

that the process would have to be scaled up one million times and decreased in cost by over a 100-fold in order to meet the energy needs of the United States. Keasling is not troubled by this consideration, since *E. coli* are already used to produce large quantities of ethanol and other chemicals. By the time the biofuel process is industrialized, Keasling will probably be on to another project and have licensed the technology. “I don’t want my folks getting the yields up to the next little iota,” he says, “We should not be looking at the last decimal of Pi. We should be looking at the first decimal.”

—Brendan Borrell

Catching crabs

It was late last September when 73-year-old farmer Archie Page pulled a six-inch blue crab out of his pond in Swansboro, NC. After catching it, Page spent the day parading around in his pickup with the crab in the back. “I couldn’t believe it,” he says with a soft Southern twang. Two months later, standing on a rickety dock at the edge of the blue-green pond, he still laughs at the memory. “I showed that thing around until it died,” says Page, gazing out over the pond, its shores now lined with wire crab traps. The single crustacean pulled from his pond suggested that an unusual experiment to save the blue crab might actually work.

In the last 15 years, crab populations along the Eastern US seaboard have declined by 65%, says Yonathan Zohar, director of the Center of Marine Biotechnology at the University of Maryland Biotechnology Institute. This area of decline includes the Chesapeake Bay, the source of an estimated one-third of the nation’s catch of blue crabs. “It’s very alarming,” says Zohar. When traditional fishery solutions such as restrictions on catch size and protection of marine areas didn’t work, Zohar and colleagues across affected states formed the Blue Crab Advanced Research Consortium (BCARC). “The [objective] is to try and reverse the situation through better understanding of the blue crab life cycle, and try to replenish spawning stocks before it’s too late,” says Zohar.

Dave Eggleston, the director of the Center for Marine Sciences and Technology at North Carolina State University, a member of BCARC, had an idea: Raise sea-faring blue crabs in freshwater. He was inspired by the story of a North Carolina man, Tim Selby, who dumped juvenile crabs into a pond and saw high growth rates. To test the possibility, Eggleston and his team did a “bucket experiment,” placing various-sized crabs into buckets of different salinities. They found that once the crustaceans molt to the “first crab” stage, following nine larval stages, the crabs can tolerate a salinity of 0.3 parts per thousand

Full-grown blue crabs, between five and six inches long, rake in about \$3 apiece.

With the networking help of the North Carolina Sea Grant, one of his major funders, Eggleston found Archie Page and his pond. Page, a cattle farmer and entrepreneur, was eager to help with the experiment. “Nothing ventured, nothing gained,” chuckles Page, leaning over the side of the pond and dipping a probe into the water, testing the salinity. One week after Page agreed to the experiment, researchers from the Center for Marine Sciences and Technology at North Carolina State University dumped 30,000 juvenile crabs into



(ppt), about the same salt content as tap water in the Outer Banks of North Carolina. (Average ocean salinity is 53 ppt.) “In retrospect, it’s not a big surprise,” says Zohar, noting that the Chesapeake Bay itself has wide variations in salt content.

One day, while making his weekly drive across the state between offices, Eggleston noticed the abundance of irrigation ponds—perfect freshwater sanctuaries. If the locals were interested in farming crabs, it might take the market pressure off wild stocks while simultaneously supplementing farmers’ incomes. With the growth of the hatchery industry, farmers could likely purchase juvenile crabs for 15-25 cents apiece, comparable to the cost of juvenile shrimp, says Zohar.

Page’s 10-acre pond in Swansboro, North Carolina, a quiet freshwater refuge tucked into a ring of trees, only two miles from the crabs’ native ocean habitat.

Since the initial 6-inch crab surprise, Page and his sons have hoisted full crab pots from the pond; one was stuffed with 36 crabs. “I ate some,” says Page. “They were good.” Eggleston is estimating a 20% return, or 6,000 full-grown crabs—an \$18,000 harvest. With the rapid growth rate measured in Page’s pond (only 8 weeks from a quarter-inch juvenile to a six-inch adult), a farmer could raise two to three crops of crabs a year, says Eggleston; “There is tremendous economical potential.”

—Megan Scudellari