



Taura Syndrome Virus, United States

June 10, 2004

Impact Worksheet

Summary: Taura syndrome (TS) has been diagnosed in farmed Pacific white shrimp (*Litopenaeus vannamei*) in Cameron and Willacy counties, Texas. This is the second outbreak of TS in Texas; the first outbreak occurred in farmed shrimp along the southern and central Texas Gulf coast in 1995. The first reported occurrence of TS in the US was in Hawaii in 1994.

Taura syndrome is caused by the Taura syndrome virus (TSV) and has caused outbreaks in farmed shrimp in the Americas, Indonesia and China since first being described in Ecuador in 1992.

The US ranks 6th in world production of shrimp and prawns. Texas had 36 shrimp farms in 2002 that produced approximately 9 million pounds of shrimp.

How extensive is Taura syndrome in the US, and what was the US' disease status prior to the outbreak?



TS has been diagnosed in farmed Pacific white shrimp (*Litopenaeus vannamei*) in Cameron and Willacy counties, Texas. As of June 15, 2004, TSV has been confirmed on four premises in 12 ponds containing 18-20 million shrimp. Shrimp mortality has ranged from 80-90 percent. This is the second outbreak of TS in Texas; the first outbreak occurred in farmed shrimp along the southern and central Texas Gulf coast in 1995. During the 1995 outbreak, TS was disseminated through movement of infected post-larvae and broodstock.

On June 7, 2004 the Texas Parks and Wildlife Department placed quarantines on the affected facilities prohibiting water discharge and restricting shrimp movement

to processing facilities only. Farmed shrimp in Texas are considered exotic species and therefore are regulated to prevent their release into coastal waters and estuaries where native shrimp are established. The first reported occurrence of TS in the US was in Hawaii in 1994. In addition to Hawaii and Texas, outbreaks of TS have occurred in farmed shrimp in Florida and South Carolina.

TS was first described in farmed shrimp near the Taura River, Ecuador in 1992. Since 1992, TS outbreaks have been reported in Colombia, Honduras, Guatemala, Brazil, Mexico, Costa Rica, Peru, Nicaragua, Belize, Indonesia, Taipei China, and the US. TSV has been reported in wild shrimp in the Taura River region of Ecuador, El Salvador and southern Mexico; however, little is known about the distribution and prevalence of TSV in wild shrimp. TS is an OIE List B notifiable disease.

Sources: OIE Disease Information Report, Handistatus II; An Initial Survey of Aquatic Invasive Species Issues in the Gulf of Mexico Region, Gulf of Mexico Program, US Environmental Protection Agency, August 2001. Taura Syndrome Virus Fact Sheet, Gulf States Marine Fisheries Commission, http://nis.gsmfc.org/nis_factsheet.php?toc_id=6, accessed June 15, 2004.

What is Taura syndrome?

TS is caused by the Taura syndrome virus (TSV), a single-stranded RNA virus in the family *Picornaviridae*. TS generally occurs over the course of a single molt in juvenile shrimp and may have a sudden onset within 5-20 days or a more chronic course of several months. Signs of infection include weakness, a soft shell, an empty digestive tract, and diffuse expansion of red chromatophores in the appendages. Mortality can vary from 5-95 percent.

Farmed shrimp species vary in their susceptibility to TS. Pacific white shrimp (*L. vannamei*), and the white shrimp (*L. schmitti*), are the most susceptible shrimp species. There are three native shrimp species of commercial importance in the Gulf of Mexico, brown shrimp (*Farfantepenaeus aztecus*), pink shrimp (*F. duorarum*), and white shrimp (*L. setiferus*). Experimental studies have found these three species are susceptible to TS.

Potential routes for introduction of shrimp viral diseases to aquaculture facilities include infected broodstock, contaminated vehicles, containers, and other fomites, and transfer by birds and bird feces. For additional information about potential routes of shrimp viral disease transmission, please see the April 23, 2004 impact worksheet about white spot disease of shrimp in the US. This worksheet can be found at http://www.aphis.usda.gov/vs/ceah/cei/wsd_us_0404.htm.

Sources: Brock JA. Special topic review: Taura syndrome, a disease important to shrimp farms in the Americas. World J Micro Biotech 1997;13:415-418. Fact Sheet for Taura syndrome virus. Gulf States Marine Fisheries Commission, http://nis.gsmfc.org/nis_factsheet.php?toc_id=6, accessed June 14, 2004. An Initial Survey of Aquatic Invasive Species Issues in the Gulf of Mexico Region, Gulf of Mexico Program, US Environmental Protection Agency, August 2001, <http://nis.gsmfc.org/pubs/Initial%20Survey%20of%20Invasive%20Species.pdf>, accessed June 15, 2004.

What is the size of the shrimp industry in Texas and the US, and what are shrimp exports from Texas and the US?

Texas had 36¹ shrimp farms in 2002 that produced approximately 9 million pounds of shrimp (Table). Commercial landings of shrimp in Texas totaled 229.4 million pounds in 2002. The value of Texas shrimp exports in 2002 decreased due to a substantial price decrease. This price decrease was a result of increased imports from China, Vietnam, India and Brazil. (Note: The state-specific export data is based on state of export, which is not necessarily the same state in which the product was produced.)

Shrimp production and exports, Texas and US

	Aquaculture Production		Commercial Landings ²		Exports ³	
	2001 ²	2002	2001	2002	2001	2002
Value (\$1,000)						
US total	27,808	NA	568,547	460,878	93,514	85,632
Texas	NA	27,000 ⁴	495,642	378,475	15,515	2,565
Quantity (1,000 pounds)						
US total	7,953	15,352 ¹	324,481	316,787	23,955	21,972
Texas	NA	9,000 ⁴	256,215*	229,476*	NA	NA

*Used counts of Gulf region for Texas quantity

NA, data not available

Sources: ¹USDA, NASS, 2002 Census of Agriculture; ²NOAA, National Marine Fisheries Service. 2002; ³US total from World Trade Atlas, US Edition, Texas exports, State Export Edition; ⁴Texas Agricultural Experiment Station, Shrimp Aquaculture Federal Initiative Accomplishments 2002, October 2003, <http://agresearch.tamu.edu/FedInit/Shrimp.htm>, accessed June 15, 2004.

What is the US' place in the international market for shrimp?

In 2001, the US was the 6th largest producer of shrimp and pawns, accounting for 3.6 percent of world production with 332.4 million pounds of shrimp and prawns.

Source: United Nations FAO

CEI's plans for follow up:

No follow-up is currently planned regarding the outbreak of TSV in Texas. If you need more information or if you'd like to comment on this worksheet, you may reply to this message, or contact Kathy Orloski at (970) 494-7221 or Liz Williams at (970) 494-7329.