

READING PASSAGE 1

Cleaning Wilson Bay

There's nothing remarkable about the fish of Wilson Bay in Jacksonville, North Carolina. They have fins, two eyes, and scales in all the right places. But the mere presence of healthy, edible marine life in the bay constitutes a man-made miracle, because until recent years any life forms inhabiting the dirty bay water grew stunted and misshapen. No one dared fish, swim or waterski there. Researchers even donned special gloves to handle the water.

Not only had the bay served as a repository for the coastal city's human waste for half a century, but the water also received run-off from a nearby housing project. A U.S. military base had a further impact. The wooden pilings supporting the structure were coated in the timber preservative, creosote, which had gradually polluted the water.

When Jacksonville officials shut down the bay's sewage treatment plant in 1998 and started a new inland waste system, they felt a moral obligation to clean up the mess left behind. But the biggest problem was that no one had a clue where to start processing such seriously contaminated water.

That's where Jay Levine stepped in. Levine, a professor of veterinary science at North Carolina State University, had recently returned from France, where he had seen an aquaculture project involving oysters. From what he had observed he proposed using bivalve molluscs such as oysters and clams as part of a multi-pronged approach to cleaning the water. City officials liked the concept, but many in the public and press were not only sceptical, but downright derisive of the idea that a humble oyster could clean such severely fouled water.

Levine's plan, which was tweaked and redrawn many times as the project progressed, was to implement a kind of bioremediation - using nature to heal itself. In this case, however, nature had a kick start from science.

Levine placed plastic mesh bags of oysters high enough in the water to allow them to be bathed in sunlight. The idea was that the oysters would thrive in the warm, shallow waters and eat the material floating in the bay. The removal of unwanted waste would allow the return of the smaller links in the bay's food chain, which would then serve as a lure to increasingly larger creatures, such as fish, turtles and seabirds.

Bubbling aeration units were used to restore oxygen to the water to help the returning species breathe. 'The original goal was to pull water into the bay, but the most important benefit was delivering oxygen to the bottom,' says Pat Donovan-Potts, who became involved as a field scientist with the project. 'It had an amazing effect - it supercharged the oysters [and helped to stabilise] the bottom of the bay.'

The clean-up project didn't stop there. The team built channels and rain gardens in adjacent neighbourhoods in order to filter the contaminated run-off from the housing projects. In addition, the pilings from the military base were removed to prevent further leaching of creosote into the water. In a related project, scientists supervised the restoration of wetlands, which was carried out by local teachers and students.

Despite predictions that the oysters would die and the project fail, the oysters not only lived, but grew fat on their dubious diet. Along with this, the water habitat showed signs of revival. Faecal coliform counts (the measure of human sewage contamination) began a steady downward spiral, while marine life and birds began to return to the bay. Normal fish reappeared and key species, such as ospreys and golden eagles, were spotted nesting in the area.

Under the auspices of the Sturgeon City Institute, established to educate residents and others on environmental issues, the project has expanded from the bay into other nearby bodies of water. Staffed mostly by teenage volunteers, the institute helps test and measure how the water and wetlands respond to change. And now, the Wilson Bay Initiative, as the overall project is known, is preparing to cash in on America's passion for sushi.

A world-class aquaculturist at Wilmington's University of North Carolina, Wade Watanube, is working with Jacksonville officials to launch his first marine aquaculture project outside the university walls. The project will rear black sea bass, harvest their eggs and grow more. A recent study found there is a high demand for black sea bass for use in sushi, one of the country's most popular restaurant dishes. Initial tests will gauge whether a freestanding, profitable venture can operate successfully. Jacksonville's projects director, Glenn Hargett, is optimistic: 'If it does, then this project will have found another unintended benefit for our community.'

Questions 1-6

Do the following statements agree with the information given in Reading Passage 1?

In boxes 1-6 on your answer sheet write

- TRUE** if the statement agrees with the information
FALSE if the statement disagrees with the information
NOT GIVEN if there is no information on this

1. It is surprising that Wilson Bay now supports healthy marine life.
2. The public supported Levine's proposal for reviving the bay.
3. The plan required a number of modifications during its implementation.
4. Levine's team was the first to realise that the pilings added to the pollution.
5. Teenagers are paid to work on the project.
6. Further research is needed into the profitability of fish farming in the area.

Questions 7-11

Complete the flow chart below.

Choose **NO MORE THAN TWO WORDS** from Reading Passage 1 for each answer.

Write your answers in boxes 7-11 on your answer sheet

Cleaning up Wilson Bay

7. _____ were put into the bay inside special bags

8. _____ was mechanically added to the water and had a significant impact on the habitat

Drains and 9. _____ were used to remove contaminants from domestic waste water

The creosote problem was solved by taking away wooden
10. _____

School groups improved
11. _____ in the area

Questions 12 and 13

Choose **TWO** letters **A-E**

Write your answers in boxes 12 and 13 on your answer sheet

According to the writer, which **TWO** of the following happened as a result of the clean-up of Wilson Bay?

- A** Recreational use of the bay increased
- B** Healthy fish reappeared
- C** Important bird species were seen in the area
- D** Oysters were farmed
- E** A new housing project was built