For the halibut

by Laurie Schreiber

FRANKLIN — A crop of baby halibut was successfully reared for the first time on a commercial scale as a multi-year effort at the University of Maine Center for Cooperative Aquaculture Research.

The event occurs three years after a halibut in captivity spawned for the first time in the center. Because halibut, taken from the wild take several years to acclimate to new surroundings, the viability of the first and subsequent batches of eggs was low and didn’t result in the successful production of juveniles until recently.

CCAR’s operations manager, Dr. Nick Brown, began developing the project in 2000 when working under a special permit from the National Marine Fisheries Service to rear halibut in the Gulf of Maine — fishermen caught about 70 adult halibut to act as broodstock for eggs and sperm.

The project suffered a major setback in 2002 with the loss of the entire population caught in 2000. However, fish caught in 2002/03 — kept in covered tanks under carefully controlled environmental conditions to thrive and started to spawn last year.

Since that time, the center itself has grown considerably and additional projects, in addition to halibut farming, are thriving.

Located at a former commercial aquaculture site on 24 acres fronting Tunaunau Bay, the center’s facilities range from small labs to numerous buildings designed to include grow-out tanks, rearing and housing buildings, and grow-out tanks under environmental-controlled conditions designed to keep out pathogens and speed the success rate of getting fish to grow from the egg stage to a marketable size.

One building houses a pilot-scale finfish nursery. Here, about 5,000 juvenile halibut, hatched from one batch of about 50,000 eggs — amounting to about 500 — are being raised in 14 tanks.

The 10 percent success rate is considered excellent, but is also expected to grow as the broodstock become accustomed to new surroundings and are more knowledgeable about dealing environmental conditions and food needed by the young fish. The adults will also benefit from new quarantines, new under construction, that will be part of a full-sized commercial hatchery designed to produce around 500,000 juveniles.

The project represents the groundwork CCAR needed to grow out halibut farming industry. The next step toward that goal was achieved with the formation of Maine Halibut Farmers Inc., which is being assisted by the University of Maine. This first crop and subsequent crops will be sold to Maine Halibut for growth-out using land-based farming techniques.

This type of partnership is what it is all about, said Dr. Brown. The facility has the equipment and wherewithal needed for the years of experimentation that go into starting up a new farming protocol.

“Now business will start to scrimp,” he said.

In a related project, CCAR is home to a study to develop diets for the broodstock. The goal is to produce formulated feeds that will replace the raw marine components currently used to feed the broodstock. Specifically, the food must be high in protein and low in fat. Three trials are underway now, testing a new off-the-shelf commercial diet, and an experimental diet containing polychaetes, a marine worm, as compared with the control diet that contains a wet fish, squid and shrimp mixture.

The study is in its second year, and must show the effectiveness of the new diets on egg production, egg quality and hatching rate.

“Overall, the past two years have been very successful for halibut production, but we need to find a way to diversify.”

Preliminary work is underway in the farming of newt (Perophya), the most valuable sea vegetable in the world.

Maine has at least seven native species of Perophya, and the goal is to develop some of these into new marketable crops.

The project, a collaboration between researchers at the University of Maine and the University of Mississippi focuses on environmental cues that trigger reproduction in native species, in order to be able to control these for net seeding. At CCAR, experiments have been done to grow Perophya to seed test and the plan is to work with local aquaculturists to test these in the sea.

The project has also received a $100,000 grant from the National Science Foundation to determine the feasibility of on-growing juvenile Atlantic cod in soft pots.

At the moment, broodstock facilities are in the final stage of construction for the production of pathogen-free cod eggs. The facility will provide a place to screen for additional wild cod broodstock and to test disinfection practices for cod eggs.

The goal is to increase the efficiency of the emerging industry and enable a major salmon growing company by exploring their use in the bioremediation of marine sediment in the biowaste-to-analyzed chemicals found in sediment. Marine worms are also used to bioremediate many other species of fish and shrimp aquaculture facilities.

Elsewhere on the farm, the National Marine Fisheries Service, Maine Atlantic Salmon Commission, and U.S. Fish and Wildlife Service are occupying two quonset-style buildings to study the selectivity of different species of Atlantic salmon. The project aims at reducing costs of production and increasing the viability of the project, which is expected to increase by 20 to 30 percent over the next 10 years.

A portion of the production is sold in local and around the country.