

## The Gulf Menhaden; *Brevoortia Patronus*. Part Three: Controversy in the Fishery

As the Gulf menhaden fishery has become a successful and thriving business, concerns regarding overharvesting, bycatch and ecosystem health have been voiced. This article examines some of the controversies that exist in the menhaden fishery and reports the positions taken by the various sectors.

Many concerns exist about potential overharvesting. About 977 million pounds of Gulf menhaden are harvested annually for the most recent rolling five-year average (2003-2007). The question is whether or not this amount is sustainable. Menhaden are a short-lived fish, with a maximum age of six years and an average lifespan of less than half this. Sexually mature at age 1; each female Gulf menhaden produces between 22,000 and 122,000 eggs, which totals between 50 and 150 trillion eggs for the population. Since 1964, a portion of each harvested menhaden set has been sampled and aged, and the data from 2008 indicates that 95 percent of all fish caught were ages 1+ through 2+. The harvest of these age classes has been relatively constant throughout the history of the fishery, indicating that females are producing more than enough offspring to replenish the stock.

Scientists make yearly species stock assessments, called biological reference points, to ensure healthy populations of most fish. Two valuable reference points computed are the fishing mortality rate and the population fecundity. For each reference point, target values and limit values are calculated to give scientists an idea of where mortality and fecundity stand in terms of the actual value (terminal value). The terminal estimate should be close to the target value, with a low fishing mortality value and a high population fecundity value being desirable. In 2007, scientists Douglas Vaughan, Kyle Shertzer and Joseph Smith published the first biological reference points for Gulf menhaden. For fishing mortality, the target ( $F_{\text{Target}}$ ) benchmark was set at 0.94 and the fishing mortality limit ( $F_{\text{limit}}$ ) set at 1.46, with the terminal value ( $F_{\text{Terminal}}$ ) estimated at 1.09. According to Vaughan and his colleagues,  $F_{\text{Target}}$  is the fishing mortality rate corresponding to the 75<sup>th</sup> percentile of the annual



Crew of menhaden steamer surrounding a school with purse-seine. Sketch by Capt. B. F. Conklin. Photo Credit: NOAA National Marine Fisheries Service

fecundity potential ratio, which is the equilibrium fecundity per recruit at  $F = 0$ . The  $F_{\text{limit}}$  corresponds to the median of the annual fecundity potential ratio (Vaughan et al. 2007). The population fecundity target and limit were set at  $\Psi_{\text{Target}} = 68.68$  and  $\Psi_{\text{Limit}} = 34.34$ , with the  $\Psi_{\text{Terminal}}$  estimated at 63.91. To compute the population fecundity target, the median fecundity per recruit is multiplied by the median annual recruitment, and the population fecundity limit corresponds to half of the target (Vaughan et al. 2007). In regards to both reference points, scientists report that both terminal values are acceptable and show that Gulf menhaden are not currently overfished and have a healthy population. Their conclusion states specifically: "In summary, Gulf menhaden have higher natural mortality and are shorter lived than Atlantic menhaden, and as a result there are rapid annual changes in the Gulf menhaden fishable stock. The Gulf menhaden fishery is currently fully exploited and the population appears reasonably stable in view of the age composition, life span, and effects of environmental factors. Annual production, fishing effort, and fleet size appear reasonably balanced and risk of overfishing low with 1997–98 fleet size and recent mean recruitment. Given the variability in the data and model estimates, recent landings below long-term MSY (and well below high landings of the mid-1980s) suggest that the stock appears reasonably stable."

As with all other fisheries, bycatch is another aspect of the Gulf menhaden fishery that receives scrutiny. Although there are typically no observers on board Gulf menhaden vessels, it has been reported that bycatch within the fishery is below 1 percent of the total harvest.

Several studies have been conducted on bycatch in the fishery: In 2001, scientists from Louisiana State University published research on this issue regarding sharks. Over the 1994 and 1995 seasons, Janaka De Silva, Richard Condrey and Bruce Thompson observed sharks (mostly blacktip sharks) in 30 percent of the sets and estimated a bycatch of 30,000 sharks for the entire fishery over the same two-year period. The scientists determined that the sharks were either feeding on the menhaden and/or were using the area as a spawning ground.

The Gulf menhaden fishery is considered relatively clean in terms of bycatch since menhaden schools can be identified and caught with purse seines, eliminating ocean floor disturbance and reducing untargeted organisms. Thus, in such a large fishery, the amount of bycatch caught in Gulf menhaden seines seems to be as low as realistically possible, and menhaden industry sources have pointed out that the 2002 stock assessment report for Gulf sharks found, that the number of sharks caught in the Gulf menhaden fishery was low enough so as not to be a factor in the calculations. Another concern with the pogy fishery revolves around how the removal of significant biomass affects the health of the ocean. Groups such as Save the Bait and Healthygulf.org are concerned that removing nearly one billion pounds of menhaden each year - fish that help make up the base of the food web - is stressing other aquatic life. A host of organisms incorporate Gulf menhaden in their diets, including sharks, trout, drum, sea birds, dolphins, as well as other opportunistic feeders. However, these organisms do not feed exclusively on Gulf menhaden (and nothing seems to feed exclusively on the older menhaden that comprise the reduction fishery), so quantifying the impact of their removal is difficult.

Groups like Save the Bait have lobbied for individual Gulf states to limit how much menhaden a state can harvest, to ensure a healthy population for both menhaden and for the fish that feed upon them. Recently Texas, through the Texas Parks and Wildlife Commission, became the first Gulf state to set a cap for menhaden in state waters. Organizations are hoping that other states will follow suit in the near future, though it is uncertain when or if this will happen.

In general, the science that has been published regarding Gulf menhaden indicates that the current fishery is sustainable and populations are in good shape. In fact, Omega Protein, the Gulf's largest menhaden company, was recently honored with the 2009 Friend of the Sea Award for its efforts towards sustainability and environmental stewardship, due in part to its low bycatch, unobtrusive sampling methods and detailed historical records of sustainable harvests. As with other targeted species, more research and continued monitoring of the Gulf menhaden will ensure that this fishery can continue for years to come.

- Will Sheftall IV

#### Sources

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#### Gustav/Ike Fisheries Assistance

The Gustav/Ike Fisheries Assistance Program has officially begun. The Louisiana Department of Wildlife and Fisheries (LDWF) launched a \$30 million reimbursement program, designed in collaboration with the Louisiana Recovery Authority (LRA), to assist the commercial fishing industry that suffered damages from Hurricanes Gustav and Ike this past year. The program, created with other state partners, is designed to ensure these funds are invested back into the fishing industry that is so vital to our state and our nation. Funding for this program comes from a \$40 million appropriation by Congress and allocated to Louisiana for fisheries disaster assistance to the commercial fishing industry under sections 308(b) and 308(d) of the Interjurisdictional Fisheries Act (16 U.S.C. 4107) (NOAA Grant Number NA09NMF4520024).

More than 4,000 packets were mailed to commercial fishermen and wholesale/retail seafood dealers who were determined prequalified for this program based on the following criteria:

1) Reported sales or purchases on LDWF trip tickets during Sept. 1, 2005, through Aug. 31, 2008, (and received by LDWF by Nov. 30, 2008) for crab, oyster, shrimp, saltwater finfish or menhaden, and

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2) Held a 2008 resident Louisiana commercial fishing or wholesale/retail dealer license.

After completely filling out the forms, participants must return the forms in the business-reply envelope provided no later than Sept. 30, 2009. Once qualified by returning this form, participants will have until Sept. 30, 2010, to make reimbursable purchases.

The program will provide reimbursement to Louisiana resident commercial fishermen and wholesale/retail seafood dealers who provide acceptable receipts/invoices documenting expenses of eligible items. Examples of acceptable recovery related expenses are: 1) Repairs to boats, motors and engines; 2) Drydocking expenses; 3) Rental of freezer trucks and/or generators; and 4) Cost of insurance premiums. Original receipts are required, not copies.

The program will be administered through the South Central Planning and Development Commission (1-800-630-3791) or (985-655-1051). [www.scpdc.org/fisheriesassistance](http://www.scpdc.org/fisheriesassistance)

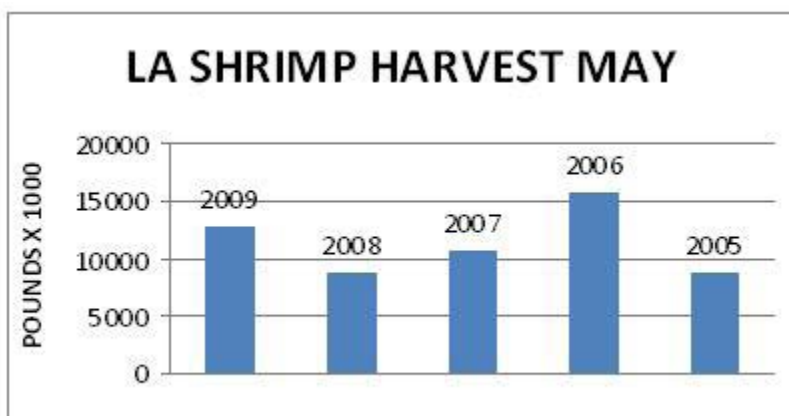
A satellite office will be set up in Lake Charles at 120 Pujo St. and will be opened the second Tuesday and Wednesday of each month for those needing assistance.

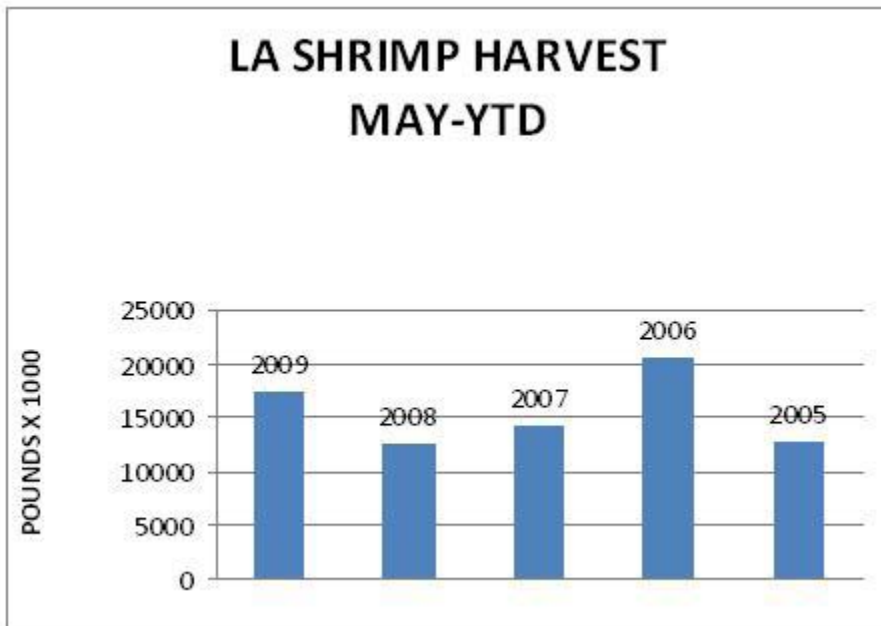
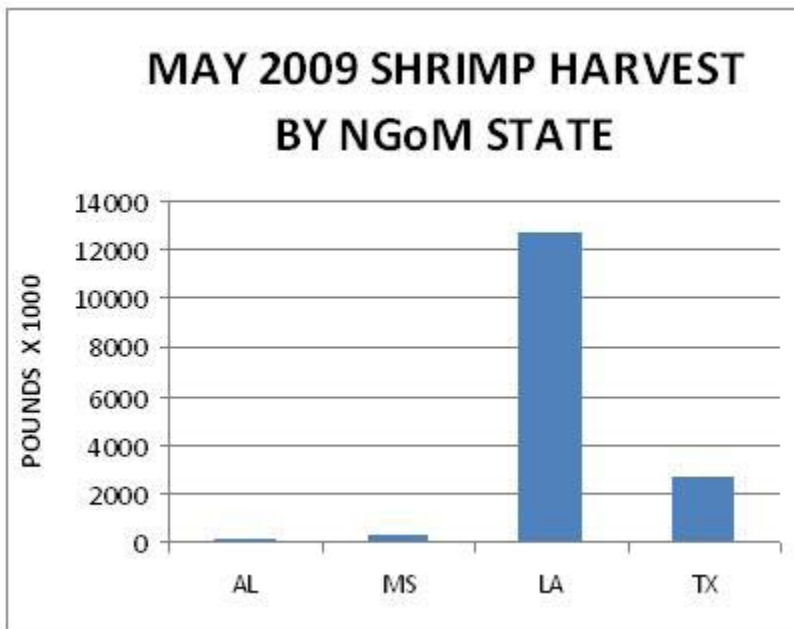
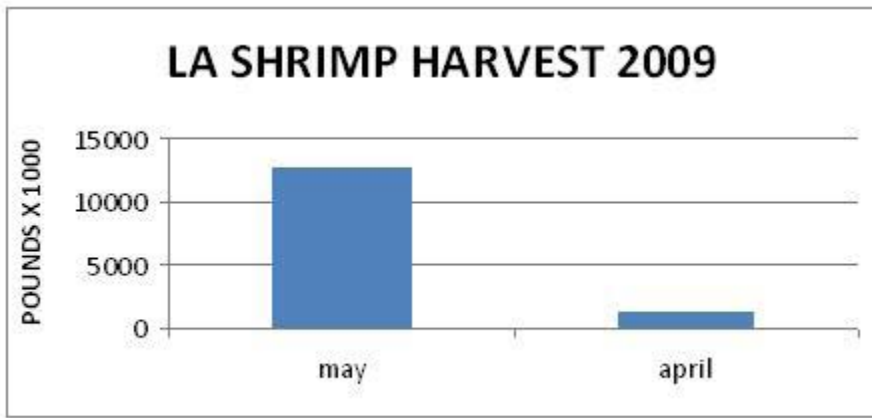
- Kevin A. Savoie

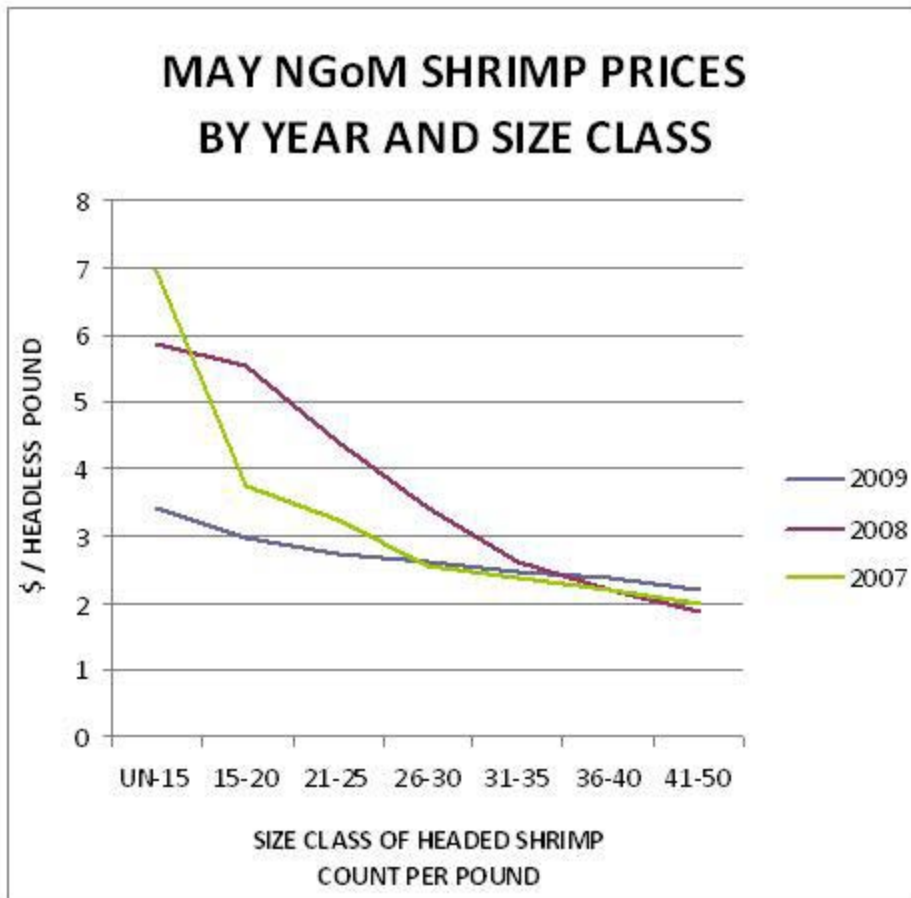
### Louisiana Shrimp Watch

Louisiana specific data portrayed in the graphics are selected from preliminary data posted by NOAA on their Website. All data portrayed are subject to final revision and approval by NOAA. Shrimp landings are ex-vessel prices, inclusive of all species harvested. Missing, inadequate or withheld reports are portrayed as 'zero' in these graphics. Price graphics reflect central Gulf states only (Texas and Florida are reported independently). For more information, please refer to: [http://www.st.nmfs.noaa.gov/st1/market\\_news/index.html](http://www.st.nmfs.noaa.gov/st1/market_news/index.html)

- Rusty Gaudé







### New Fisheries Lab Opens on Grand Isle

The Louisiana Department of Wildlife and Fisheries officially opened the \$23 million, state-of-the-art Fisheries Research Lab on Grand Isle this month. Secretary Robert Barham and Assistant Secretary Randy Pausina were joined by area legislators, local officials and the community of Grand Isle for the ribbon-cutting ceremony.

Governor Bobby Jindal said, "The Fisheries Research Lab will go a long way to help protect our state's aquatic resources. Indeed, the new lab will help LDWF better manage and monitor fisheries resources across the state which will benefit our fishermen, the tourism industry and our coastal communities."

The 35,000 square foot Fisheries Research Lab complex is located on a seven-acre site that fronts on Caminada Bay on the north shore of Grand Isle. The site is part of a 30-acre parcel of land owned by the Grand Isle Port Commission.

"This project is one of my proudest accomplishments in my tenure at Wildlife and Fisheries," said LDWF Secretary Robert Barham. "This is one of the finest research facilities in the United States and will help Louisiana maintain its dominance and prestige as one of the greatest seafood producers in the world. I welcome all Louisianians to visit the Fisheries Research Lab in the months and years to come as we continue to fulfill our mission of monitoring, managing and protecting the living aquatic resources for all."

The new lab will support resource sampling and research work performed by Office of Fisheries staff, which drives the decision making process for management of the resources within the entire state. Biologists based in Grand Isle study a variety of marine species including finfish, crab, shrimp and oysters and their associated habitat, which are all vital to the economy of Louisiana.

The Sport Fish Restoration Program and the Artificial Reef Program for the state will also be based at the new lab. These programs help provide boating and fishing access opportunities for the recreational and commercial fishers of Louisiana.

To ensure that the facility is hurricane and flood proof, LDWF specified that dredged material from construction of the marina be used to build the site up to six feet above sea level, that buildings were raised to 12 feet above the new grade, with the finished floors being 18 feet above sea level; that all elements at grade are designed to “wash out” during a high flood event; and that all buildings are constructed of concrete columns, beams, floors and walls to withstand 150-plus MPH winds.

Additionally, the lab will provide a base of operation for the rehabilitation of stranded and out-of-habitat marine species such as manatees, dolphins and sea turtles. The new facility will allow LDWF to continue to build on the cooperative working relationships with the Audubon Aquarium of the Americas, the Louisiana Marine Mammal and Sea Turtle Rescue Program.

Facility space is available in the visitors' lab to accommodate the research needs of any public group or visiting scientist and can provide meeting space for up to 100 people. Activities the lab can accommodate include but are not limited to law enforcement training, educational high school programs such as 4-H, and graduate-level study programs with Louisiana State University, Southeastern Louisiana University and Nicholls State University, among others.

### **Deepwater Grouper Commercial Fishery Closed**

The commercial fishery for deepwater grouper in the Gulf of Mexico is closed, effective 12:01 a.m. (local time) June 27, 2009, through December 31, 2009. NOAA Fisheries has determined the 2009 commercial quota of 1.02 million pounds of deepwater grouper will be reached by this date. During the closure period, no person aboard a vessel for which a commercial permit for reef fish has been issued may fish for or retain misty grouper, snowy grouper, yellowedge grouper, Warsaw grouper, or speckled hind in federal waters of the Gulf of Mexico.

Closure of the commercial deepwater grouper fishery in the Gulf of Mexico complies with regulations implemented under the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico and is necessary to protect the Gulf reef fish resource. Additionally, the Louisiana Wildlife and Fisheries Commission authorized LDWF Secretary Barham to modify this closing date for the commercial deep-water grouper season in Louisiana waters to comply with changes or modifications in season dates in federal waters. The commission's actions ensure that regulations in state waters will mirror regulations of the National Marine Fisheries Service for federally managed waters.

The operator of a vessel with a valid commercial reef fish permit having deepwater grouper aboard must have landed and bartered, traded or sold such deep-water grouper prior to 12:01 a.m., local time, June 27, 2009. The prohibition on sale or purchase does not apply to sale or purchase of deepwater grouper that were harvested, landed ashore and sold prior to 12:01 a.m. local time, June 27, 2009, and were held in cold storage by a dealer or processor.

The fishery will remain closed until 12:01 a.m., Jan. 1, 2010. During the closure, vessels with commercial quantities of reef fish on board are prohibited from retaining a recreational bag limit. Thus, a vessel may only have a commercial quantity of reef fish or a recreational bag limit of reef fish.

In accordance with an emergency rule effective May 18, 2009, once the tilefish and deepwater grouper quotas have been filled, the use of bottom longline gear to harvest reef fish in water of all depths east of 85°30'W longitude (off the Florida Gulf coast) will be prohibited. The tilefish fishery was closed on May 15, 2009, with the closure of deepwater grouper, both quotas will have been filled and the use of bottom longline gear to harvest reef fish in water of all depths east of 85°30'W longitude will be prohibited as of June 27, 2009.

### **Texas Brown Shrimp Opening July 15**

The Gulf of Mexico commercial shrimp season for Texas state and federal waters will open 30 minutes after sunset July 15. The opening date is based on an evaluation of the biological, social and economic information to maximize the benefits to the industry and the public, according to the Texas Parks and Wildlife Department Coastal Fisheries Division.

The shrimp fishery is closed annually off Texas to allow brown shrimp to reach a larger and more valuable size prior to harvest, and to prevent waste of brown shrimp that might otherwise be discarded due to their small size.

The Texas closure in federal waters ranges from 45 to 90 days. The closing and/or opening dates of the Texas closure are based on the results of biological sampling by the Texas Parks and Wildlife Department (TPWD). NOAA Fisheries Service opens federal waters off Texas when the state of Texas opens its territorial waters. Texas opens state waters based on projections of when the mean size of brown shrimp leaving the estuaries is 112 mm total length, during a period of maximum duration ebb tides. TPWD has projected the criteria to end the Texas closure will be met on July 15 this year. Coastal Fisheries Division Science and Policy Director Robin Reichers reports that there are good stocks of brown shrimp widely distributed in Texas Gulf waters this season.



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## THE GUMBO POT

### Shrimp Stuffed Tomatoes

6 large tomatoes  
2 pounds shrimp, peeled  
¼ cup red onion, minced  
6 cloves garlic, minced  
1 tablespoon fresh thyme, minced  
1 tablespoon flat-leafed parsley, minced  
¼ cup zucchini, cut in ¼ inch cubes  
½ cup grated parmesan cheese  
¼ cup olive oil  
Juice of one lemon  
Salt and red pepper flakes

Preheat oven to 400 degrees. Cut a ¼ inch slice from the smooth end of each tomato, saving the slices, and use a spoon to scoop out all of the insides, leaving a wall about ¼ inch thick. With the stem end up, the tomatoes should sit flat in the pan. If any do not, shave off a small piece to make it level. Discard the woody core and seeds, and chop the remaining pulp and the shrimp together until they are approximately in ¼ inch pieces. Toss this mixture with the remaining ingredients and season to taste with salt and pepper. Season inside of tomatoes with salt and pepper and stuff with shrimp mixture. Cover with reserved tomato slices. This will help keep the stuffing moist during baking. Lightly oil a shallow roasting pan that can fit all the tomatoes without touching each other. Place tomatoes in pan, drizzle with olive oil, and season with salt and pepper. Place pan in oven and roast for 30-40 minutes, until tomatoes are slightly shriveled and stuffing is hot. Serve hot, room temperature, or chilled.

Recipe taken from *Louisiana Estuary Cuisine with Chef Brandon LeBlanc* produced by the Barataria-Terrebonne National Estuary Program. For ordering information go to <http://www.btneep.org>.





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