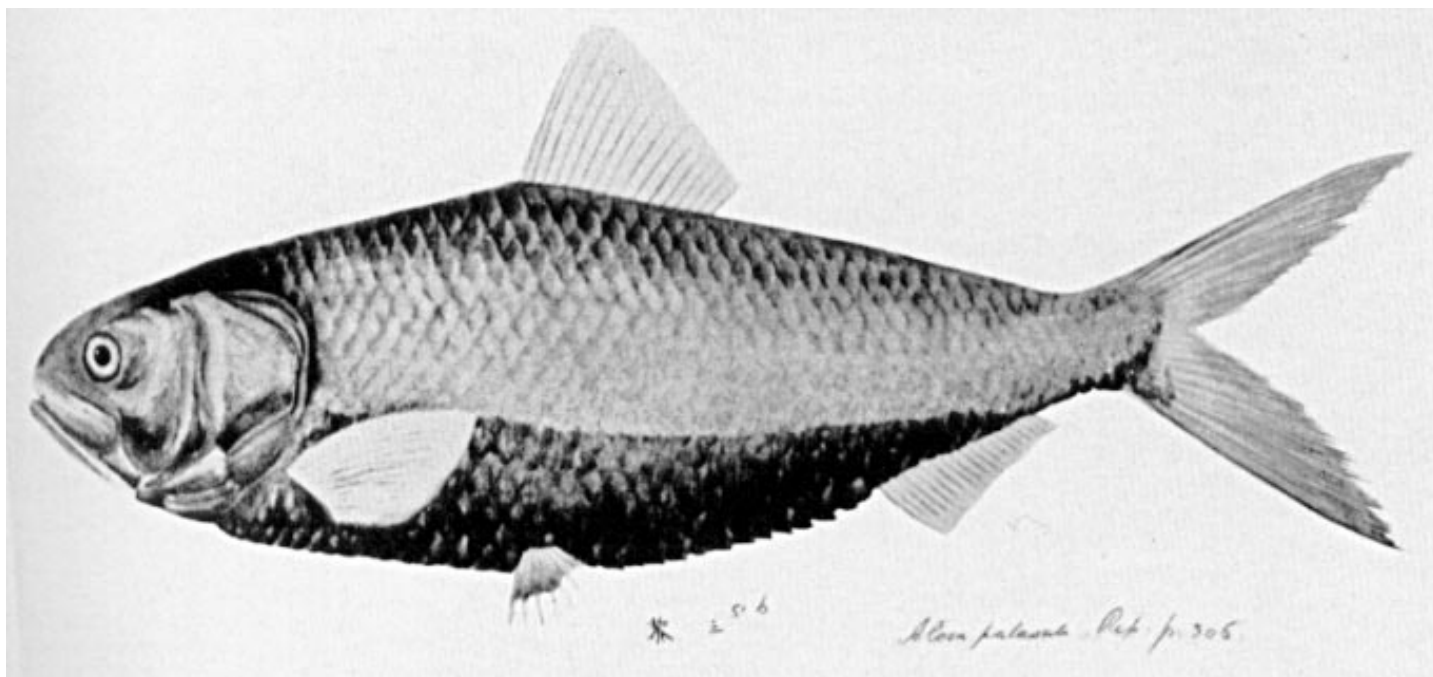


SHAD JOURNAL

"For the study, protection, and celebration of shad around the world"

A resource in peril: China's Reeves shad
Current worldwide literature on shad
Plus: Reader comments

VOLUME 2, NUMBER 2, MAY 1997



CURTISY OF THE BRITISH MUSEUM OF NATURAL HISTORY

Reeves Shad, depicted here by Chinese artist Akew in 1828, is an Asian treasure. To learn how the species is faring, please turn to page 4.

President's Note:

This issue features the Reeves shad from China in an article by Wang Hanping of China and Richard St. Pierre of the United States. The two have frequently discussed their respective restoration and culture activities since 1991. Wang learned of the Susquehanna River shad restoration program headed by St. Pierre from scientists visiting China who were part of a nature conservation exchange program. Such exchanges are negotiated every two years between the U.S. Fish and Wildlife Service and the Chinese Ministries of Forestry and Agriculture. St. Pierre visited China twice, traveling from Beijing to Guangzhou, making numerous

stops along the Yangtze River, including the Yangtze River Fisheries Institute at Shashi, the Chinese sturgeon breeding facility at Yichang, and the site of the Three Gorges Dam project. Wang has visited the northeastern United States, trading shad information at federal and state research facilities in Massachusetts, Pennsylvania, and Maryland.

This exchange program should be emulated in the many countries of the world where shad research is conducted (see page 9).

We also feature reader comments in the new Shad Forum department, and a sample of current shad literature.

Good news: we recently were designated a 501(c)(3) organization; details next issue.

-R. Hinrichsen

INSIDE

Shad Forum	2
Chinese Shad	4
Research Notes	9
Shad Bites (News Briefs)	11

SHAD FORUM

This new "Shad Forum" department includes letters and comments on all issues surrounding shad and their fisheries. Your contributions are welcome

AMERICAN SHAD NO SUBSTITUTE FOR SALMON ON COLUMBIA

From the Editors:

To begin to understand how introduced shad on the U.S. west coast are affecting human culture, we asked anthropologist Courtland Smith, "Do the exotic American shad on the Columbia River help conserve Native American culture in the Northwest United States?"

Smith Responds:

Thanks for your question. I have not asked it of tribal fishermen, but I think that most native fishers would not agree that shad was helping to preserve their culture. Shad may substitute for salmon somewhat economically, but they do not substitute very well culturally. I do not see the tribes celebrating a "First Shad" ceremony. [Each year, Native Americans traditionally held a First Salmon ceremony to celebrate the arrival of salmon.] The basic reason they dip net shad is that they are less likely to kill a salmon migrating upstream.

Tribal treaty rights are tied to salmon and I think the tribes would be very resistant to seeing shad as being anywhere near a substitution. I suspect if people started to discuss shad as helping to preserve tribal culture that the tribes would quickly refute the suggestion. The tribes have not accepted disaster relief money offered them, because they feared that this would be interpreted as their willingness to be compensated for lost salmon fisheries. Tribal culture and the politics associated with the Columbia are based on salmon. Currently, I am skeptical that the tribes or even gill-netters and anglers would see shad as valuable other than providing some economic help during very troubled economic times for them.

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COURTESY OF THE OREGON HISTORICAL SOCIETY (ORHI #70780)



RICHARD HINRICHSSEN

A NATIVE AMERICAN (left) dipnets salmon on the Columbia River in 1909. Today, Native American fishers (right) dipnet for American shad on the Columbia at the Cascade Locks, just upriver of Bonneville Dam.

The Editors reply:

We see irony in the low esteem given American shad on the Columbia because tribes on the East Coast such as the Mattaponi and Pamunkey are working to restore American shad runs to their rivers.

Although, as you say, probably no Columbia River tribal fisherman would likely agree that American shad have helped preserve culture, we wonder if, putting politics aside, they have.

Smith Responds:

As someone who grew up in New England, I know how changing coasts can greatly change the value of shad. Unfortunately, Northwesterners have not developed the same affection for shad. I know the Recovery Team sees American shad as an introduced predator, but so are most of us. Culture takes strange twists that, depending on one's perspective, may skirt being rational and logical.

AMERICAN SHAD SCARFING SALMON SMOLTS?

To the Editors:

I moved out here to Southwest Washington State from Massachusetts where I lived only 5 minutes away from the Holyoke Dam on the Connecticut River! I guided and made shad tackle as a source of income and also wrote articles on the sport. Something I read recently on Amer-

ican shad in the Northwest caught my interest.

THE SHAD JOURNAL®

Editor-in-Chief: Richard Hinrichsen

Board of Editors: Curtis Ebbesmeyer, Catherine Hinrichsen

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THE SHAD FOUNDATION

P.O. Box 21748
Seattle, WA 98111-3748

The Shad Foundation is a Washington State non-profit corporation that was established in 1996 to promote a greater understanding of shad for the purpose of restoration where depleted, or their responsible use where sufficiently abundant.

Trustees: Richard A. Hinrichsen, *University of Washington, Seattle, Washington*; Curtis Ebbesmeyer, *Evans-Hamilton, Inc., Seattle, Washington*; Richard St. Pierre, *U.S. Fish and Wildlife Service, Harrisburg, Pennsylvania*.

Submissions. The editors welcome submission of articles on any aspect of shad. The Journal publishes letters, commentaries, histories, scientific articles, interviews, reviews, and philosophical and methodological items related to shad the world over. (See instructions on back cover.)

Lenox Dick, author of "Experience the World of Shad Fishing," wrote an article about two years ago where he claims that shad returning to the Columbia River feed on salmon smolts migrating to the Pacific Ocean. The anatomy of a shad indicates that these fish were not put here on Earth to be carnivores, eating smolts as squawfish do! The gill rakers and absence of teeth should be evidence in itself. What is your opinion on this? Have they new findings here on the West Coast?

STEVE VALLEY
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The Editors reply:

Most references we have seen indicate that shad do not eat on their spawning run. However, writing on shad of the Columbia River in 1967, Henry Wendler claimed:

"Shad stomachs from mature unspawned females have shown little, if any, protein material therein, although fish (shad) scales, bits of wood, pebbles, and miscellaneous detritus have been found. Stomachs of two spent shad taken by Indian dip-nets in the Bonneville Dam forebay showed them to contain small chinook salmon. One of these shad, a 19-inch [48.3 centimeter] female, contained 16 salmon ranging from 35 to 42 millimeters in length."

Continuing, Wendler explains that the American shad were captured near salmon hatcheries where millions of smolts were released; he was uncertain whether shad would eat smolts under other circumstances.

The very earliest reference we know of on the feeding habits of shad was by Samuel Ladd Howell, M.D. in 1837, a venerable physician at Princeton who was once a commercial shad fisherman on the Delaware River. He wrote:

"What this food is, is conjectural; they certainly are not a fish of prey, and their alimentary canal on dissection, discloses nothing but a greenish, earthy slime, which is probably strained through their fringed throats, as they suck in the water; we may fairly infer that their nutriment consists of the mulch or matters held in solution by the waters."

UK SEEKS STATUS OF ITS SHADS

To the Editors:

As part of a larger programme on Species Management in aquatic habitats, the Environment Agency, English Nature, and the Countryside Council for Wales are obtaining information on *Alosa alosa* and *Alosa fallax* populations in the UK to seek to ensure their favourable conservation status. The overall objectives are to:

(1) Produce a UK species action plan for *Alosa alosa* and *Alosa fallax* in England and Wales detailing their current UK status, main threats to the populations, current activities underway to conserve the species, short and long term targets and objectives, and the proposed actions to meet the objectives.

(2) Report on the past and present status of *Alosa alosa* and *Alosa fallax* in England and Wales.

(3) Identify and quantify factors affecting recruitment and age of first spawning of *Alosa fallax*.

(4) Outline requirements to ensure the favourable conservation status of *Alosa alosa* and *Alosa fallax* in England and Wales, in particular quantifying spawning and nursery habitats of shad.

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STATUS OF SHAD IN IRANIAN WATERS?

From the Editors:

We asked Yazdan Keivany and Brian Coad about shad species in Iran. Do we know their status in the Caspian Sea?

Keivany responds:

There is uncertainty in the number of species of shads in the Caspian Sea. Based on Coad (1995), there are six species of shads in the Iranian part of the Caspian Sea: *Alosa brashnikovi* with 8 subspecies (excluding *A. curensis*); *A. caspia* with 3 subspecies; *A. curensis*; *A. pontica* with 2 subspecies; *A. saposhnikovii*; and *A. sphaerocephala*. There is also one species in the Tigris River Basin and Shatt-al-Arab River in the southern Iran, *Tenualosa ilisha* (Khalaf, 1961). From what I remember

from courses at the Gorgan University of Agricultural Sciences (located on the southeast corner of the Caspian Sea in the province of Mazandaran, the Persian name for the Caspian Sea), my observations of the fish catchment on the Caspian coast, and reports of the Iranian Fisheries Research Organization, *Alosa* species—which used to comprise a major part of the fish catchments—now are rarely found in the nets.

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Coad responds:

"*Shag mahi*" (Iranian shads of genus *Alosa*) and "*kilka*" (*Clupeonella* species) are heavily fished in Iranian waters of the Caspian Sea and with pollution problems are probably under some measure of threat. *Alosa pontica volgensis* was in category 1 on the Red List of the Russian Republic. Also of interest is the hilsa shad, *Tenualosa ilisha* or "*sobour*" in Farsi, from the rivers at the head of the Persian Gulf. I am working on a Red List for Iranian fishes right now, but many species are difficult to assess since little is known of actual numbers and, more importantly, trends in numbers. There is a lot more information available on species composition, taxonomy and various aspects of biology and fisheries.

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[Dr. Coad is writing a brief review on the fresh and brackish water Iranian shads which will appear in an upcoming issue of the Shad Journal.]

CORRECTION

Seth Green, the father of fish culture in America, lived in Rochester, N.Y., USA, not Albany, N.Y. at the time of his famous transcontinental railroad journey with shad fry in 1871 ["The Oceanography of the Pacific Shad Invasion," February]. Our apologies for the error.

A Resource at Risk

Saving China's Reeves Shad

by Wang Hanping and Richard St. Pierre

The Reeves or Chinese shad (*Tenualosa reevesii*) is one of China's most famous food fishes. Prior to the 1970s it supported valuable fisheries in the Yangtze, Pearl, and Qiantang rivers. Yet today it verges on extinction.

Annual landings of adult Reeves shad in the Yangtze River system varied greatly between 1957-1977, reaching a peak production of 1577 metric tons in 1974 and declining precipitously thereafter. Yangtze River fisheries were closed in 1987 when the Ministry of Agriculture gave the shad protected status. Now, only a small population remains near the mouth of the Pearl River. Causes for this decline include overfishing of adults and juveniles, habitat degradation due to pollution and hydropower operations, and loss of critical nurseries due to water withdrawals and diversions.

The plight of the Reeves shad has drawn considerable attention from Chinese researchers during the past two decades, sparking investigations on life history, bionomics, population dynamics, impacts of dams and diversions, and artificial propagation.

Life History

The Reeves shad ranges from China's southeast coast between 20° and 36° North latitudes and is also found in the eastern part of the Indian Ocean (Phuket Island, Andaman Sea). Like several other shad species, Reeves shad are anadromous—they mature at sea and return to spawn in their natal rivers. Both adult and immature shad migrate great distances along the coast, feeding mainly on zooplankton and small shrimp. The breeding season is during the rainy season, May through August, when flooding causes increased turbidity and current velocity. Most spawning occurs in June and July, when water temperatures soar to 25-32 degrees Celsius. By

comparison, their cousins, the American shad, spawn at 13-18 degrees Celsius.

A principal spawning area for Reeves shad is the Xiajian reach of the Ganjiang River, which feeds Puoyang Lake before entering the Yangtze River. Another historic spawning area located on a tributary of the Pearl River called the West River is no longer used by shad because it is seriously polluted. Instead of entering the polluted West River for spawning, they enter other tributaries of the Pearl, such as the East River near the Pearl's mouth.

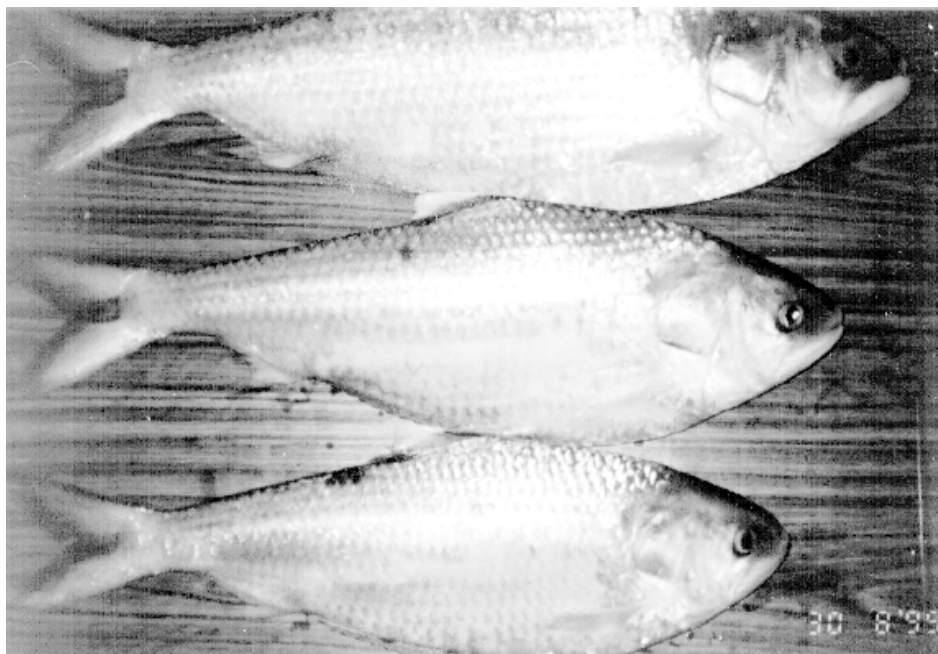
Male Reeves shad mature earlier than females, spawning by ages 2-3 years while most females mature in 4-5 years. Female shad live longer and attain larger sizes than males. Females may reach 70 centimeters in length and weigh 5 kilograms. Fecun-

dity increases linearly with body weight with some females carrying 1-4 million eggs.

As eggs ripen, they measure 0.7-0.9 millimeters in diameter and hatch quickly—within 16-19 hours at 27 degrees Celsius. The newly hatched larvae average less than 3 millimeters long, but grow to 40 millimeters and weigh about 1 gram by the end of their first summer. As autumn approaches and waters cool, these juveniles leave their rearing grounds and migrate to sea.

Fisheries

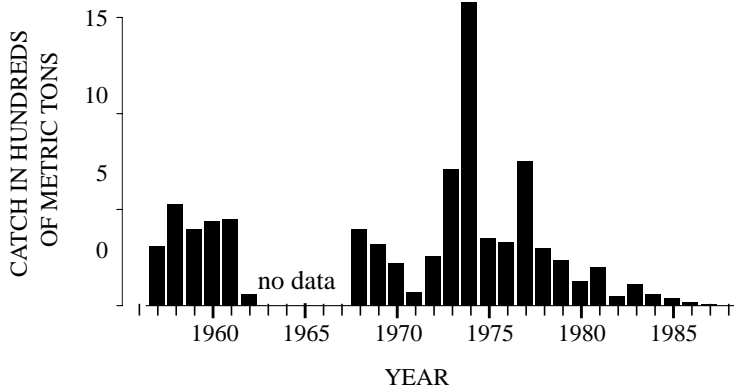
Reeves shad supported important commercial fisheries prior to the mid-1970s. Harvest from the Yangtze River and its trib-



COURTESY OF THE YANGTZE RIVER FISHERIES INSTITUTE

MATURE REEVES SHAD of the Yangtze River. Initially described by Richardson in 1846 as *Alosa reevesii*, this species was assigned to the genera *Hilsa* (Regan, 1917), *Macrura* (Fowler, 1941), and finally *Tenualosa* (Wongratana, 1983). The name *Tenualosa*, meaning slender (*tenuis*) shad, was coined by Henry W. Fowler in 1934.

THE BOOM AND BUST of the Yangtze River Reeves shad from 1957 to 1988, when the fishery ground to a halt. The largest catches in the mid-70s led to its eventual failure. As the fishery declined, the age composition showed a classic shift toward the younger age classes (RIGHT).



THE CHANGE IN AGE COMPOSITION of the Yangtze River Reeves shad showed a shift to a greater percentage of younger fish, indicating severe recruitment overfishing. Each row of the table shows the percentages of the shad caught at ages 2-7. The bolded percentages indicate the most frequent ages observed.

Year	Age Group						Mean Age
	2	3	4	5	6	7	
1962	0.0	31.3	51.2	14.4	2.7	0.4	3.87
1973-1975	0.0	52.7	40.4	6.7	0.2	0	3.55
1980-1986	36.5	55.2	6.6	1.7	0	0	2.74
1987-1989	49.0	45.3	5.7	0	0	0	2.57

DATA SOURCE: Yangtze River Fisheries Management Commission

utaries was relatively stable at 298-530 metric tons from the mid-1950s through 1961, but then became highly variable from 58-1577 metric tons until 1977; and declined precipitously thereafter to about 12 metric tons by 1986. In addition to the traditional harvest of adult fish, Reeves shad also supported fisheries on juveniles in their major Yangtze River nurseries. During autumn months villagers captured shad fry in beach seines and fyke nets lined with ramie cloth.

These fisheries, located on Puoyang and Dongting lakes, annually produced

thousands of kilograms of sun-dried shad fry through the 1970s.

Prior to the 1970s Reeves shad supported valuable fisheries in the Yangtze, Pearl, and Qiantang rivers. Yet today it verges on extinction.

Reeves shad are aged by examining their scales and it is assumed that the formation of annual rings on the fish scales coincides with cessation of feeding and growth during the breeding season. Prior to 1975, Yangtze River shad catch was composed of age 3-7 fish with a mean of about 3.7 years. Since 1980, most fish were age 2-4 with a mean age of about 2.6 years. In 1962, almost 40 percent of Yangtze River shad exceeded 2 kilograms; by the late 1980s none exceeded 2 kilograms. Sex ratios in the catch changed from about 4:1 favoring males in the early 1970s to over 12:1 by the mid-1980s. These conditions suggest severe recruitment overfishing. Indeed, in 1987 all shad fisheries were closed in the Yangtze River.

Historic fisheries for Reeves shad in the West River (upper reaches of the Pearl River) disappeared by the 1980s and have since redeveloped in the lower Pearl. Catch from Pearl River fell from 175 to 78 metric tons during 1980-1988, plummeting to 0.6 metric tons by 1996. Adult shad have not been harvested from the Qiantang River since the 1970s.

Management

Prior to establishment of the interprovincial Yangtze River Fisheries Management Commission (YRFMC) in 1987, shad and other river fisheries were managed by separate Provincial fishery bureaus with guidance from the Ministry of Agriculture's Bureau of Fisheries Management. Beginning in the 1950s, shad re-



COURTESY OF THE YANGTZE RIVER FISHERIES INSTITUTE

SHAD FRY, spread along the banks of Puoyang Lake, dry in the autumn sun. The annual village harvest in the 1970s numbered in the thousands of kilograms.

searchers and managers have described and quantified essential freshwater habitats, projected population and production estimates, and identified causes of shad declines. They then recommended ways to successfully manage shad stocks.

Reasons for the decline of shad stocks in the Yangtze and Pearl rivers include overfishing and the degradation and loss of habitat. Habitat losses relate to hydroelectric dam development, particularly on the upper Qiantang River, which upset ecological conditions necessary for spawning; pollution from industrial and domestic sources; water diversions from nursery areas to support agriculture and aquaculture needs; and land reclamation in Puoyang Lake which, by the mid-1980s, removed more than 800 square kilometers of productive shad nursery. In 1991, the YRFMC convened a conference on conservation of the Yangtze River shad resource and rec-



COURTESY OF THE YANGTZE RIVER FISHERIES INSTITUTE

VILLAGERS SEINE IMMATURE SHAD in Pouyang Lake, using a beach seine. The lake, which drains into the Yangtze River, is the preferred rearing grounds for these young fish, whose parents spawned in the Ganjiang River.

Why An English Name (Reeves) for a Chinese Fish?



COURTESY OF THE BRITISH MUSEUM OF NATURAL HISTORY

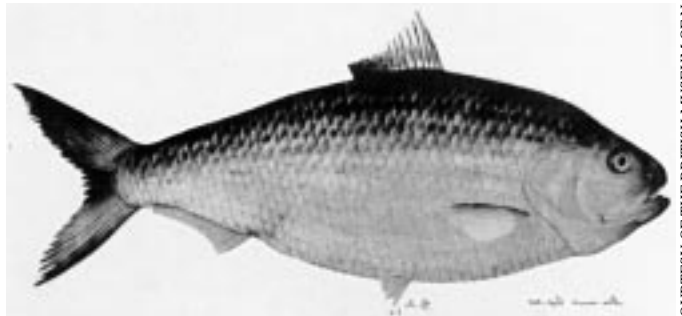
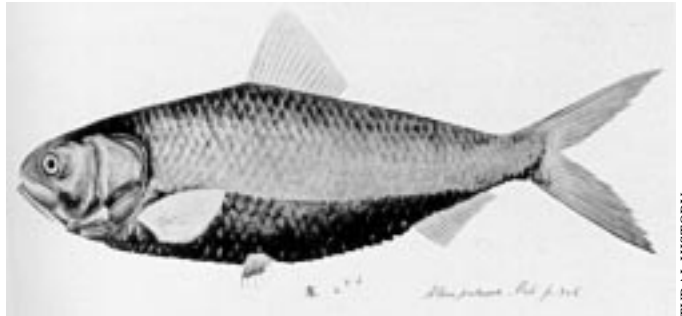
JOHN REEVES (1774-1856), from whom the Chinese shad, *Tenualosa reevesii*, take their scientific and common English names, was one of the foremost collectors of natural history specimens in southern China in the early 19th century.

of Chinese culture and natural history. He did not return finally to England until 1831, after he had served three tours in China of about five years each.

Reeves' notebooks show that by June 1828, or perhaps earlier, he had begun commissioning fish drawings, and many of these (three sets) are now at the Zoological Library of the British Museum of Natural History. A fourth set is located in the library of the Zoological Society of London. Among these

John Reeves was a Tea Inspector for the Honorable East India Company who was stationed in Canton starting in 1812. Understanding that more precise knowledge of plants and animals could add to their coffers, the Honorable East India Company actively supported detailed study of plants and animals. Reeves worked in Canton (Guangzhou) during the tea season and other times at Macao. His duties as inspector were not time-consuming or difficult, so he found time to investigate many aspects

intricate drawings were two of the Chinese shad, once thought to be different species, but now both identified as *T. reevesii*. The two shad, formerly identified as *Alosa palasah* (Russell) (TOP) and *A. reevesii* (Richardson) (BOTTOM) were drawn by two different Chinese artists, Akew and Akut, respectively in 1828. These artists were paid one dollar for three drawings (the original and two copies), and Akut did 54 drawings in 48 days--about one drawing a day.



COURTESY OF THE BRITISH MUSEUM OF NATURAL HISTORY

REEVES FISH DRAWINGS of the Chinese shad. These two drawings, Reeves numbers $\beta 51$ (TOP) and $\alpha 8$ (BOTTOM), now numbered BMNH.1963.8.20.1 and BMNH.1963.8.20.3, respectively, were produced by two Chinese artists, Akew and Akut, in 1828.

ommended that the Chinese central government enact legislation to prevent all further harvest of Reeves shad and raise its protected classification.

Aquaculture and Breeding Efforts

In efforts to save the resource and rebuild shad stocks, Chinese researchers have conducted numerous attempts to propagate shad. According to an old Chinese proverb, "Give a person a fish and he will have food for a day; teach him to grow fish and he will have food for a lifetime."

In 1963, two-month-old fingerling shad were raised from eggs, and by 1982, thousands of 100-day-old juveniles were reared. Large-scale culture efforts were hampered by lack of wild brood fish, which were needed to provide eggs, and the difficulty handling this delicate fish. Despite these difficulties, successful experiments in 1963 and 1982 led to attempts to rear shad from eggs to adults in ponds and to use domesticated broodstock for egg production.

Outside support is essential to save this valuable resource.



COURTESY OF THE YANGTZE RIVER FISHERIES INSTITUTE

A CREW SEINES SHAD brood fish from domestication ponds at Dongguan. Shad were raised to 6 years of age and induced to spawn using long-term release hormones injected into their muscle. These experiments continue a tradition of aquaculture in China which is some 4,000 years old.

Successful experiments on domestication of Reeves shad in brackish water ponds were achieved by the senior author and his colleagues during 1987-1996. Shad broodstock were thus raised to 6 years of age, achieving average body lengths of 428 millimeters and weights of

1,590 grams. Domesticated parents were successfully induced to spawn using long-term release hormones, and yearling progeny attained a yield of 1,170 kilograms per hectare with an average weight of 203 grams per fish and a survival probability of 92 percent. These experiments suggest the feasibility of artificial culture and breeding of Reeves shad and demonstrate good growth potential in ponds.

Future Prospects

In addition to enforcing management measures and fishing regulations and striving towards habitat improvements, large-scale culture of Reeves shad, using domesticated or wild brood sources, may provide a fundamental means for stock recovery. This technique has proven successful in the Susquehanna River, USA, where an average annual stocking of 10 million larvae of American shad (*Alosa sapidissima*) has produced a large and growing population of returning adult spawners. Development of commercial culture of Reeves shad in pond environments can also help to meet market demands for this valuable fish while reducing dependence on commercial fisheries.

The authors have developed an initial 10-year recovery plan for Reeves shad in select tributaries of the Yangtze River



COURTESY OF THE YANGTZE RIVER FISHERIES INSTITUTE

CHINESE HARVEST SHAD FRY using beach seines.

Protection of Aquatic Resources in the Yangtze River

The Yangtze is one of the great rivers of the world and the longest in Asia. From its origins in the highlands of Tibet, the Yangtze courses 6,300 kilometers to the China Sea near Shanghai. The Yangtze River drains about 1.8 million square kilometers with 53 major tributaries including 26 drainages greater than 10,000 square kilometers. The largest of these are the Yalong, Ming, Dadu, Jialing, Wu, Yuan, Han and Gan rivers. In 1989 there were about 53,200 man-made reservoirs and more than 1,900 natural lakes, 28 of which are over 70 square kilometers.

About 370 fish species are recorded from this river system including important anadromous and semi-anadromous resources. The Yangtze is home to several of China's unique aquatic species, many of which are considered threatened or endangered. These include the Baiji dolphin (*Lipotes vexillifer*), Chinese sturgeon (*Acipenser sinensis*), Dabry's sturgeon (*A. dabryanus*), Chinese paddlefish (*Psephurus gladius*), Reeves shad (*Tenualosa reevesii*), and the Chinese sucker (*Myxocyprinus asiaticus*).

The Yangtze Valley is known as China's "cradle of freshwater fisheries production," accounting for as much as 60 percent of the total national output. Fishery production peaked in 1954 at 450,000 metric tons but decreased to less than half that by the early 1980s. Declines in fishery production and diversity in the Yangtze River are related to several factors, including:

- Blockage of fish migrations by isolation of lakes from rivers caused loss of recruitment. More than 7,000 drainage sluices were constructed since the 1950s with only the largest lakes still connected to the Yangtze.

- Over 50,000 dams were constructed, including the Gezhouba Hydroelectric project on the mainstem at Yichang in 1981, thus interfering with migratory fish passage and altering ecological conditions necessary for spawning of many species.

- Large areas of land were reclaimed from lakes through diking in order to meet growing agricultural demands. This greatly reduced fish spawning and nursery areas.

- Rapid industrial development of the Yangtze Valley led to increases in wastewater discharges. In 1989 it was reported that 21 cities accounted for over 2,000 pollution sources.

- Fine-mesh fishing gears aimed at juvenile stages caused severe overfishing.

Fishery agencies and laboratories in China are conducting considerable research on the conservation of Yangtze fisheries and their habitats and they are urging other government departments to recognize fishery needs in future water-related development projects.

In 1985, the Chinese central government issued new fishery laws which included many regulations aimed specifically at protecting Yangtze River resources. In recent years the government and related departments have established the Baiji dolphin protection zone, a Chinese sturgeon hatchery and release station, and a Reeves shad experimental cultural station. With its long and successful history in fish farming, China views fish culture as a major means of easing reliance on wild fish populations and as a tool for stock replenishment.

- R. St. Pierre and W. Hanping

which involves relocation and expansion of culture facilities, large-scale hatchery production, mass marking, and stocking into quality nursery habitats. Extensive

monitoring of survival and recruitment, and continued bans on all shad fishing, are also recommended. Outside support is essential to save this valuable resource and

potential international funding sources are encouraged to contact the authors.

The Authors

WANG HANPING is associate professor at the Yangtze River Fisheries Institute (YFI), a laboratory of the Chinese Academy of Fishery Sciences. He has been doing research on the ecology, domestication and induced breeding of Reeves shad for more than 10 years, publishing 20 papers in this field. Wang is currently preparing to investigate the genetic differences among coastal populations of Reeves shad. Contact the author at YFI, Shashi 434000, Hubei, China (Fax 716-822- 8212).

RICHARD ST. PIERRE is the Susquehanna River Fisheries Coordinator for the U. S. Fish and Wildlife Service and a Shad Foundation trustee. He negotiates fish passage development and manages a multi-agency 30-year-old effort to restore American shad and other migratory fishes to their historic spawning range above dams in the Susquehanna River. For information contact the author at 1721 North Front Street, Harrisburg, Pennsylvania 17102, USA or via e-mail at R5FFA_SRC@mail.fws.gov.

Further Reading

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Shad Bites

American Shad Regulations Extended For U.S. East Coast States

The Shad and River Herring Management team of the Atlantic States Marine Fisheries Commission extended its 90-day emergency action on March 19 to maintain American shad (*Alosa sapidissima*) regulations or perhaps establish more restrictive regulations until October 27. This emergency action is required for all U.S. Atlantic states from Maine to Florida because of

the uncertain status of several shad stocks and mounting pressure from fishers to re-open or expand fisheries.

Ichthyologists Meet In Seattle

Several international scientific societies will hold their annual meetings together at the University of Washington in Seattle, Washington, U.S.A., June 29-July 2. The American Society of Ichthyologists and Herpetologists, the parent society, will also host the Herpetologists' League, the Society for the Study of Amphibians and Reptiles, the Early Life History Section of

the American Fisheries Society, the American Elasmobranch Society, and the Gilbert Ichthyological Society. Altogether, says Ted Pietsch, a conference organizer, "we'll have about 2,000 people here from all over the world for a week of scientific talks and various social events."

For further information see the World Wide Web pages at <http://artedi.fish.washington.edu/asih/asih97.html> or contact Art Kendall; National Marine Fisheries Service, Alaska Fisheries Science Center; 7600 Sand Point Way NE, Bin C15700, Building 4; Seattle, WA 98115; (206) 526-4108; kendall@afsc.noaa.gov.

NEW CHARTER MEMBERS OF THE SHAD FOUNDATION

The Shad Foundation welcomes its new individual and corporate members and invites you to become a charter member*.

James Anderson, Seattle, Washington, USA
Sandra Geddes, Potomac, Maryland, USA
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Charles R. Weaver, Stevenson, Washington, USA
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George Bernard, Wallingford, Connecticut, USA
John Waldman, New York, New York, USA
Joe Purcell, Grahamsville, New York, USA
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William A. Richkus, Columbia, Maryland, USA
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Kathryn Hattala, New Paltz, New York, USA
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Joseph W. Smith, Beaufort, North Carolina, USA
Neil McNeill, Beaufort, North Carolina, USA
Delaware River Shad Fishermen's Association, Bethlehem, Pennsylvania, USA
Tom Lake, Wappinger Falls, New York, USA

**Charter membership is open through 1997*

5/97

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SHAD(S) OF INTEREST					
INTEREST(S) IN SHAD (examples: biology, sports fishing, commercial fishing, history, etc.)					

Make your check or money order for \$15 U.S. payable to THE SHAD FOUNDATION, P.O. Box 21748, Seattle, WA 98111-3748 USA

Shad Foundation Display Appears at Shad Festivals

The Shad Foundation's interactive educational display, which features a map of the distribution of Alosinae around the world, a catalog of the various shad species, and a "mystery shad" door for kids, is making its rounds at several festivals and events on the U.S. east coast this spring. Among these events were the first Rappahannock Shad Festival in Fredericksburg, Virginia, the Bethlehem Shad Festival in Bethlehem, Pennsylvania, and the grand opening of the fish lift at Holtwood Dam in Pennsylvania.

To present the display at your event contact Richard Hinrichsen at (206) 616-7449 or send e-mail to hinrich@cqs.washington.edu.

Menhaden Fishermen Record Chanties

The Northern Neck Chantey Singers, a group of retired menhaden fishermen in Virginia, recently recorded 15 work songs on cassette, "See You When The Sun Goes Down." The chantey singers were organized in 1991 by William A. Hudnall, a retired fishermen, to re-create the songs they once sang for motivation as they hauled in their nets loaded with menhaden.

Hudnall said that the lyrics needed to be cleaned up somewhat for family audiences. "When we were working we were out a thousand miles from nowhere," he explained.

The group includes Selby Basker,

James Cain, James U. Carter, William O. Carter, E. B. Chewing, Eddie Clark, Josh Curry, Calvin Hill, Ellsworth Landon, Richard Tarleton, Edward Taylor, Lloyd Warner, Capt. Charles Winstead, and William A. Hudnall.

To order a tape or book a performance, contact William A. Hudnall, Route 3, Box 225, Heathsville, Virginia, USA 22473 (804) 453-7901. (Price \$10 U.S.)



E.C. FORD COLLECTION

FISHERMEN sang chanties while hauling in a net loaded with menhaden.

Submissions

Contributions should be double-spaced. Submissions via e-mail or on disk (Mac or DOS) are encouraged. If e-mailing, you may need to split it up and send it as several messages. No message should exceed 1.7 megabytes. Scanned photographs should be e-mailed individually. Direct your contributions to Richard Hinrichsen, Editor-In-Chief, The Shad Journal, P.O. Box 21748, Seattle, WA 98111-3748 or to the e-mail address: hinrich@cqs.washington.edu.

Letters to the Editor and Articles. The Journal publishes letters, commentaries, histories, scientific articles, interviews, reviews, and philosophical and methodological items related to shad the world over. There are no page limits but authors are asked to edit their submissions for clarity and precision. Previously published items from other sources can be republished in the Journal if the contributor obtains permission of the author and the copyright holder, and clearly identifies the original publication.

Please do not include footnotes or references in the text. Choose 4-5 of the most relevant references for inclusion at the end of the article. References may include a World Wide Web address. Write a brief biographical statement which includes your interest in shad, and current work. Please include your e-mail address, fax number, phone number, and postal address.

News Briefings (Shad Bites). Submit news articles on developments relating to shad. For upcoming meetings, submit a brief description, including title, a short paragraph on objectives and content, dates, location, registration requirements, and the meeting contact person's name, street address, and phone/FAX/e-mail address.

Obituaries. The Foundation will honor the memory of members and friends through obituaries. The obituary should describe the person's history (date and place of birth, professional address and title) and his/her involvement with shad.

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