

Despite Mortality Concerns, Horseshoe Crab Blood Facility Gets Permit 20 April 2022

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By: William F. Galvin

The mortality rate when biomedical companies extract blood from horseshoe crabs was a concern expressed at the planning board's hearing for a special permit for scientific research and development for Charles River Laboratories last week. FILE PHOTO

HARWICH – Despite concerns raised about the potential “decimation” of the horseshoe crab population, the planning board unanimously approved a special permit for Charles River Laboratories International, Inc. to establish a facility to extract blood from the ancient arthropods for biomedical uses.

The Wilmington-based company was before the board on April 12 seeking a land use special permit to conduct scientific research and development from a leased building at 195 Queen Anne Rd. in the town's industrial zoning district.

Greg Marshall, general manager of Charles River Microbial Solutions, said the company has the approval from the Massachusetts Division of Marine Fisheries (DMF) to process horseshoe crabs. Charles River Laboratories is one of four companies approved by the Food and Drug Administration to provide this “life saving product to biopharmaceutical industries,” Marshall said.

Instead of developing antibodies in response to infections, horseshoe crabs have an immune system that releases proteins that can bind and kill bacteria. Limulus ameocyte lysate (LAL), which is derived from horseshoe crab blood, ensures the safety of many biopharmaceutical products by detecting bacterial endotoxins, according to a company narrative. The company plans to extract horseshoe crab blood at the Harwich facility and ship it to South Carolina, where the LAL will be extracted.

Globally, more than 55 percent of all injectable pharmaceuticals and implantable devices that come in contact with patients' blood are tested with Charles River Laboratories products, said Marshall.

Resident Sebastian Mudry took issue with the proposal, saying horseshoe crab populations have been decimated in the waters off New York and New Jersey, the Chesapeake Bay, and Delaware, where Charles River Laboratories

operates. The creatures have been around for 450 million years, but are being driven to extinction because of the value of their blood, he said. Conservation groups are taking up the battle to protect those crabs, he added.

A synthetic alternative to horseshoe crab blood has been developed, Mudry said, and 60 countries have approved its use. But scientists in this country are delaying federal approval, he said, because they want to see more data on whether the synthetic product compromises patient safety.

Resident Carol Kucha Stone said the pharmaceutical company Ely Lilly has begun using the synthetic alternative in countries outside the United States. Kucha Stone said up to 30 percent of horseshoe crabs die prematurely after experiencing the blood extraction process.

“It seems like you’re on the wrong path,” she said of Charles River's plan.

Planning board member Craig Chadwick also raised questions about the mortality rate. Marshall said the department of natural resources in South Carolina, where the blood is processed, estimates a 2 to 3 percent mortality rate, while the Atlantic States Marine Fisheries Commission estimates 15 percent, which he thinks is high. The horseshoe crab populations in northeast waters got better under the last assessment the commission conducted, he said.

“Unlike the bait harvesters, biomedical harvesters can take up to 1,000 horseshoe crabs a day,” Massachusetts Audubon Wellfleet Bay Sanctuary horseshoe crab field coordinator Abigail Costigan wrote last June in “Building A Case For Horseshoe Crab Conservation.”

“While the extraction of blood is designed to be non-lethal, it is estimated that up to 30 percent of horseshoe crabs don’t survive the process. Further, since females are bigger, they are more likely to be targeted, likely explaining the highly male-skewed sex ratio in this embayment,” she wrote.

William Crowell, the company's attorney, said the operation will have a positive effect on the economy and fit into Harwich’s ties to the ocean and fishing industry while partnering with the biomedical industry. Between 25 and 30 jobs will be created along with providing work for the licensed fishermen who will harvest the crabs.

The horseshoe crabs will be provided by Jamie Bassett of Chatham and Matthew Belson of Harwich, who own a wholesale seafood business in Chatham and deal with hard shell stock. Part of the business involves

purchasing horseshoe crabs used in fisheries for bait.

The DMF caps the number of horseshoe crabs that can be harvested for bait at 165,000 annually. There is no limit for biomedical harvests, Bassett said. The horseshoe crabs used for bait go directly into a freezer with a 100 percent mortality rate, Bassett said.

“We’re happy to move out of the bait industry and into a more sustainable fishery,” Bassett said. “This is a better purpose, and gives horseshoe crabs a round-trip ticket instead of a one-way ticket.”

Bassett said in 2011 an ad hoc fisheries group established best practice provisions for handling horseshoe crabs that they will follow. The crabs would be returned to the ocean waters within 24 hours. If weather conditions intercede, they would be stored in insulated vats that are temperature controlled. In such cases, the crabs would be out of the water for no more than 48 hours, he said.

The crabs would be harvested in Nantucket Sound to limit the time they would be out of the water getting to and from the processing plant, added Bassett.

Crowell reminded the committee they must consider whether the applicant meets the conditions for a land use special permit. He emphasized that the DMF would not have issued the permit for the processing of horseshoe crabs if it endangered their sustainability.