

Read the text and answer questions 8–15.

### **Blue Crabs Provide Evidence of Oil Tainting Gulf Food Web**

by John Flesher, *Staff Writer*

Weeks ago, before engineers pumped in mud and cement to plug the gusher, scientists began finding specks of oil in crab larvae plucked from waters across the Gulf coast.

The government said last week that three-quarters of the spilled oil has been removed or naturally dissipated from the water. But the crab larvae discovery was an ominous sign that crude had already infiltrated the Gulf's vast food web—and could affect it for years to come.

"It would suggest the oil has reached a position where it can start moving up the food chain instead of just hanging in the water," said Bob Thomas, a biologist at Loyola University in New Orleans.

"Something likely will eat those oiled larvae . . . and then that animal will be eaten by something bigger and so on."

Tiny creatures might take in such low amounts of oil that they could survive, Thomas said. But those at the top of the chain, such as dolphins and tuna, could get fatal "megadoses."

Marine biologists routinely gather shellfish for study. Since the spill began, many of the crab larvae collected have had the distinctive orange oil droplets, said Harriet Perry, a biologist with the University of Southern Mississippi's Gulf Coast Research Laboratory.

"In my 42 years of studying crabs I've never seen this," Perry said.

She wouldn't estimate how much of the crab larvae are contaminated overall, but said about 40 percent of the area they are known to inhabit has been affected by oil from the spill.

While fish can metabolize dispersant and oil, crabs may accumulate the hydrocarbons, which could harm their ability to reproduce, Perry said in an earlier interview with *Science* magazine.

She told the magazine there are two encouraging signs for the wild larvae—they are alive when collected and may lose oil droplets when they molt.

Tulane University researchers are investigating whether the splotches also contain toxic chemical dispersants that were spread to break up the oil but have reached no conclusions, biologist Caz Taylor said.

If large numbers of blue crab larvae are tainted, their population is virtually certain to take a hit over the next year and perhaps longer, scientists say. The spawning season occurs between April and October, but the peak months are in July and August.

How large the die-off would be is unclear, Perry said. An estimated 207 million gallons of oil have spewed into the Gulf since an April 20 drilling rig explosion triggered the spill, and thousands of gallons of dispersant chemicals have been dumped.

Scientists will be focusing on crabs because they're a "keystone species" that play a crucial role in the food web as both predator and prey, Perry said.

Richard Condrey, a Louisiana State University oceanographer, said the crabs are "a living repository of information on the health of the environment."

Named for the light-blue tint of their claws, the crabs have thick shells and 10 legs, allowing them to swim and scuttle across bottomlands. As adults, they live in the Gulf's bays and estuaries amid marshes that offer protection and abundant food, including snails, tiny shellfish, plants and even smaller crabs. In turn, they provide sustenance for a variety of wildlife, from redfish to raccoons and whooping cranes.

Adults could be harmed by direct contact with oil and from eating polluted food. But scientists are particularly worried about the vulnerable larvae.

That's because females don't lay their eggs in sheltered places, but in areas where estuaries meet the open sea. Condrey discovered several years ago that some even deposit offspring on shoals miles offshore in

the Gulf.

The larvae grow as they drift with the currents back toward the estuaries for a month or longer. Many are eaten by predators, and only a handful of the 3 million or so eggs from a single female live to adulthood.

But their survival could drop even lower if the larvae run into oil and dispersants.

"Crabs are very abundant. I don't think we're looking at extinction or anything close to it," said Taylor, one of the researchers who discovered the orange spots.

Still, crabs and other estuary-dependent species such as shrimp and red snapper could feel the effects of remnants of the spill for years, Perry said.

"There could be some mortality, but how much is impossible to say at this point," said Vince Guillory, biologist manager with the Louisiana Department of Wildlife and Fisheries.

Perry, Taylor and Condrey will be among scientists monitoring crabs for negative effects such as population drop-offs and damage to reproductive capabilities and growth rates.

Crabs are big business in the region. In Louisiana alone, some 33 million pounds are harvested annually, generating nearly \$300 million in economic activity, Guillory said.

Blue crabs are harvested year-round, but summer and early fall are peak months for harvesting, Guillory said.

Prices for live blue crab generally have gone up, partly because of the Louisiana catch scaling back due to fishing closures, said Steve Hedlund, editor of SeafoodSource.com, a website that covers the global seafood industry.

Fishers who can make a six-figure income off crabs in a good year now are now idled—and worried about the future.

"If they'd let us go out and fish today, we'd probably catch crabs," said

Glen Despaux, 37, who sets his traps in Louisiana's Barataria Bay. "But what's going to happen next year, if this water is polluted and it's killing the eggs and the larvae? I think it's going to be a long-term problem."

Excerpt from "Blue Crabs Provide Evidence of Oil Tainting Gulf Food Web" by John Flesher. Copyright © 2010 by The Associated Press. Reprinted by permission of The Associated Press.

Item	Grade	Claim	Target	DOK	Standard(s)
#9	11	1	9	3	RI.2

Evidence Statement
The student will summarize a central idea in a text using supporting evidence.

Summarize the author's point about why scientists are monitoring the blue crab population so closely. Support your summary using key evidence from the text.

Score	Rationale	Exemplar
2	<p><u>A response:</u></p> <ul style="list-style-type: none"> <li>Gives sufficient evidence of the ability to determine/summarize the author's message/claim/point/central idea, or to explain the support for a central idea</li> <li>Includes specific examples/details that make clear reference to the text</li> <li>Adequately explains the author's message/claim/point/central idea or explanation with clearly relevant information based on the text</li> </ul>	<p>Oil tainted water has contaminated populations of blue crabs, a species relatively low on the food chain. The primary concern here is that while these crabs may survive the poisoning, their position on the food chain could be disastrous for the environment overall. For example, the oil may negate their ability to reproduce and the animals who hunt blue crab may die off- and in turn their predators will starve as well. Poisoned blue crabs could also survive small doses of oil but those at the top of the food chain could consume fatal megadoses. "Something likely will eat those oiled larvae... and then that animal will be eaten by something bigger and so on." says the scientist in the text. Scientists must monitor the blue crab population because the effects that the oil may have had on them could disrupt the entire food chain.</p>
1	<p><u>A response:</u></p> <ul style="list-style-type: none"> <li>Gives limited evidence of the ability to determine/summarize the author's message/claim/point/central idea, or to explain the support for a central idea</li> <li>Includes vague/limited examples/details that make reference to the text</li> <li>Explains the author's message/claim/point/central idea or explanation with vague/limited information based on the text</li> </ul>	<p>They are monitoring the blue crab population so closely because they are a key part to the food chain. If the species cannot reproduce then they will die off causing a chain reaction that will effect the consumers of the food chain.</p>
0	<p><u>A response:</u></p> <ul style="list-style-type: none"> <li>Gives no evidence of the ability to determine/summarize the author's message/claim/point/central idea, or to explain the support for a central idea</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Gives the author's message/claim/point/central idea or explanation, but includes no examples or no examples/details that make reference to the text</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Gives the author's message/claim/point/central idea or explanation, but includes no explanation or no relevant information from the text</li> </ul>	<p>Scientists began finding specks of oil in crab larvae plucked from waters across the Gulf coast. The government said last week that three- quarters of the spilled oil has been removed or naturally dissipated from the water.</p>