

## Commercial Fishing in Tennessee

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January 2010

### Introduction

#### *Directive and Scope*

This document was produced pursuant to Tennessee Public Chapter No. 261 (2009), which directs the Comptroller of the Treasury to:

...conduct a study of the economic impact of commercial fishing within the State of Tennessee and make any recommendations for change as may be necessary to balance the legitimate interest in protecting the natural habitat of this state against the degree of regulation necessary for the exercise of authority over the commercial fishing industry.<sup>1</sup>

The study mandate indicates that habitat protection and industry regulation are the primary interests that led to the request for the study.

#### *Objectives*

The objectives of this research project were:

1. to study and define the Tennessee commercial fishing industry,
2. to review governance structures for regulation of commercial fishing in Tennessee, and
3. to determine the economic impact of commercial fishing in Tennessee.

### Methodology

Methods used included:

- review of state and federal laws and regulations, and international treaties;
- interviews with Tennessee Wildlife Resources Agency staff;
- interviews with U.S. Geological Survey staff;
- interviews with representatives of the commercial fishing industry in Tennessee;
- review of commercial fishing in other states; and

- review of Tennessee legislative study committee hearings in 2008 and 2009 regarding commercial fishing.

### Background

#### *What is included in the commercial fishing industry?*

Federal law defines commercial fishing very generally as “fishing in which the fish harvested, either in whole or in part, are intended to enter commerce or enter commerce through sale, barter or trade.”<sup>2</sup> State definitions are more or less specific depending upon the extent and types of commercial fishing in the state. Some states choose to identify the fish and the fishers as commercial, as in Louisiana, which defines both “commercial fish” and “commercial fisherman,” but not “commercial fishing.”<sup>3</sup>

The use of specific fishing equipment can also be a distinguishing factor. In Mississippi, for example, “persons fishing [with] freshwater commercial fishing gear and/or selling [certain] non-game gross fish and non-native fish from all freshwaters of Mississippi ...must possess a Freshwater Commercial Fishing License.”<sup>4</sup>

For purposes of regulation, some states distinguish between the activity of commercial fishing and the larger economic concept of a commercial fishing industry. For example, California’s Department of Fish and Game defines commercial fishing as “...the taking and possession of fish for any commercial purpose,” and specifically excludes aquaculture (see definition on page 2).<sup>5</sup> However, a separate agency, California’s

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#### Contact:

Douglas Wright, Principal Legislative Research Analyst  
(615) 401-7870 / [Douglas.W.Wright@tn.gov](mailto:Douglas.W.Wright@tn.gov)  
 Cara Huwieler, Associate Legislative Research Analyst  
(615) 401-7885 / [Cara.Huwieler@tn.gov](mailto:Cara.Huwieler@tn.gov)

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Employment Development Department, includes aquaculture in its definition of commercial fishing industry, as “any business engaged in the catching, taking, harvesting, cultivating, or farming of any kind of fish, shellfish, crustacean, sponge, seaweed, or other aquatic forms of animal and vegetable life.”<sup>6</sup>

## **Tennessee**

### ***Who participates in the Tennessee commercial fishing industry?***

Tennessee does not define commercial fishing, but does define “commercial fisher” and “wholesale dealer.” These are the primary commercial fishing participants. Tennessee defines a commercial fisher as:

any person who takes or who aids and assists another person in taking fish or other aquatic life from any of the waters, lakes, streams or ponds of this state for pay, or for the purpose of sale, barter or exchange. Any person fishing with commercial fishing gear shall be deemed to be a “commercial fisher” within the meaning of this subdivision (b)(1). All persons using fishing tackle or fishing gear other than that permitted to be used by a person having or holding a sport fishing license is likewise deemed and considered a “commercial fisher” within the meaning of this subdivision (b)(1).<sup>7</sup>

The definition of commercial fisher in Tennessee does not include fishing guides, charter boat operators, or tournament fishermen.<sup>8</sup>

A wholesale fish dealer is:

any person in the business of buying from a commercial fisher, fish or other edible aquatic life, or parts of fish or other edible aquatic life, or products taken from the waters of the state of Tennessee for the purpose of canning, preserving or processing; or any person in the business of buying from a wholesale fish dealer for the purpose of selling or handling for shipment or sale. Excluded from this definition are restaurants, hotels, grocery stores, retail fish markets, and other businesses that do not buy directly from a commercial fisher and that

sell directly to the general public. Each separate place of business shall require a separate license.<sup>9</sup>

### ***What is aquaculture, and is it part of the commercial fishing industry in Tennessee?***

The United States Department of Agriculture National Agriculture Statistics Service (USDA-NASS) defines aquaculture as “the farming of fish, crustaceans, mollusks, and other aquaculture products.”<sup>10</sup> According to the Tennessee Department of Agriculture, “Tennessee Freshwater Farming, or Aquaculture, is the science and business of raising aquatic plants or animals in natural or controlled, marine or freshwater environments.”<sup>11</sup>

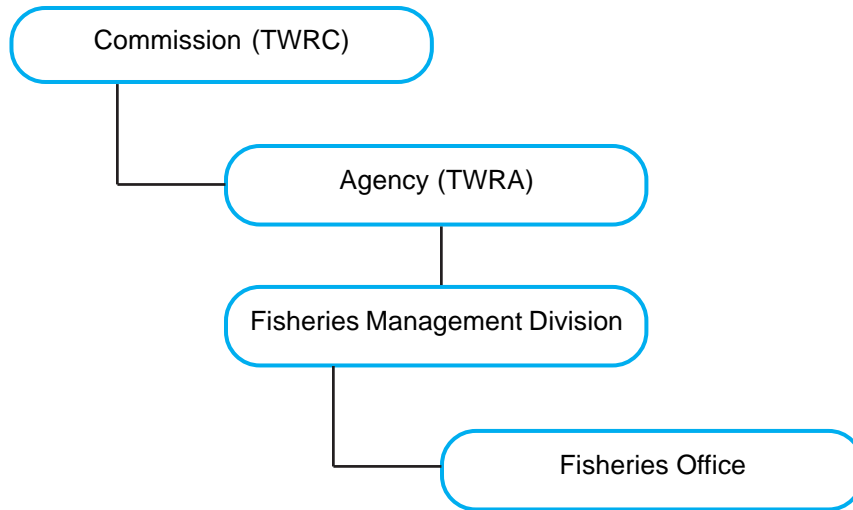
Tennessee’s aquaculture activities receive support from both the Tennessee Department of Agriculture and the Tennessee Wildlife Resources Agency. The Tennessee aquaculture directory maintained by the Department of Agriculture lists aquaculture producers in 27 counties.<sup>12</sup> Tennessee aquaculture also includes production of Tennessee freshwater shrimp, with producers active in 17 counties.<sup>13</sup> Management of aquaculture is similar in many respects to the management of domestic livestock such as cattle or chicken, whereas commercial fishing stock requires wildlife management techniques. Analysis for this project excludes aquaculture activities.

## **Governance**

### ***What state entities have regulatory authority over commercial fishing?***

In 1974, the Tennessee Game and Fish Commission was reorganized into the Tennessee Wildlife Resources Commission (TWRC) and the Tennessee Wildlife Resources Agency (TWRA). The TWRC is the policy-making body that promulgates rules and regulations to protect and maintain wildlife resources. The commission receives recommendations from the TWRA, which manages fish populations and fishing activities through its Fisheries Management Division. The Division houses the Fisheries Office, which is responsible for managing commercial fishing. (See Exhibit 1.)

**Exhibit 1: Partial Organizational Chart of the Tennessee Wildlife Resources Commission (TWRC)**



**Tennessee Wildlife Resources Commission**

The Tennessee Wildlife Resources Commission is “an independent and separate administrative board of conservation for game, fish and wildlife of the state.”<sup>14</sup>

The Commission consists of 13 members:

- the Commissioner of Environment and Conservation,
- the Commissioner of Agriculture,
- nine members (three from each grand division of the state) appointed by the Governor,
- one member appointed by the Speaker of the House, and
- one member appointed by the Speaker of the Senate.<sup>15</sup>

All appointed members of the commission serve six-year terms.<sup>16</sup> The Governor serves as an ex officio member of the commission.<sup>17</sup> The Commission is directed and authorized to:

- appoint and dismiss the executive director of TWRA;
- approve the TWRA budget;
- promulgate necessary rules, regulations, and proclamations as required by law;
- establish objectives within state policy that will enable TWRA to develop, manage, and maintain sound programs of hunting, fishing, trapping, and other wildlife-related outdoor recreational activities; and
- establish the salary of the TWRA executive director.<sup>18</sup>

The Commission is required by statute to meet at least 6 times each year, and may meet up to 12 times per year.<sup>19</sup>

**Tennessee Wildlife Resources Agency**

The Tennessee Wildlife Resources Agency is responsible for managing wildlife in the state, including game animals, non-game species, fish, and endangered species.<sup>20</sup> TWRA was created by Public Chapter 481 (1974).<sup>21</sup> The General Assembly has given TWRA “...full and exclusive jurisdiction...relating to the management, protection, propagation,

and conservation of wildlife, including hunting and fishing, except those powers and duties conferred upon the wildlife resources commission.”<sup>22</sup>

TWRA is directed and authorized to:

- protect, propagate, increase, preserve and conserve wildlife, and enforce wildlife laws;
- acquire, extend, and consolidate by exchange lands and waters suitable for: fish hatcheries and nursery ponds; wildlife restoration, propagation, protection, management, or for access to such lands or waters; public hunting, fishing, or trapping areas; and
- enter into cooperative agreements with state, federal, and other agencies to promote wildlife management, conservation, and regulation.<sup>23</sup>

**Fisheries Office**

TWRA’s Fisheries Office manages commercial fishing activities, develops regulations (subject to adoption by the commission) designed to protect commercial stock from overfishing and to prevent harm to noncommercial species, and enforces regulations. Commercial fishers are required to report the amount and species of fish harvested to TWRA. “TWRA staff analyze harvest trends and monitor fish populations with the goal of ensuring the sustainability of Tennessee’s fisheries.”<sup>24</sup>

### How does Tennessee regulate commercial fishing?

TWRA regulates commercial fishing by selling appropriate licenses (fishers, wholesalers), maintaining records of such licenses, restricting the waters in which fish may be taken, restricting the type of gear that can be used, and restricting the types of fish that can be harvested.

The TWRA and the TWRC consult in the development of general regulatory policy, which affects both sport and commercial fishing. The TWRC issues wildlife proclamations which establish seasons; creel, size and bag limits; areas open to hunting and/or fishing, wildlife, and/or public hunting areas; and declare the manner and means of taking.<sup>25</sup> Commercial fishing activities are subject to these proclamations, as well as standard statutory and administrative law provisions.<sup>26</sup>

The TWRA is guided in general by a strategic plan but also develops management plans for individual species and for certain activities.

### Licenses

Commercial fishers and wholesale fish dealers must obtain proper licenses and permits before engaging in the business of commercial fishing.<sup>27</sup> In addition, if dealing with roe fish, they must obtain supplemental permits to fish, buy, hold, or sell any commercial roe fish.<sup>28</sup> Commercial roe fish species are paddlefish, shovelnose sturgeon, and bowfin.<sup>29</sup> “No more than 80 resident Commercial Roe Fish Permits will be issued each license year.”<sup>30</sup> Exhibit 2 displays the current fees for Tennessee commercial fishing licenses and permits.

### Geographic and Species Restrictions

Tennessee restricts commercial fishing to specific bodies of water and to specific species of fish. (See Exhibits 3 and 4.) Further restrictions, such as the size of individual fish and the total number of fish that may be taken, are detailed in the management plans for specific species. Chickamauga Reservoir, Kentucky Lake, and the Mississippi River produced the majority of commercial fish harvest between 2006 and 2008.<sup>31</sup>

**Exhibit 2: Fees for Tennessee Commercial Fishing Licenses and Permits, 2009-2010**

License/Permit	Fees	
	Resident	Nonresident
Commercial Fishing	\$200	\$1,000
Commercial Fishing Helper	\$200	\$1,000
Commercial Roe Fish Permit, Supplemental*	\$1,000	\$1,500
Commercial Turtle Permit, Supplemental**	FREE	FREE
Wholesale Fish Dealer	\$500	\$500
Wholesale Roe Fish Permit, Supplemental***	\$500	\$1000

Notes:

- \* Commercial fishers who intend to fish for commercial roe fish must obtain a Commercial Fishing License **and** a Commercial Roe Fish Permit prior to harvesting any part of a paddlefish, shovelnose sturgeon, or bowfin from Tennessee waters. No more than 80 resident Commercial Roe Fish Permits will be issued each license year. Any person who purchased a Resident Commercial Roe Fish Permit between March 1, 2006, and March 31, 2006, shall have priority to renew the permit in each succeeding March thereafter until he/she fails to renew such permit (i.e., priority status will be lost permanently if the permit is not renewed before April 1st each year).
- \*\* Commercial fishers intending to harvest commercial turtles must obtain a Free Commercial Turtle Permit, Supplemental prior to harvesting these species.
- \*\*\* Wholesale fish dealers who wish to buy, hold, or sell any part of a roe species (paddlefish, sturgeon, and bowfin) must purchase a Wholesale Roe Fish Permit.

Source: “Tennessee Commercial Fishing Regulation Summary,” Tennessee Wildlife Resources Agency, pp. 1-2, [http://www.state.tn.us/twra/fish/Commercial/TN\\_com\\_reg\\_10.pdf](http://www.state.tn.us/twra/fish/Commercial/TN_com_reg_10.pdf) (accessed April 29, 2009).

**Exhibit 3: Waters Open to Commercial Harvest in Tennessee**

<b>Rivers</b>	Cumberland, Duck, Forked Deer, French Broad, Harpeth, Hatchie, Hiwassee, Holston, Mississippi, Nolichucky, Obion, Red, Stones, Tennessee, Wolf
<b>Reservoirs</b>	Barkley, Cheatham, Cherokee, Chickamauga, Davy Crockett, Douglas, Fort Loudoun, Gunterville, John Sevier, Kentucky, Nickajack, Old Hickory, Pickwick, Reelfoot

Source: “Tennessee Commercial Fishing Regulation Summary,” Tennessee Wildlife Resources Agency, pp. 2-3.

## Economic Impact

### Economic Impact and Commercial Fisheries

Commercial fishing's economic impact is particularly dependent upon the type and number of commercial fisheries present in a state. A fishery is "a system composed of three interacting components: the biota,

the habitat, and the human users."<sup>33</sup> A fishery can involve "a single target species or multiple target species, their habitat, and human effects on both organisms and the habitat."<sup>34</sup> Fishery values can be determined collectively or can depend upon a single species or species group.

Fisheries management is "the art and science of manipulating the biota, habitat, or human users of a fishery to produce some desired end result."<sup>35</sup> The purpose of regulating commercial fishing is to protect the species so that a sufficient number of fish are available for harvest on an equitable basis for all fishers over time. Commercial fishers in most cases compete for fish in the same public waters as recreational fishers, which requires balancing the interests of these parties. Catch restrictions, which are part of management plans, may limit the economic value of a fishery at a particular point in time. However, catch restrictions are designed in part to support fair catch opportunities among commercial fishers and should take into account the different lifespans, fertility, and spawning patterns of species. The long-term economic value of a target-

**Exhibit 4: Fish Species Which May Be Taken Commercially in Tennessee<sup>32</sup>**

Common Name	Scientific Name
Shovelnose sturgeon <sup>4,5</sup>	<i>Scaphirhynchus platyrhynchus</i> (Rafinesque)
Paddlefish <sup>1,4</sup>	<i>Polyodon spathula</i> (Walbaum)
Spotted gar	<i>Lepisosteus oculatus</i> (Winchell)
Longnose gar	<i>Lepisosteus osseus</i> (Linnaeus)
Shortnose gar	<i>Lepisosteus platostomus</i> (Rafinesque)
Bowfin <sup>4</sup>	<i>Amia calva</i> (Linnaeus)
Skipjack herring	<i>Alosa chrysochloris</i> (Rafinesque)
Gizzard shad	<i>Dorosoma cepedianum</i> (Lesueur)
Threadfin shad	<i>Dorosoma petenense</i> (Guenther)
Grass carp	<i>Ctenopharyngodon idella</i> (Valenciennes)
Common carp	<i>Cyprinus carpio</i> (Linnaeus)
Silver carp <sup>3</sup>	<i>Hypophthalmichthys molitrix</i> (Valenciennes)
Bighead carp <sup>3</sup>	<i>Hypophthalmichthys nobilis</i> (Richardson)
River carpsucker	<i>Carpionodes carpio</i> (Rafinesque)
Quillback	<i>Carpionodes cyprinus</i> (Lesueur)
White sucker	<i>Catostomus commersoni</i> (Lacepede)
Smallmouth buffalo	<i>Ictiobus bubalus</i> (Rafinesque)
Bigmouth buffalo	<i>Ictiobus cyprinellus</i> (Valenciennes)
Black buffalo	<i>Ictiobus niger</i> (Rafinesque)
Spotted sucker	<i>Minytrema melanops</i> (Rafinesque)
Silver redhorse	<i>Moxostoma anisurum</i> (Rafinesque)
Golden redhorse	<i>Moxostoma erythrurum</i> (Rafinesque)
Black bullhead	<i>Ameiurus melas</i> (Rafinesque)
Yellow bullhead	<i>Ameiurus natalis</i> (Lesueur)
Brown bullhead	<i>Ameiurus nebulosus</i> (Lesueur)
Blue catfish <sup>1,2</sup>	<i>Ictalurus furcatus</i> (Lesueur)
Channel catfish <sup>2</sup>	<i>Ictalurus punctatus</i> (Rafinesque)
Flathead catfish <sup>2</sup>	<i>Pylocictis olivaris</i> (Rafinesque)
Freshwater drum	<i>Aplodinotus grunniens</i> (Rafinesque)
Yellow bass	<i>Morone mississippiensis</i> (Jordan, Eigenmann)

Notes:

- 1 The taking and possession of blue catfish and paddlefish from Cherokee Reservoir by commercial fishing methods is prohibited.
- 2 No catfish less than 8 inches in length may be kept alive. The commercial harvest of catfish greater than 34 inches in length is restricted to those commercial fishers holding license types 100, 101, and 103 and may not exceed one (1) catfish per day greater than 34 inches in length. The possession limit of catfish greater than 34 inches is two (2).
- 3 Silver carp and bighead carp are Class V animals and therefore may not be possessed alive by commercial fishers.
- 4 Special regulations apply for all commercial roe fish species (paddlefish, shovelnose sturgeon, and bowfin). See section titled "Commercial Roe Fish Regulations" for a synopsis of these regulations.
- 5 The taking and possession of *Scaphirhynchus intermediates* (c.k.a. pallid:shovelnose sturgeon hybrids) is prohibited. Any sturgeon that is not a pure shovelnose sturgeon must be released immediately.

Source: "Tennessee Commercial Fishing Regulation Summary," Tennessee Wildlife Resources Agency, pp. 5-6, [http://www.state.tn.us/twra/fish/Commercial/TN\\_com\\_reg\\_10.pdf](http://www.state.tn.us/twra/fish/Commercial/TN_com_reg_10.pdf) (accessed April 29, 2009).

species fishery will depend upon the ability of the species to reproduce and replenish its population. Variables which affect this ability include the age of sexual maturity of the species, the length of reproductive viability, lifespan, predators, and access to and mobility through habitat. In addition, both natural and man-made environmental factors, such as pollution, dam construction, and floods, can affect a fish population and should be taken into account in a management plan.

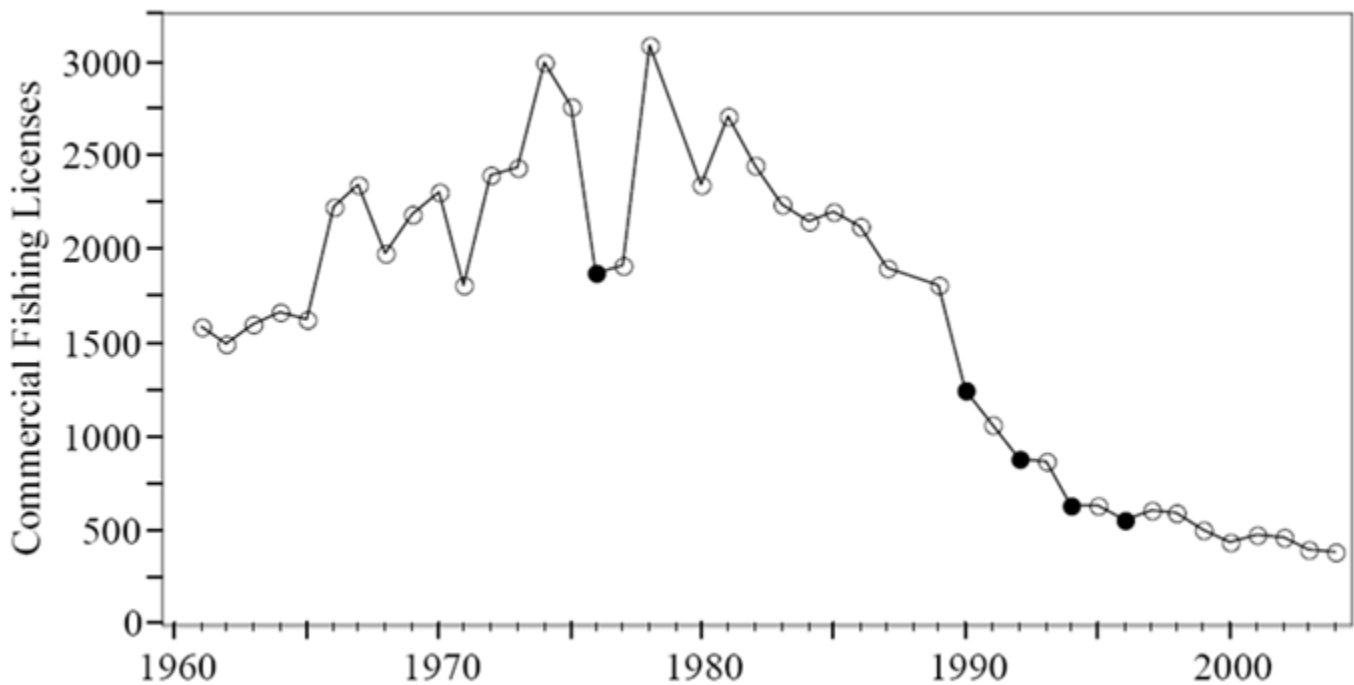
Commercial fisheries are subject to environmental, regulatory, and market factors, which can affect the economic impact of commercial fishing.<sup>36</sup> Weather, fishery size, consumer demand, and limits on the number and size of fish that can be taken all impact

commercial fisheries. For example, a particularly rainy season, such as the one Tennessee experienced in 2009, can reduce paddlefish harvest.<sup>37</sup> The number of variables affecting commercial fishing increase the likelihood that the economic impact of a target-species fishery will vary significantly from year to year. In general, economic impact studies of commercial fishing in other states have tried to capture indirect revenue effects and so have calculated and/or assigned values to processors, grocers, and restaurants as well as to fishers and wholesalers.

**Economic Impact of Commercial Fishing in Tennessee**

In its 2006-2012 Strategic Plan, TWRA identifies high risks and generally low sale prices as primary issues

**Exhibit 5: Tennessee Commercial Fishing License (Resident & Non-resident) Sales from 1961 to 2004**



Note: Solid circles represent license sales following license fee increases.  
 Source: TWRA Strategic Plan: 2006-2012, p. 29.

**Exhibit 6: Tennessee 2009 Commercial Fishing License Sales<sup>41</sup>**

License Type	Number Sold	Revenue
Commercial Fisher	228	\$48,000
Commercial Fisher Helper	79	\$15,800
Wholesale Fish Dealers	27	\$13,500
Commercial Roe Fisher Permit	70	\$70,500
Wholesale Roe Dealer Permits	16	\$9,000
Dealer	244	\$15,350
<b>Total</b>	<b>644</b>	<b>\$172,150</b>

Source: Tennessee Wildlife Resources Agency, TWRA License Type Sales, generated Nov. 10, 2009.

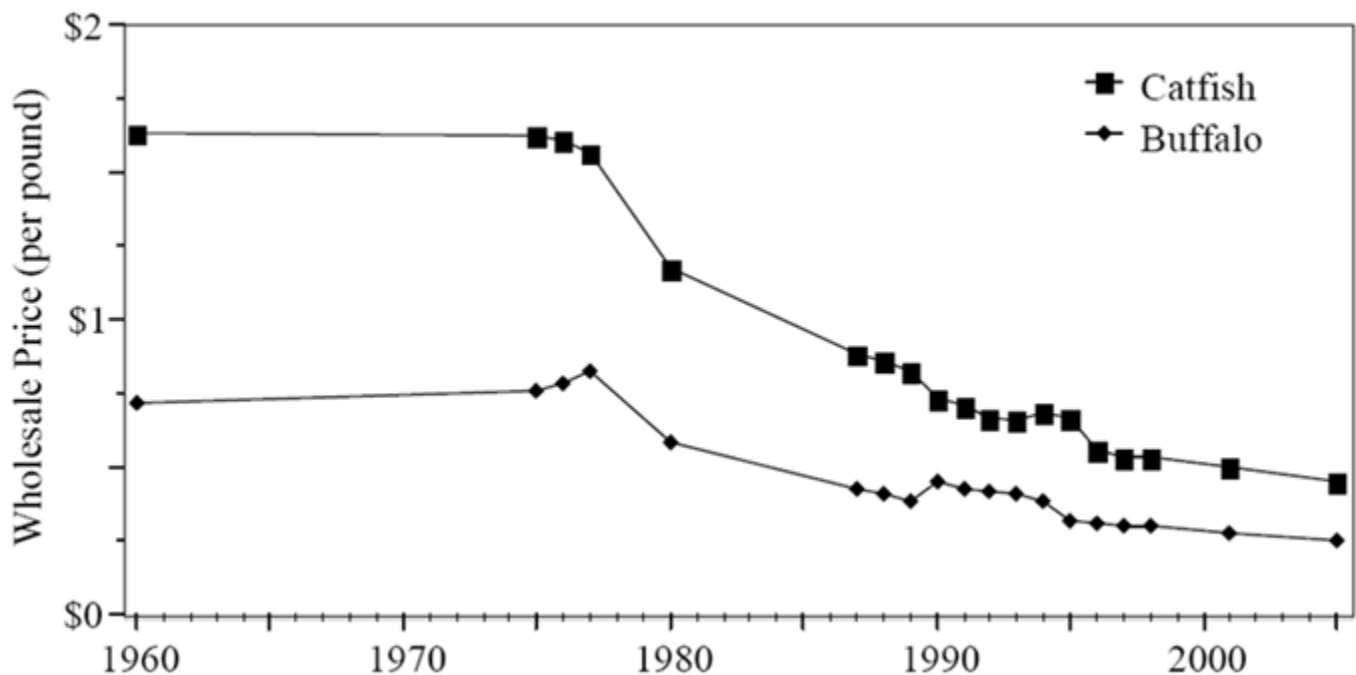
for Tennessee's commercial fishing industry, noting that the nature of the occupation itself is "laborious and potentially dangerous."<sup>38</sup> Exhibit 5 shows commercial fishing license sales over a 40-year period. License sales have declined steadily since the 1980s. Retirement rates for commercial fishers are higher than recruitment rates.<sup>39</sup> According to TWRA, "over 54 percent of the commercial fishing license holders are older than 50 years of age."<sup>40</sup>

Tennessee allows approximately 30 types of fish species to be commercially harvested by fishers.<sup>42</sup> Catfish, buffalo and roe species (paddlefish, sturgeon,

and bowfin) produce the bulk of the economic impact on the commercial fishing industry. From July 2007 to June 2008, catfish and buffalo comprised approximately 93 percent of the non-roe harvest and 89 percent of the total harvest. Flathead catfish, common carp, drum, and 8 other species accounted for the remaining 7 percent of the non-roe harvest. For the same time period, roe species accounted for 4 percent of the total harvest, but brought in approximately 65 percent of the total harvest value.<sup>43</sup>

Adjusted for inflation, wholesale prices for most fish commercially harvestable in Tennessee have remained

**Exhibit 7: Inflation Adjusted Wholesale Prices Paid for Catfish and Buffalo since 1960**



Note: Prices were adjusted for inflation using an inflation calculator provided by the Bureau of Labor Statistics. Source: TWRA Strategic Plan: 2006-2012, p. 33.

**Exhibit 8: Wholesale Value of Non-Roe Fish in Tennessee, July 2007 – June 2008**

Species	Pounds	Price/Per	Total Value
Blue or Channel Catfish	1,633,233	\$0.50	\$816,617
Buffalo	878,348	\$0.25	\$219,587
Flathead Catfish	83,419	\$0.50	\$41,710
Snapping Turtles	19,332	\$1.75	\$33,831
Common Carp	26,244	\$0.25	\$6,561
Bighead/Silver Carp	21,684	\$0.25	\$5,421
Freshwater Drum	21,572	\$0.08	\$1,726
Carp suckers (White Eye)	6,260	\$0.08	\$501
Shad (skipjack herring)	2,455	\$0.08	\$196
Gar	944	\$0.70	\$661
Yellow Bass	114	\$0.08	\$9
<b>Totals</b>	<b>2,693,605</b>		<b>\$1,126,819</b>

Source: Tennessee Wildlife Resources Agency, Tennessee Commercial Fishing Presentation, Feb. 2009.

essentially flat or have fallen since the 1980s.<sup>44</sup> Catfish and buffalo typically bring around 50 cents per pound and 25 cents per pound, respectively. Exhibit 7 shows wholesale prices for catfish and buffalo since 1960.

According to the TWRA strategic plan, roe species are generally “prone to overfishing and stock collapse.”<sup>45</sup> The roe fishery is, however, the most profitable segment of the commercial fishing industry in Tennessee; prices for roe have contradicted the general wholesale market trend. The 2005 wholesale price for sturgeon and paddlefish roe was approximately \$65 per pound, but by 2007-2008 had risen to approximately \$100 per pound.<sup>46</sup> (See Exhibit 9.)

**Paddlefish: International and Federal Laws Regulating Commercial Fishing**

Tennessee’s management of paddlefish is subject to state, federal, and international policies. Tennessee must adhere to all of these policies because the United States has signed international wildlife protection treaties.

The governing treaty in this instance is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES creates an international system of import/export regulations to prevent exploitation of listed plants and animals. Status of the species dictates the level of trade regulation, as does the estimated impact of trade upon the species. The United States ratified the Convention and passed implementing legislation in 1973. The U.S. Fish and Wildlife Service is the designated federal agency responsible for implementing CITES.

International export of paddlefish and paddlefish products requires a CITES permit. International shipment of these species and products made from them requires an import or export permit, or both, issued in advance by the official management authorities of the countries involved.

Under the Lacey Act, it is a violation of federal law to import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any wildlife, including fish, that was taken, transported, possessed, or sold in violation of any state or foreign law, or taken or possessed in violation of other federal law. The Lacey Act covers all fish, and their parts or products, protected by CITES and those protected by state law. The Lacey Act functions as an enforcement mechanism. If Tennessee citizens engage in paddlefish fishing activities which violate CITES, the federal government prosecutes them under the Lacey Act.

**Paddlefish Range and MICRA**

Although the paddlefish range extends throughout the Mississippi River drainage basin, Tennessee’s Kentucky Lake paddlefish fishery is “one of the largest, if not the largest, paddlefish fisheries in the world.”<sup>47</sup> Because of their interjurisdictional range, paddlefish require interstate management. The Mississippi Interstate Cooperative Resource Association (MICRA) is an interjurisdictional fishery management organization, comprised primarily of the 28 Mississippi River Basin member states.<sup>48</sup> “MICRA’s mission is to improve the conservation, development, management and utilization of interjurisdictional fishery resources (both recreational and commercial) in the Mississippi River Basin through improved coordination and communication among the responsible management entities.”<sup>49</sup> The representatives from member states are, for the most part, staff from wildlife resource management agencies. MICRA is the “key coordinating body for the management of paddlefish populations in the Mississippi River Basin.”<sup>50</sup> In 1995, in response to the status of paddlefish stock and interjurisdictional management needs, MICRA and USFWS undertook a paddlefish stock assessment.<sup>51</sup>

**Exhibit 9: Wholesale Value of Roe Fish in Tennessee, July 2007 – June 2008**

Species	Pounds	Price/Per Pound	Total Value
Paddlefish Meat	88,863	\$0.50	\$44,432
Paddlefish Eggs	19,336	\$100	\$1,933,565
Sturgeon Meat	2,287	\$0.50	\$1,143
Sturgeon Eggs	1,366	\$100	\$136,566
Bowfin Meat	228	\$0.15	\$34
Bowfin Eggs	201	\$35	\$7,031
Totals	112,281		\$2,122,771

Source: Tennessee Wildlife Resources Agency, Tennessee Commercial Fishing Presentation, Feb. 2009.



### **Tennessee Commercial Paddlefish Fishery Management**

Up until the 1990s, Tennessee had few regulations on its paddlefish fishery. Since that time, several events have had an impact on Tennessee's approach to paddlefish management. Exhibit 10 highlights some of those occurrences.

### **Tennessee Paddlefish Management**

FWS currently has Tennessee commercial paddlefish management under scrutiny because it believes scientific data indicates Tennessee is not sufficiently managing the fishery. TWRA has not published a management plan for paddlefish; criteria for management of the species is contained in the regulations of Proclamation 08-18. (See Appendix 2.)

On June 18, 2009, TWRA received a letter from the U.S. Fish and Wildlife Service (FWS) indicating that the agency was "unable to find that the export of paddlefish and its products harvested from Kentucky

Lake in Tennessee during the 2008-09 fishing season is not detrimental to the survival of the species." This resulted in FWS declaring that "the Kentucky Lake paddlefish population is not being managed in a sustainable manner and commercial harvest cannot continue without a detrimental impact to paddlefish populations." (See Appendix 3.)

TWRA submitted proposed management amendments to FWS. On July 29, 2009, FWS indicated in a letter (see Appendix 4) that the following proposed changes would be sufficient to receive the non-detriment finding necessary for issuance of CITES export permits:

- increasing the statewide size limit to 38 inches prior to November 2009, to 39 inches prior to November 2011, and to 40 inches prior to 2012, and to 40 inches prior to November 2013;
- requiring paddlefish to remain whole and uncut until delivered to a licensed wholesaler; and
- reducing the season by 15 days.

### **Exhibit 10: Events that have affected Tennessee paddlefish management**

- 1992 – CITES lists paddlefish as at-risk
- 1992 – MICRA creates Paddlefish/Sturgeon Committee
- 1992 – FWS develops "Framework for the Management of Conservation of Paddlefish and Sturgeon Species in the United States"
- 1993 – MICRA Paddlefish/Sturgeon develops a strategic plan for addressing paddlefish and sturgeon management
- 1995 – MICRA initiates a long-term paddlefish stock assessment project
- 1998 – MICRA's seven commercial harvest states discuss monthly harvest reporting
- 1998 – TWRA requires all commercial fishers who sell paddlefish to get a free permit; implements reporting requirements
- 1998 – CITES lists all previously unlisted Acipenseriformes as at-risk
- 1999 – Other Commercial Harvest states follow Tennessee's lead in implementing commercial harvesting reports
- 2001 – Division of Scientific Authority (DSA) observes an increasing number of applications for export of paddlefish roe from Tennessee
- 2002 – DSA voices concern that paddlefish in Kentucky Lake are being overfished
- 2002 – Tennessee roe wholesale dealers found guilty of Lacey Act violations
- 2005 – Bettoli/Scholten publish Kentucky Lake paddlefish harvest study; commercial harvest states move to reduce harvest seasons based on study's findings
- 2005 – TWRA proposes paddlefish management plan; TWRC adopts plan
- 2008 – TWRC revokes paddlefish management plan (Oct.) and reestablishes 2006 limits (Nov.)
- 2009 – DSA unable to make a non-detriment finding; FWS denies issuance of CITES permits for the 2008-2009 season

Sources: Division of Scientific Authority for CITES, U.S. Fish and Wildlife Service, *Final Report to the Scientific Review Group of the European Community, Paddlefish (Polyodon spathula): Status, Conservation, and Harvest Management in the United States*, March 2009; Phillip W. Bettoli and George D. Scholten, "Assessment of Overfishing and Bycatch for an Exploited Paddlefish Population in the Lower Tennessee River," May 9, 2005; Phillip W. Bettoli, George D. Scholten, and William C. Reeves, "Protecting Paddlefish from Overfishing: a Case History of the Research and Regulatory Process," *Fisheries*, Vol. 32, No. 8, Aug. 2007, p. 390; U.S. Fish and Wildlife Service, "Exporting Paddlefish Products Harvested from Tennessee's Kentucky Lake during the 2008-2009 harvest season," June 2009, [http://www.fws.gov/international/DMA\\_DSA/pdf/TN%20Paddlefish%20Factsheet%20\(June%202009\).pdf](http://www.fws.gov/international/DMA_DSA/pdf/TN%20Paddlefish%20Factsheet%20(June%202009).pdf) (accessed July 27, 2009).

However, as of January 2010, the TWRC has not acted on the TWRA recommendations.

**The Tennessee Commercial Fishing Association and the Tennessee Commercial Roe Fishing Association**

OREA staff met in December 2009 with members of two industry associations, the Tennessee Commercial Roe Fishing Association and the Tennessee Commercial Fishing Association. The presidents of both associations were present.

Those present at the meeting expressed their concern that commercial fishing as an industry is under significant stress from overregulation. There was a belief among members that TWRA favors sport fishing because it generates more revenue through licenses and fishing tournaments. Members also expressed the opinion that proposed regulations to increase allowable fish sizes and reduce the length of the commercial fishing season will reduce profitability in the industry.

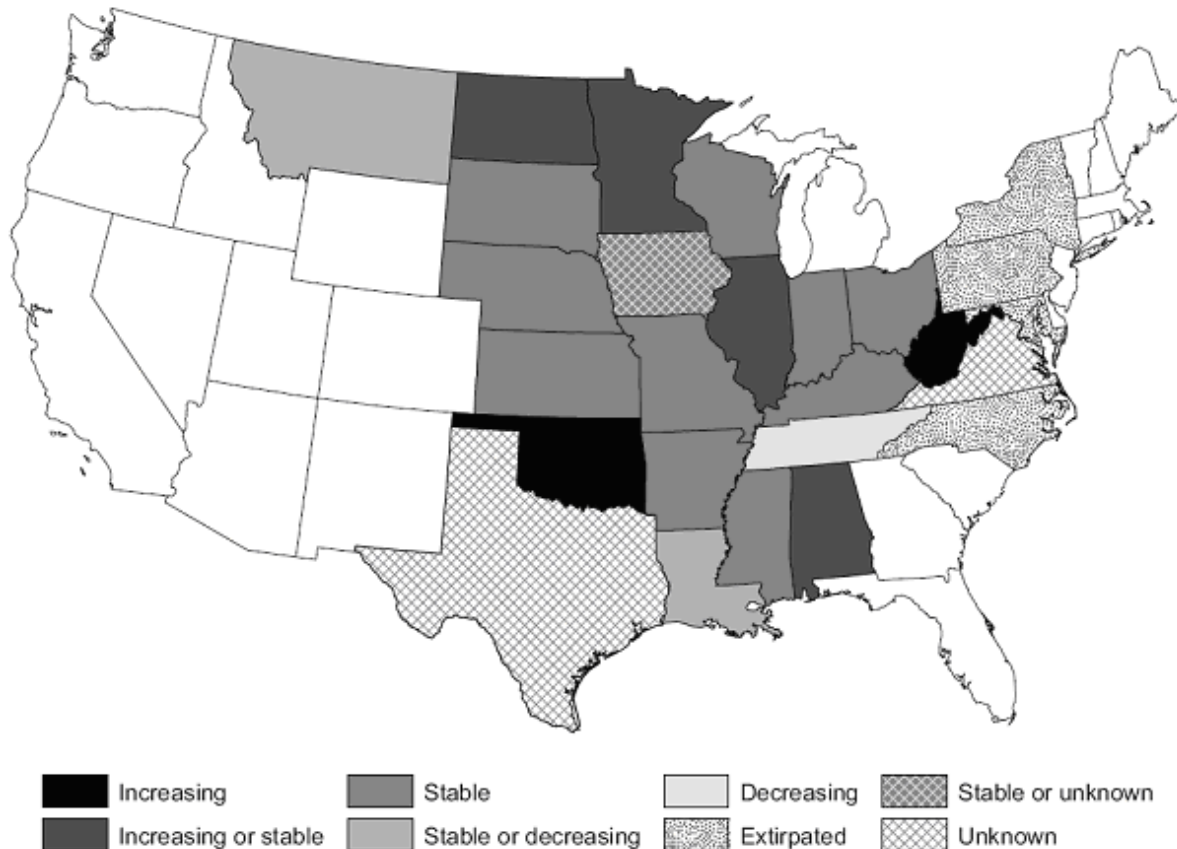
The association members disagree strongly with the result of the FWS-commissioned study of paddlefish stock in Kentucky Lake. The study led in part to the export ban on Tennessee paddlefish roe product. Members contend the report is not a true paddlefish stock assessment, and feel there is need for additional studies including other waters before passing new paddlefish regulations.

The June 18, 2009, letter from FWS cited the failure of the TWRC to adopt more restrictive regulations as one reason for denying export permits. However, in general it is the opinion of the association members that with support from TWRA and increased dialogue with FWS, the current regulations, which became effective November 26, 2008, would be sufficient to lift the export ban.

**The Caviar Trade**

Reduced international caviar supply is contributing to the value of Tennessee’s paddlefish roe. In the past the Caspian Sea area of Eastern Europe has been the

**Exhibit 11: Status of paddlefish stocks in the United States**



Source: Phillip W. Bettoli, Janice A. Kerns, and George D. Scholten, *Status of Paddlefish in the United States*, American Fisheries Society Symposium, (forthcoming), p. 4.

primary producer of the world's caviar.<sup>52</sup> However, the sturgeon populations of this region have been declining. International conflicts have played a role in the caviar market. In 1987, the United States banned all imports from Iran, which reduced the supply of caviar available in particular markets. The dissolution

of the Soviet Union in 1991 “affected the Caspian Sea [Sturgeon] fisheries and management efforts.”<sup>53</sup> According to the U.S. Fish and Wildlife Service the demand for paddlefish roe can be attributed to “the virtual collapse of eastern European sturgeon populations brought on by overfishing.”<sup>54</sup>

**Exhibit 12: Caspian Sea Region**

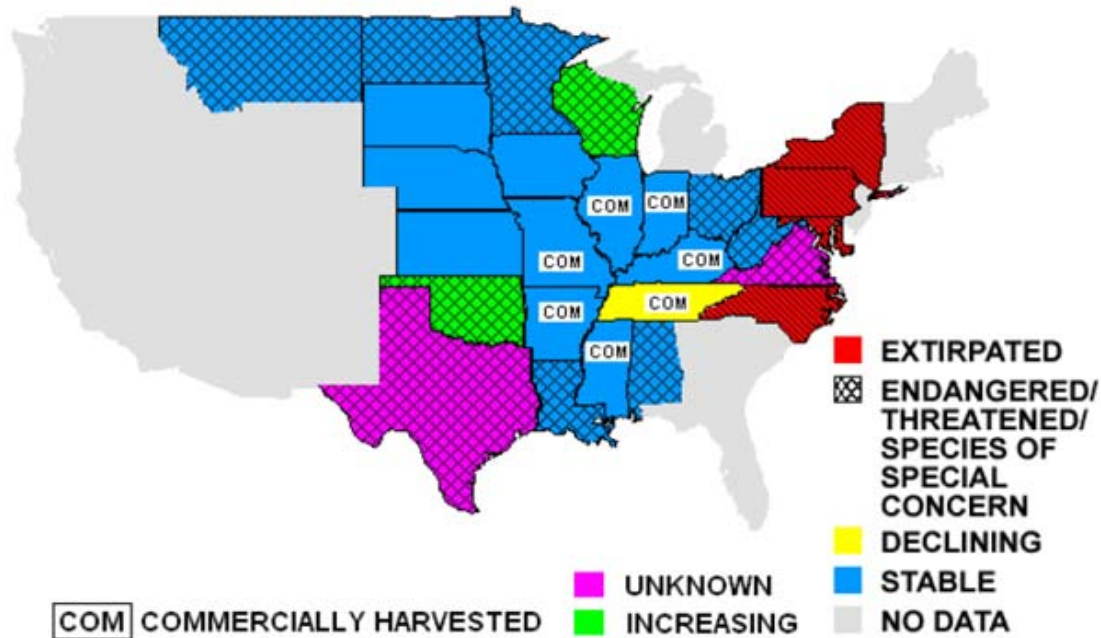


Source: “Caspian Sea,” Wikipedia, accessed December 2, 2009, [http://en.wikipedia.org/wiki/Caspian\\_Sea](http://en.wikipedia.org/wiki/Caspian_Sea).

**Paddlefish: The Commercial Harvest States**

Seven states allow commercial harvest of paddlefish in the U.S.: Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee. All of these states, except for Mississippi, are freshwater fishery states. Each of these states follows different management plans that are dependent upon their individual state natural resource agency for approval. Common elements though, include “monthly harvest reporting requirements, harvest season time and durations, minimum length limits, and specific areas open to harvest.”<sup>55</sup> According to MICRA, commercial harvest states have all adopted more restrictive management over the last five years. States are increasing management activities, including monitoring fish populations.<sup>56</sup> Exhibit 14 highlights state regulations for commercial harvest of paddlefish.<sup>57</sup>

**Exhibit 13: The Paddlefish Range, Highlighting Commercial Harvest States**



Note: This data is derived from a forthcoming publication, *Status of Paddlefish in the United States*; see Exhibit 11. Source: U.S. Fish and Wildlife Service, *Exporting Paddlefish Products Harvested from Tennessee’s Kentucky Lake During the 2008-2009 Harvest Season*, June 2009, [http://www.fws.gov/international/DMA\\_DSA/pdf/TN%20Paddlefish%20Factsheet%20\(June%202009\).pdf](http://www.fws.gov/international/DMA_DSA/pdf/TN%20Paddlefish%20Factsheet%20(June%202009).pdf) (accessed July 27, 2009).

**Exhibit 14: Current Commercial Harvest Regulations for Paddlefish in States that Allow Commercial Fishing, 2008**

State	Season	Minimum length limit or catch limit	Special permit	Harvest reporting	Waters open to harvest
Arkansas	December 1-March 31, annually	Dardanelle and Ozark Lakes, 37 in. EFL <sup>1</sup> ; Arkansas River 36 in. EFL; White River 32 in. EFL; all other open waters 34 in.	Commercial fishing license; Roe Taker, Roe Taker Helper and Roe Dealer permits required	Monthly, Fishers and Dealers	Specific portions of the Arkansas River; Black River; Dardanelle and Ozark Lakes; Ouachita River; and White River, and the Mississippi River
Illinois	October 31-May 31, by permit	None specified, proposed for 2009	Commercial fishing license; Commercial Roe Harvest permit and Wholesale Aquatic Life Dealer permit	Monthly, Fishers and Dealers	Ohio River, the Illinois River below Route 89, and the Mississippi River below Lock and Dam 19
Indiana	November 1- April 30, annually	32 inches EFL	Commercial fishing license	Monthly, fishers	Ohio River only
Kentucky	Barkley and Kentucky Lakes- November 1- March 31; All other open waters: November 1- April 30	Barkley and Kentucky Lakes: 38 inches All other open waters: 32 inches	Commercial fishing license; Commercial Roe-bearing Fish Harvester's permit and Roe-bearing Fish Buyer's permit	Monthly, fishers and dealers	See KDFWR 2008a Waters open to commercial harvest
Mississippi	December 1- March 31	35 inches EFL	Commercial fishing license; Commercial Roe-bearing Fish Harvester's permit and Roe-bearing Fish Buyer's permit	Monthly, fishers and dealers	Mississippi River border waters with Arkansas only
Missouri	October 15- May 15	24 inches EFL	Commercial fishing license; Commercial Roe-bearing Fish Harvester's permit	Monthly, fishers	Mississippi River
Tennessee	November 15-April 15	36 inches EFL except on the Mississippi River where 34 inches EFL	Commercial fishing license; Commercial Roe-bearing Fish Harvester's permit and Roe-bearing Fish Buyer's permit	Monthly, fishers and dealers	See TWRC Proclamation 08-18 amendment to Proclamation 08-01 for all open waters

<sup>1</sup>EFL = measurement from the eye to fork of the tail.

Source: Division of Scientific Authority for CITES, U.S. Fish and Wildlife Service, *Final Report to the Scientific Review Group of the European Community, Paddlefish (Polyodon spathula): Status, Conservation, and Harvest Management in the United States*, March 2009, pp. 13-14.

## Endnotes

- <sup>1</sup> Tenn. Pub. Chap. No. 261 (2009).
- <sup>2</sup> 16 U.S.C. 1802.
- <sup>3</sup> Louisiana Department of Wildlife and Fisheries, "Commercial Freshwater Fishing Regulations," p. 15, <http://www.wlf.louisiana.gov/pdfs/fishing/2009CommercialFishing.pdf> (accessed Aug. 12, 2009).
- <sup>4</sup> Mississippi Department of Wildlife, Fisheries and Parks Offices, "Mississippi Digest of Freshwater Commercial Fishing Laws and Regulations," p. 1, <http://home.mdwfp.com/PDF/Fisheries/CommercialFreshwaterFishDigest.pdf> (accessed Dec. 28, 2009).
- <sup>5</sup> California Codes, (Fish and Game Code) § 7600.
- <sup>6</sup> California Employment Development Department, "Information Sheet: Commercial Fishing," p. 1, [http://www.edd.ca.gov/pdf\\_pub\\_ctr/de231cf.pdf](http://www.edd.ca.gov/pdf_pub_ctr/de231cf.pdf) (accessed Nov. 12, 2009).
- <sup>7</sup> Tenn. Code Ann. § 70-2-205(b)(1).
- <sup>8</sup> Tenn. Atty. Gen. Op. No. 07-144, Oct. 12, 2007, p. 2.
- <sup>9</sup> Tenn. Code Ann. § 70-2-206(a)(3).
- <sup>10</sup> 2007 Census of Agriculture, Appendix B B-5, Tennessee State and County Data, issued Feb. 2009, updated Sept. 2009.
- <sup>11</sup> Tennessee Department of Agriculture, Tennessee Freshwater Farming, <http://www.picktnproducts.org/farm/aqua.html> (accessed Nov. 12, 2009).
- <sup>12</sup> Tennessee Department of Agriculture, Aquaculture Directory, <http://www.agriculture.state.tn.us/Marketing.asp?qstring=AQU&display=aquaculture%20directory> (accessed Nov. 12, 2009).
- <sup>13</sup> Tennessee Department of Agriculture, Tennessee Prawn Producers Directory, <http://www.agriculture.state.tn.us/Marketing.asp?qstring=PDI&display=Tennessee%20Prawn%20Producers%20Directory> (accessed Nov. 12, 2009).
- <sup>14</sup> Tenn. Code Ann. § 70-1-201.
- <sup>15</sup> *Ibid.*
- <sup>16</sup> *Ibid.*
- <sup>17</sup> Tenn. Code Ann. § 70-1-203.
- <sup>18</sup> Tenn. Code Ann. § 70-1-206.
- <sup>19</sup> Tenn. Code Ann. § 70-1-203.
- <sup>20</sup> Tennessee Wildlife Resources Agency, *TWRA Strategic Plan: 2006-2012*, March 2006, p. 1.
- <sup>21</sup> See Tenn. Code Ann. Title 70, Chapter 1, Part 3.
- <sup>22</sup> Tenn. Code Ann. § 70-1-301.
- <sup>23</sup> Tenn. Code Ann. § 70-1-302.
- <sup>24</sup> Tennessee Comptroller of the Treasury, *Performance Audit: Tennessee Wildlife Resources Agency, Tennessee Wildlife Resources Commission*, November 2009, p. 22.
- <sup>25</sup> See Tenn. Code Ann. § 70-2-219(b)(1) and Tennessee Administrative Register Glossary.
- <sup>26</sup> See Tenn. Code Ann. §§ 70-2-101 to 70-2-226.
- <sup>27</sup> Tennessee Wildlife Resources Agency, *Tennessee Commercial Fishing Regulation Summary*, p. 1, [http://www.state.tn.us/twra/fish/Commercial/TN\\_com\\_reg\\_10.pdf](http://www.state.tn.us/twra/fish/Commercial/TN_com_reg_10.pdf) (accessed April 29, 2009).
- <sup>28</sup> *Ibid.*, pp. 1-2.
- <sup>29</sup> *Ibid.*, p. 6.
- <sup>30</sup> *Ibid.*, p. 1.
- <sup>31</sup> Tennessee Wildlife Resources Agency, Tennessee Commercial Fishing Presentation, Feb. 2009.
- <sup>32</sup> Tennessee Wildlife Resources Agency, *Tennessee Commercial Fishing Regulation Summary*, Tennessee Wildlife Resources Agency, [http://www.state.tn.us/twra/fish/Commercial/TN\\_com\\_reg\\_10.pdf](http://www.state.tn.us/twra/fish/Commercial/TN_com_reg_10.pdf) (accessed April 29, 2009).
- <sup>33</sup> David W. Willis, Charles G. Scalet, and Lester D. Flake, *Introduction to Wildlife and Fisheries: an Integrated Approach*, W. H. Freeman and Company, New York, 2008, p. 405.
- <sup>34</sup> *Ibid.*
- <sup>35</sup> *Ibid.*
- <sup>36</sup> University of California Cooperative Extension, *Factors Affecting Fisheries*, <http://ceventura.ucdavis.edu/files/53751.pdf> (accessed Nov. 13, 2009).
- <sup>37</sup> Interview with Bobby Wilson, TWRA Fisheries Biologist, Nov. 18, 2009.
- <sup>38</sup> TWRA Strategic Plan: 2006-2012, p. 28.
- <sup>39</sup> *Ibid.*
- <sup>40</sup> *Ibid.*, p. 29.
- <sup>41</sup> Tennessee Wildlife Resources Agency, TWRA License Type Sales, generated Nov. 10, 2009.
- <sup>42</sup> See Wildlife Proclamation 08-01 for a list of those species commercially harvestable.
- <sup>43</sup> Tennessee Wildlife Resources Agency, Tennessee Commercial Fishing Presentation, Feb. 2009.
- <sup>44</sup> *TWRA Strategic Plan: 2006-2012*, p. 28.
- <sup>45</sup> *Ibid.*
- <sup>46</sup> *Ibid.*, p. 32.
- <sup>47</sup> Phillip W. Bettoli and George D. Scholten, *Assessment of Overfishing and Bycatch for an Exploited Paddlefish Population in the Lower Tennessee River*, May 9, 2005, p. 8.
- <sup>48</sup> Division of Scientific Authority for CITES, U.S. Fish and Wildlife Service, *Final Report to the Scientific Review Group of the European Community, Paddlefish (Polyodon spathula): Status, Conservation, and Harvest Management in the United States*, March 2009, p. 6.
- <sup>49</sup> Mississippi Interstate Cooperative Resource Association, "Mississippi Interstate Cooperative Resource Association," <http://www.ux.cerc.cr.usgs.gov/MICRA/> (accessed Jan. 5, 2010).
- <sup>50</sup> Division of Scientific Authority for CITES, U.S. Fish and Wildlife Service, *Final Report to the Scientific Review Group of the European Community, Paddlefish (Polyodon spathula): Status, Conservation, and Harvest Management in the United States*, March 2009, p. 6.
- <sup>51</sup> U.S. Fish and Wildlife Service, "Administration of the National Paddlefish Database," <http://www.fws.gov/midwest/Fisheries/Library/post-paddlefish.pdf>.
- <sup>52</sup> D.F. Williamson, *Caviar and Conservation: Status, Management, and Trade of North American Sturgeon and Paddlefish*, TRAFFIC North America, World Wildlife Fund, Washington, D.C., May 2003, pp. 146-148.
- <sup>53</sup> *Ibid.*, p. 145.
- <sup>54</sup> U.S. Fish and Wildlife Service, "Paddlefish: *Polyodon spathula*," May 16, 2001.
- <sup>55</sup> Division of Scientific Authority for CITES, U.S. Fish and Wildlife Service, *Final Report to the Scientific Review Group of the European Community, Paddlefish (Polyodon spathula): Status, Conservation, and Harvest Management in the United States*, March 2009, p. 11.
- <sup>56</sup> Christopher O'Bara, *Final Report: A Review of State Agency Paddlefish Management in the Mississippi River Basin*, Mississippi Interstate Cooperative Resource Association, March 2009, p. 118, accessed December 11, 2009, <http://www.ux.cerc.cr.usgs.gov/micra/EB%20Meetings/MICRA%20EB%20July%202009/A%20Review%20of%20State%20Agency%20Paddlefish%20Management.pdf>.
- <sup>57</sup> Division of Scientific Authority for CITES, U.S. Fish and Wildlife Service, *Final Report to the Scientific Review Group of the European Community, Paddlefish (Polyodon spathula): Status, Conservation, and Harvest Management in the United States*, March 2009, pp. 13-14.

STATE OF TENNESSEE  
PUBLIC CHAPTER NO. 261  
SENATE BILL NO. 2225

By Gresham

Substituted for: House Bill No. 2366

By Mike Turner, Lollar

AN ACT to amend Tennessee Code Annotated, Title 50, Chapter 7, Part 2 and Title 70, relative to commercial fishing.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. The comptroller shall conduct a study of the economic impact of commercial fishing within the State of Tennessee and make any recommendations for change as may be necessary to balance the legitimate interest in protecting the natural habitat of this state against the degree of regulation necessary for the exercise of authority over the commercial fishing industry.

SECTION 2. The comptroller shall complete the study and report its findings to the members of the Environment and Conservation Committees of the Senate and the House of Representatives no later than January 15, 2010.

SECTION 3. This act shall take effect upon becoming a law, the public welfare requiring it.

**PASSED: May 11, 2009**

  
\_\_\_\_\_  
RON RAMSEY  
SPEAKER OF THE SENATE

  
\_\_\_\_\_  
KENT WILLIAMS, SPEAKER  
HOUSE OF REPRESENTATIVES

**APPROVED this 20th day of May 2009**

  
\_\_\_\_\_  
PHIL BREDESEN, GOVERNOR

Tennessee Wildlife Resources Commission

Proclamation 08-18  
Amendment To Proclamation 08-01  
Statewide Proclamation On The  
Commercial Taking Of Fish And Turtles

Pursuant to the authority granted by Title 70, Tennessee Code Annotated, and Sections 70-4-107 and 70-4-119 thereof, the Tennessee Wildlife Resources Commission summarily proclaims the season on paddlefish by following amendment to Proclamation 08-01. This proclamation will become effective immediately upon filing with the Office of the Secretary of State.

In Section III., Subsection B:

Insert: "Paddlefish or parts thereof shall not be taken during the period from April 16 through November 14, nor shall they be possessed during this period unless they were previously taken during a legal taking season."

Insert "paddlefish or" and "these" to: "Those persons possessing paddlefish or sturgeon or parts thereof during these closed periods must have in their possession receipts denoting pounds of flesh or eggs (or both if applicable) in their possession, name and address of supplier/fishermen, the name of the water body from which fish were harvested, and date of harvest or date obtained."

Insert: "Paddlefish must be 36 inches or larger eye to fork length to be legal for harvest from all waters except the Mississippi River. Paddlefish must be 34 inches or larger eye to fork length to be legal for harvest from the Mississippi River."

Insert "Paddlefish less than the appropriate minimum eye to fork length limit and" to "Paddlefish less than the appropriate minimum eye to fork length limit and shovelnose sturgeon smaller than 24 inches or greater than 32 inches must be returned immediately to the water."

Insert Section III., Subsection K in its entirety and renumber the remaining subsections accordingly:

- K. Paddlefish larger than the appropriate minimum eye to fork length limit can be blocked (with the tail remaining on the fish) prior to sale if the fish also meets the appropriate minimum block length (as measured along side of the fish from the fork of the tail to the edge of the skin behind the gill arch) limit. The minimum block length limit for each minimum eye to fork length limit is reported in the table below. Blocked fish must be larger than both the minimum eye-to-fork length limit and the minimum block length limit. Prior to sale to an in-state wholesale fish dealer's business or prior to being marketed out-of-state, paddlefish carcasses may not be altered in such a manner that the eye to fork length or the block length of the fish can not be determined.

If the minimum eye to fork length is:	Then the minimum block length is:
34 inches	25 inches
36 inches	27 inches
37 inches	27 inches
38 inches	28 inches
40 inches	29.5 inches

So that, as amended, Section III reads:

**SECTION III. GENERAL PROVISIONS**

A. Fish and turtles classified as endangered, threatened, or in need of management as proclaimed by the Wildlife Resources Commission may not be taken.

B.<sup>1</sup> The following fish species may be taken and sold commercially year-round unless otherwise restricted by this proclamation, other Tennessee Wildlife Resources Commission proclamations or rules, or Tennessee Code Annotated.

	<u>Common Name</u>	<u>Scientific Name</u>
**	Shovelnose sturgeon	Scaphirhynchus platyrhynchus (Rafinesque)
*, **	Paddlefish	Polyodon spathula (Walbaum)
	Spotted gar	Lepisosteus oculatus (Winchell)
	Longnose gar	Lepisosteus osseus (Linnaeus)
	Shortnose gar	Lepisosteus platostomus Rafinesque
	Bowfin	Amia calva Linnaeus
	Skipjack herring	Alosa chrysochloris (Rafinesque)
	Gizzard shad	Dorosoma cepedianum (Lesueur)
	Threadfin shad	Dorosoma petenense (Guenther)
	Grass carp	Ctenopharyngodon idella (Valenciennes)
	Common carp	Cyprinus carpio Linnaeus
	Silver carp	Hypophthalmichthys molitrix (Valenciennes)
	Bighead carp	Hypophthalmichthys nobilis (Richardson)
	River carpsucker	Carpionodes carpio (Rafinesque)
	Quillback	Carpionodes cyprinus (Lesueur)
	White sucker	Catostomus commersoni (Lacepede)
	Smallmouth buffalo	Ictiobus bubalus (Rafinesque)
	Bigmouth buffalo	Ictiobus cyprinellus (Valenciennes)
	Black buffalo	Ictiobus niger (Rafinesque)
	Spotted sucker	Minytrema melanops (Rafinesque)
	Silver redhorse	Moxostoma anisurum (Rafinesque)
	Golden redhorse	Moxostoma erythrurum (Rafinesque)
	Black bullhead	Ameiurus melas (Rafinesque)
	Yellow bullhead	Ameiurus natalis (Lesueur)
	Brown bullhead	Ameiurus nebulosus (Lesueur)
*	Blue catfish	Ictalurus furcatus (Lesueur)
	Channel catfish	Ictalurus punctatus (Rafinesque)
	Flathead catfish	Pylodictis olivaris (Rafinesque)
	Freshwater drum	Aplodinotus grunniens Rafinesque
	Yellow bass	Morone mississippiensis Jordan, Eigenmann

\* The taking and possession of blue catfish and paddlefish from Cherokee Reservoir by commercial fishing methods is prohibited.

\*\* Paddlefish or parts thereof shall not be taken during the period from April 16 through November 14, nor shall they be possessed during this period unless they were previously taken during a legal taking season. Shovelnose sturgeon or parts thereof shall not be taken during the period from May 16 through October 14, nor shall they be possessed during this period unless they were previously taken during a legal taking season. Those persons possessing paddlefish or sturgeon or parts thereof during these closed periods

<sup>1</sup> Section III, Subsection B. and Subsection K. amended by Proc. 08-16, effective November 7, 2008.



must have in their possession receipts denoting pounds of flesh or eggs (or both if applicable) in their possession, name and address of supplier/fishermen, the name of the water body from which fish were harvested, and date of harvest or date obtained. Paddlefish must be 36 inches or larger eye to fork length to be legal for harvest from all waters except the Mississippi River. Paddlefish must be 34 inches or larger eye to fork length to be legal for harvest from the Mississippi River. Shovelnose sturgeon must be larger than 24 inches and smaller than 32 inches from the tip of the snout to the fork of the tail to be legal for harvest. Paddlefish less than the appropriate minimum eye to fork length limit and shovelnose sturgeon smaller than 24 inches or greater than 32 inches must be returned immediately to the water. Paddlefish may not be possessed alive away from the harvested waters. Any paddlefish and/or shovelnose sturgeon from which eggs are taken must be kept. The cutting or mutilation of paddlefish to check for eggs is prohibited except that a stainless steel 12-gauge needle may be inserted into the abdomen between the pectoral and pelvic fins to determine the presence of eggs. This needle and syringe device must be on board every roe fishing vessel and kept in a sanitary manner. A 2-inch portion of ovary (including some eggs) must remain attached to each harvested paddlefish until the fish and eggs are received by a licensed Wholesale Roe Fish Dealer. Paddlefish eggs removed from ovaries must be kept in separate containers - eggs from one fish only per container. Shovelnose sturgeon must remain whole and the eggs must remain in each harvested shovelnose sturgeon while on the water or immediately adjacent to the water where harvested.

- C. Only the Common Snapping Turtle, *Chelydra serpentina serpentina*, with a carapace (upper shell) length of at least 12 inches, measured front to back, may be taken year-round and statewide without limit by any legal commercial fishing method.
- D. Only at Reelfoot Wildlife Management Area, all sizes and species of turtles except the box turtles and those covered in Item A. above may be taken by any legal commercial fishing method.
- E. Commercial fishing gear is prohibited within 1,000 yards downstream of any TVA or Corps of Engineers Dam, within 300 yards of any commercial boat dock or resort, or within 100 yards of the mouth of any stream, river, or inlet at any time. For purposes of this proclamation, wingwalls and lock walls are considered to be a part of the "dam", and measurements will be made from their downstream end.
- F. No catfish less than 8 inches in length may be kept alive. The commercial harvest of catfish greater than 34 inches in length is restricted to those commercial fishers holding license types 100, 101, and 103 and may not exceed one (1) catfish per day greater than 34 inches in length. The possession limit of catfish greater than 34 inches is two (2).
- G. Gill nets, trammel nets, turtle traps, and trotlines must be checked at least once every 24 hour period. Other types of commercial fishing gear must be checked at least once every 72 hour period. Each time a gear is checked, any and all species must be removed from the net.
- H. Hoop nets, fyke nets, trap nets, and pound nets with a mesh size of one (1) inch or smaller on the square may be fished only during the months of October, November, December, January, February, March, and April, except the Mississippi River, which is open year-round.
- I. A fish seine may be used in private waters and in waters which are replenished by overflows from the Mississippi, Tennessee, Obion, Hatchie, Wolf, Loosahatchie, and Forked Deer rivers, but which during the dry season of the year have no outlet to these rivers. Fish seines as defined in this proclamation may be used in the dewatering areas of Kentucky Reservoir.

- J. No commercial fishing gear shall be set so as to extend more than three-quarters (3/4) across any stream, river, chute, or embayment.
- K. Paddlefish larger than the appropriate minimum eye to fork length limit can be blocked (with the tail remaining on the fish) prior to sale if the fish also meets the appropriate minimum block length (as measured along side of the fish from the fork of the tail to the edge of the skin behind the gill arch) limit. The minimum block length limit for each minimum eye to fork length limit is reported in the table below. Blocked fish must be larger than both the minimum eye-to-fork length limit and the minimum block length limit. Prior to sale to an in-state wholesale fish dealer's business or prior to being marketed out-of-state, paddlefish carcasses may not be altered in such a manner that the eye to fork length or the block length of the fish can not be determined.

If the minimum eye to fork length is:	Then the minimum block length is:
34 inches	25 inches
36 inches	27 inches
37 inches	27 inches
38 inches	28 inches
40 inches	29.5 inches

- L. Commercially harvested paddlefish and sturgeon or parts thereof taken from the waters of the state and sold in-state must be marketed to a licensed wholesale fish dealer who has a valid Wholesale Roe Fish Permit, Supplemental.

Proclamation 08-18 received and recorded this 26th day of November, 2008 to be effective this 26th day of November, 2008. (FS 11-45-08)



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Washington, D.C. 20240



In Reply Refer To:  
FWS/DSA/041416

JUN 18 2009

Ed Carter, Director  
Tennessee Wildlife Resources Agency  
Ellington Agricultural Center  
P.O. Box 41489  
Nashville, TN 37204

Dear Mr. Carter:

The U.S. Fish and Wildlife Service (Service) wishes to inform you of a recent decision in your jurisdiction regarding the export of paddlefish (*Polyodon spathula*) and its products (meat and roe processed into caviar). **The Service is unable to find that the export of paddlefish and its products harvested from Kentucky Lake in Tennessee during the 2008-2009 fishing season is not detrimental to the survival of the species.** The Service's non-detriment finding is based on the science-based recommendations published in a peer-reviewed journal paper by Scholten and Bettoli (2005), "*Population characteristics and assessment of overfishing for an exploited paddlefish population in the lower Tennessee River.*" Since a non-detriment finding can not be made, Convention on the International Trade of Endangered Species of Wild Fauna and Flora (CITES) export permits will be denied for paddlefish and products from this impoundment.

International trade in paddlefish and its caviar requires an associated CITES export permit. Issuance of an export permit is contingent upon two separate and distinct determinations that are made by the Service's Division of Management Authority (DMA) and Scientific Authority (DSA). The Division of Management Authority makes the determination that the roe was legally acquired from the information submitted by the applicant, while the Division of Scientific Authority makes the finding that the harvest for export is not detrimental to the survival of the species. Both determinations must be positive before a CITES export permit can be issued by DMA to an applicant.

As you know, commercial harvest of paddlefish in Tennessee is managed by the Tennessee Wildlife Resources Agency (Agency). Since 2005, all regulatory recommendations by the Agency were based on the results and recommendations of a scientific research study undertaken to determine the potential effects commercial fishing could have upon Kentucky Lake's paddlefish population. Kentucky Lake is a mainstream impoundment of the Tennessee River, situated in western Tennessee and western Kentucky. The study was conducted because of the Service's concerns about the

increasing number of applications submitted for caviar export permits from this impoundment.

The primary result of the study indicated that paddlefish were being overfished. To address this problem, the Agency developed a five-year management plan that would gradually increase the minimum size length limit to protect additional mature female fish from harvest, and close the harvest season earlier in April. Ending the season earlier would reduce bycatch mortality of male and juvenile paddlefish that are entangled in nets and die because the water is too warm. The bycatch is subsequently discarded because it has little commercial value. Based on the implementation of the Agency's five-year management plan, the Service has previously been able to find that the export of paddlefish and its products have not been detrimental to the survival of the species.

In 2006, the Agency shortened the harvest season from April 15 to April 7 to reduce bycatch mortality. In keeping with the five-year management plan, in 2008, the Agency proposed increasing the minimum length limit to 37 inches. The final management measure remaining to be implemented under the five-year management plan was to increase the minimum length limit to 38 inches, in 2009. Scholten and Bettoli (2005) found that minimum length limits of 36 inches and 38 inches only protect 7% and 29%, respectively, of the mature females from harvest.

Harvest regulations are reviewed and approved by the Tennessee Wildlife Resources Commission (Commission). On October 7, 2008, the Service contacted the Commission expressing its concerns about proposed changes to eliminate all paddlefish harvest regulations, the potential effects on paddlefish populations, and the subsequent effect on issuance of CITES export permits due to our inability to make a determination of non-detriment for a non-sustainable fishery. However, in November 2008, the Commission retreated from implementation of the State's 5-year plan and adopted less restrictive harvest regulations than those that were currently being proposed by the Agency. The new regulations included a decrease in minimum size length limit to 36 inches, which only protects 7% of all mature female paddlefish; and an increase in season length to April 15. These changes were a regression of the five-year management plan to a level similar to that of the 2005 season.

The result is that under the current regulatory framework, the Kentucky Lake paddlefish population in Tennessee is not being managed in a sustainable manner and commercial harvest cannot continue without a detrimental impact to paddlefish populations. Since the 2008-2009 paddlefish harvest season is closed now, harvest reports were submitted to the Agency by May 15, 2009 and therefore, the origin of the caviar can be substantiated. All of the factors discussed above led to the Service's finding.

The Service's finding will not affect the sale of this caviar domestically. The Service will undertake a proactive outreach effort to caviar sellers, and the exporting community to make them aware of this decision.

If you have any questions regarding this issue, please contact Ms. Teiko Saito, the Acting Assistant Director at 202-208-6393 or by e-mail at [Teiko\\_Saito@fws.gov](mailto:Teiko_Saito@fws.gov).

Sincerely,



ACTING DEPUTY  
DIRECTOR

cc: Bill Reeves, Chief of Fisheries, TWRA  
Carolyn Caldwell, AFWA  
Jack Buckley, AFWA  
Buddy Baker, AFWA  
Bob Broscheid, AFWA  
Don MacLauchlan, AFWA



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Washington, D.C. 20240



In Reply Refer To:  
FWS/DSA/041856

JUL 29 2009

Mr. Ed Carter  
Executive Director  
Tennessee Wildlife Resources Agency  
440 Hogan Road  
Nashville, Tennessee 37220

Dear Mr. Carter,

The U.S. Fish and Wildlife Service's Division of Scientific Authority (DSA) has informally discussed with biologists from your agency potential amendments to Tennessee's paddlefish (*Polyodon spathula*) harvest regulations for Kentucky Lake, Tennessee. We would like to provide you with feedback about the potential amendments, as they relate to DSA's ability to find that export of paddlefish and paddlefish products from Kentucky Lake, Tennessee is not detrimental to the survival of the species under the Convention on International Trade in Endangered Species (CITES).

The specific potential amendments that were proposed to us by biologist George Scholten, are as follows:

- 1) Increasing the statewide (excluding Mississippi River) size limit to 38 inches prior to November 2009, to 39 inches prior to November 2011, and to 40 inches prior to November 2013;
- 2) Adding the following regulation to allow enforcement of the proposed size limit. "Paddlefish shall remain whole, uncut after capture and eggs shall remain entirely within the body cavity of the fish until the fish reach a licensed Wholesale Roe Fish Permit holder at the address that appears on their permit;" and
- 3) Reducing the paddlefish season by 15 days (i.e., open November 15 and close on March 31) to reduce losses to bycatch mortality.

Implementation of these potential amendments for all statewide waters, except the Mississippi River, over the 5-year time frame specified would provide for protection of more than 50 percent of the mature female paddlefish, based on the scientific information presented in the final report for the Kentucky Lake study (Scholten and Bettoli. 2005. *Population Characteristics and Assessment of Overfishing for an Expolited Paddlefish Population in the Lower Tennessee River. Transactions of the American Fisheries Society 134:1285-1298*). The addition of a regulation to strengthen enforcement of these harvest

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regulations is important to ensuring that the size limits are adhered to and this level of protection of mature females is maintained. Shortening the length of the harvest season will significantly reduce bycatch mortality (Scholten and Bettoli (2005) *Population characteristics and assessment of overfishing for an exploited paddlefish population in the Lower Tennessee River in the Transactions of the American Fisheries Society* 134:1285-1298) and thereby allow more paddlefish to reach maturity, reproduce, and contribute to the sustainability of the population.

If the amendments provided above were adopted and implemented within the time frames indicated, the DSA would be able to find that the export of paddlefish and paddlefish products from Kentucky Lake, Tennessee is not detrimental to the survival of the species under CITES, provided no unforeseen events (e.g. disease outbreak or a natural disaster) occurred that would place the sustainability of the paddlefish population in jeopardy. Furthermore, these amendments would serve as a model for state paddlefish regulations and the Service will strongly encourage other states that allow commercial paddlefish states to adopt similar regulations. A long-term goal of DSA is to see harmonization of regulations across shared catch river basins to ensure sustainability.

We appreciate the opportunity to work with you and your staff on this important issue. If you have questions, please contact Dr. Rosemarie Gnam, Chief of the Division of Scientific Authority at 703-358-2497 or [rosemarie\\_gnam@fws.gov](mailto:rosemarie_gnam@fws.gov).

Sincerely,



I. Teiko Saito  
Acting Assistant Director  
International Affairs

cc: Bill Reeves, Chief of Fisheries  
Commissioner of the Tennessee Wildlife Regulatory Commission



OFFICES OF RESEARCH AND EDUCATION ACCOUNTABILITY  
Phillip Doss, Director  
Suite 1700, James K. Polk Building ▪ 505 Deaderick Street  
Nashville, Tennessee 37243 ▪ (615) 401-7911  
[www.tn.gov/comptroller/orea](http://www.tn.gov/comptroller/orea)

