

FIELDNOTES Bayou La Loutre, Louisiana

Crunch time ahead for Gulf oyster fisheries

Sujata Gupta

WE HAVE been hurtling south through marshes for half an hour when Brad Robin kills the engine of his flat-bottomed oyster boat. Having already fallen off my stool once, I grab a metal rail. We've arrived at our first stop - the mouth of Lake Jean Louis Robin in south-eastern Louisiana, in the middle of the marshlands that border the Gulf of Mexico. Here, the Robins have bred and harvested oysters for generations.

Robin and his crew throw a net over the side and haul in the catch. Dozens of palm-sized eastern oysters, *Crassostrea virginica*, clatter onto a plastic tray. "Mostly boxes," says Ed Cake, a marine biologist with Gulf Environmental Associates in Ocean Springs, Mississippi. He holds one up for me to see. The shell hangs open, empty. Cake estimates that 75 per cent of the shells in the catch are boxes.

Mortality rates are normally closer to 5 per cent, but that changed in the aftermath of the Deepwater Horizon oil spill this year. How fast the industry rebounds depends on an event expected sometime in the next few weeks, and Cake and Robin are eagerly searching for early signs of it.

The event is the annual spatfall, when oyster larvae cement themselves onto old oyster shells and other material on the sea floor. After the spill, the Louisiana state authorities took an unprecedented decision designed keep the oil at bay and save the local oystermen,

but which could also doom them: they maxed the flow of fresh water through the region's canals to three times usual levels.

Oysters thrive in about 2 per cent salinity. After the flush, salinity fell to near zero at the mouth of the canals, and this is likely what killed most of Robin's harvest. Yet, like many other oystermen, he supported the decision, hoping that larvae further out where

Healthy oysters have become a rarity following the huge oil spill

salinity stayed higher would be saved from the oil and brought ashore by local currents.

Oysters in the Gulf take about two years to mature, so if spatfall happens as normal, Robin could be harvesting oysters again in 2012. If it fails, that could get delayed six months or more.

Early signs are promising. As we travel further towards the Gulf, only 20 per cent of the oysters come back as boxes. The freshwater inundation may even boost yields in the long run. Though each female produces from 75 to 150 million eggs, only 1 in 1000 survive. With so many empty shells now scattered on the sea floor, the larvae have more to latch onto, improving their odds. Moreover, the flush killed oyster predators as well as oysters. Boring sponges, for instance, are noticeably absent from the fresher inshore waters.

History suggests a bumper crop could occur within five years. After hurricane Katrina wiped out Gulf oysters in 2005, harvests recovered to 85 per cent of pre-Katrina levels by 2009. By early 2010, oystermen were bringing in record numbers. Then the oil spill happened.

On the boat, Robin squints at a white speck on the shell of another box oyster. It's a spat. "It looks like they're trying to come back," says Cake. Now all they can do is wait and hope for a longer gap between catastrophic events - a tall order in the Gulf of Mexico. ■



SUJATA GUPTA

HIV may remain deadly for millennia

HIV'S close cousin, the simian immunodeficiency virus (SIV), has been around for tens of thousands of years - much longer than the few hundred years that some studies had suggested.

Because SIV does not cause AIDS in its primate hosts, some have speculated that HIV might also stop being lethal within a few centuries. The discovery that SIV has had

millennia to evolve into peaceful coexistence dashes these hopes.

The age of a viral species can be determined by measuring its rate of mutation, then calculating how long it would take for this to generate its current genetic diversity.

Preston Marx, a virologist at Tulane University in New Orleans, Louisiana, and his colleagues studied SIV samples from drills, close relatives of baboons. They compared virus from drills living on Bioko Island, off the coast of Cameroon, to virus from the mainland. Because the island has been isolated from continental Africa since the last ice age, 10,000 years

ago, the genetic differences between the two viral populations must represent 10,000 years of evolutionary divergence.

Using their comparison of the viruses to estimate the rate of genetic change, the team reckon that it must have taken at least 32,000 years to generate the diversity seen in SIV throughout Africa.

If this is correct, SIV has had millennia to evolve its ability to live in

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its hosts without causing AIDS. That makes it highly unlikely that HIV, which seems to have first infected humans barely a century ago, will lose its virulence any time soon.

The finding may also be relevant to attempts to control the spread of HIV. If SIV is millennia old, it is likely that humans had been exposed to it off and on for many thousands of years before it made the leap to infect us, becoming HIV. "It hammers home the point that these viruses have been around for a long, long time," says Beatrice Hahn, an HIV researcher at the University of Alabama at Birmingham. Bob Holmes ■