%) indicated that they would purchase 4.50–9.00 kg of fish per order, and 13 (32%) bait shops would receive more than 9 kg of fish per order. Few bait shops reported that their order size was 0.91–1.82 kg (15% of surveyed shops) and 2.27–4.09 kg (12% of surveyed shops).

The seasonality of bait transactions is a vital aspect of developing successful marketing plans (Pounds & Engle, 1992). Table 5 shows that 58% of bait shops purchased fish all year round. However, some bait shops purchased seasonally. For example, 30% of shops purchased fish during the

TABLE 5 Seasonality of Baitfish/Crayfish Demand

Seasonality	Number of respondents (percentage)
Bait shops that purchase baitfish/crayfish during:	
All year	27 (58%)
March – May	2 (4%)
March – July	1 (2%)
March – November	14 (30%)
December – May	2 (4%)
December – November	1 (2%)
Times of high consumer demand for baitfish/crayfish:	
All year	2 (4%)
March – May	14 (30%)
March – July	5 (11%)
March – November	15 (32%)
May – December	3 (2%)
June – July	4 (9%)
June – November	4 (9%)
June – December	2 (4%)

March to November sport fishing season; 4% purchased fish during March to May; 2% bought fish during March to July; 2% purchased fish from December to the following November; and 4% of bait shops purchased fish from December to the following May.

Table 5 reports on the seasonality associated with baitfish/crayfish sales to consumers. The results showed that the 32% of bait shops experienced high demand during March to November; 30% of retail shops indicated a high demand for baitfish/crayfish during March to May; and 11% of bait shops reported March to July to be the high demand season for baitfish/crayfish. Only 8.5% of bait shops had high demand during June and July. Another 8.5% faced a high demand from June to November, and 4% of bait shops realized a high demand from June to December. In comparison, only 4% of the surveyed shops reported an all-year high demand for baitfish/crayfish.

The survey elicited information about the potential of small-scale producers within Kentucky supplying baitfish/crayfish to local retailers. Large-scale bait suppliers/live haulers usually operate on a predetermined schedule. Hence, bait shops dependent on these deliveries could experience supply shortages during seasons of high demand. The survey results showed that 31% of bait retailers were dissatisfied with their current suppliers because of shortages. These retailers would be prime candidates for local suppliers providing “topping off” services for their baitfish/crayfish tanks.

The survey showed that 94% of bait retailers were willing to purchase baitfish/crayfish from local producers. Seven percent of the respondents indicated that they already buy baitfish/crayfish from Kentucky producers. Among the retailers interested in locally grown baitfish, six indicated interest

in large golden shiners; seven shops desired medium-sized fathead and rosy red minnows; four wanted large chubs; and four bait shops wanted channel catfish. A few bait shops wanted common carp/koi, suckers, shad, rainbow trout, crappie, bluegill, etc.; however, it should be noted that rainbow trout, crappie, and bluegill are illegal to be sold as baitfish in Kentucky (Covington, 2007).

CONCLUSIONS

The results of this paper provided evidence of a niche market for locally grown baitfish/crayfish in Kentucky, which is not a traditional baitfish-growing state. Although the results of this paper are directly applicable to Kentucky, they are likely to be true for neighboring “non baitfish” states such as Tennessee, Indiana, West Virginia, etc. In many such states, there is evidence of baitfish producers supplying neighborhood bait shops. This practice could become increasingly common as transportation costs inflate with high fuel prices. This is supported by the survey data, which indicated that 94% of the 47 bait shops surveyed were interested in purchasing bait from local suppliers and that 7% were already purchasing locally produced baitfish. Based on this study, local bait producers could niche market their products by “topping off” baitfish tanks of local bait shops during times of supply scarcity and by providing species and/or sizes of baitfish/crayfish not normally available from large-scale baitfish suppliers.

The local niche markets for baitfish and crayfish assume that farmers haul small volumes of product to neighborhood bait shops. However, farmers could also sell baitfish/crayfish directly to live haulers. While most live haulers originating from traditional “baitfish states” such as Arkansas have established suppliers, anecdotal data indicates that there are other live haulers that would be willing to purchase baitfish/crayfish from non-traditional baitfish states such as Kentucky. Information about bait product attributes, demand schedules, and prices offered by these live haulers has not been discussed in this paper and should be topics for future research.

REFERENCES

- Covington, D. 2006. *Sport fishing and boating guide*. Frankfort, KY: Kentucky Dept. of Fish and Wildlife Resources. Available at: <http://www.kdfwr.state.ky.us/pdf/kyfish07a.pdf?lid=1795&NavPath=C128C168C588>
- Engle, C., and N. Stone. 1996. *Baitfish production enterprise budget*. SRAC Publication No. 122. Stoneville, MS: Southern Region Aquaculture Center.
- Engle, C., N. Stone, and E. Park. 2000. An analysis of production and financial performance of baitfish production. *J. Appl. Aquacult.* 10(3): 1–15.

- Engle, C., and N. Stone. 2003. *Industry profile: The aquaculture of baitfish—A review developed for the National Risk Management Feasibility Program for Aquaculture, Department of Agriculture Economics, Mississippi State University*. Mississippi State, MS: Mississippi State University.
- Jensen, G.L. 1990. Sorting and grading warmwater fish. SRAC Publication No. 391. Stoneville, MS: Southern Region Aquaculture Center.
- Pounds, G., and C.R. Engle. 1992. Economic effects of intensification of baitfish production. *J. World Aquacult. Soc.* 23(1): 64–76
- USDA, National Agriculture Statistics Service. 2006. 2002 Census of agriculture: Census of aquaculture (2005). United States Department of Agriculture, Volume 3, Special Studies Part 2, AC-02-SP-2. Beltsville, MD.
- Wurts, W.A. 2000. Baitfish farming in the United States: A Kentucky perspective experience. *World Aquacult.* 31(2): 55–56.