

# Aquaculture: Investment Opportunities in Puerto Rico

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## RESUMEN

Las actividades para el fomento de la acuicultura en Puerto Rico empezaron, en su forma actual en 1970, pero los esfuerzos mayores para su promoción y respaldo firme se acometieron después de la fundación el 7 de julio de 1979 de la Corporación para el Desarrollo de los Recursos Marinos, Lacustres y Fluviales (CODREMAR), una corporación pública afiliada al Departamento de Recursos Naturales del Gobierno de Puerto Rico.

Como resultado, se preparó un informe sobre el desarrollo de la acuicultura en Puerto Rico. Las especies que se mencionan en el mismo con potencial para la acuicultura de agua dulce, salobre o salada incluyen las tilapias (*T. aurea*, *T. nilotica*), el barbo (*Ictalurus punctatus*), el camarón de agua dulce (*Macrobrachium rosenbergii*), el ostión (*Crassostreaa rhizophorae*), camarones marinos (*Penaeus* spp) y el camarón de las salinas (*Artemia salina*). Otras especies con potencial son, el alga marina (*Gelidium* y *Gracilaria*), el carrucho (*Strombus gigas*), el dorado (*Coryphaena hippurus*), los barbús (*Polydactylus*), el pámpano (*Trachinotus* spp) y las lizas (*Mugil* spp).

En armonía con los planes del Gobierno, CODREMAR está autorizada, sola o en coordinación con otras agencias gubernamentales o entidades, a proveer ayuda a inversionistas potenciales en forma de asistencia técnica, garantías, préstamos, incentivos, exención contributiva, etc. Tres intentos privados de acuicultura han recibido ya ayuda técnica y económica de CODREMAR.

Aquaculture in Puerto Rico truly began around 1970, when research efforts on the culture of tilapias (*Tilapia* spp.), channel catfish (*Ictalurus punctatus*) and the freshwater prawn (*Macrobrachium rosenbergii*), were undertaken. Tilapia and channel catfish were grown by professors and graduate students of the University of Puerto Rico at Mayaguez, with good indications of economic viability.

Although only one tilapia farm is currently in operation in the municipality of Río Grande in eastern Puerto Rico, there is much potential for expansion of its culture. A real potential and promise are also seen for the commercial farming of the channel catfish on the island.

Two private ventures to grow *M. rosenbergii* in ponds located near Cabo Rojo, western Puerto Rico, were operated for several years, but recently have been discontinued. An unsuitable site, subject to floods, was partly responsible for their termination. Another prawn farm was subsequently established in 1978 and is now being enlarged, but may require more capacity to prove economically feasible.

On 7 July 1979, the Legislative Assembly enacted, and the Governor of Puerto Rico signed, Law 82, which created the Corporation for the Devel-

opment and Administration of the Marine, Lacustrine and Fluvial Resources of Puerto Rico, better known by the acronym CODREMAR. This public corporation is affiliated with the Department of Natural Resources of Puerto Rico. Among its main responsibilities are the development and promotion of aquaculture projects and activities. This new Corporation has generated a strong momentum and interest here and abroad for the establishment of aquaculture endeavors in Puerto Rico. The Government of Puerto Rico is committed to encourage, promote and support worthwhile aquaculture enterprises in fresh, brackish and marine waters of the island. Because of that interest, we, at CODREMAR, prepared a small prospectus<sup>1</sup> on the development of aquaculture. It summarizes briefly the species with immediate culture potential and marine species with short range potential and marine species with long term potential.

In line with the content of the prospectus and of the soon-to-be completed Aquaculture Development Plan for Puerto Rico, CODREMAR designated species of tilapia (*Tilapia* spp.), the channel catfish (*I. punctatus*), the freshwater prawn (*M. rosenbergii*), the oysters (particularly the mangrove oyster *Crassostrea rhizophorae*), the marine shrimps (*Penaeus* spp.), and the brine shrimp (*Artemia salina*), as those with immediate potential. Other species with short or long range potential include marine plants (*Gracilaria* spp. and *Gelidium* sp., -short range), queen conch (*Strombus gigas*), pompano (*Trachinotus* spp.), dolphin fish (*Coryphaena hippurus*), threadfin (*Polydactylus virginicus*), and mullet (*Mugil* spp.). Obviously, this list of species may vary as new promising finds are made known. Recently, good reports were received on the potential of grouper, snapper, and dolphin fish culture in cages or enclosures. Tests with some of the local species of snappers and groupers are required to determine their culture viability. Lastly, brine shrimp occurs naturally in salt flats in Puerto Rico. Local farms could raise adult brine shrimp for shipment to the U.S. mainland for use as food for ornamental fish in aquaria and in commercial aquaculture.

The availability of adequate capital has impaired the development of aquaculture worldwide, especially for species with unproven culture technology. However, farming methods for tilapia, catfish and oysters are well known and aquaculture of these species has less risk than some others. The technology for raising freshwater prawn and marine shrimps is rapidly developing and this should make it easier to attract investment capital. Also, Puerto Rico has no restrictions on investment by nonresident U.S. citizens or by foreigners which broaden the source of investment capital.

The Government of Puerto Rico can provide technical assistance, incentives and financial assistance to expedite the development of aquaculture. The Act of the Legislature which established CODREMAR authorizes financial assistance, loans, price guarantees and market development programs for fishing and aquaculture. Traditionally, our Government has pro-

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<sup>1</sup> Aquaculture Development in Puerto Rico—A Prospectus 1981. Corporation for the Development and Administration of the Marine, Lacustrine and Fluvial Resources of Puerto Rico (CODREMAR), Commonwealth of Puerto Rico.

vided special benefits and incentives to encourage the development of agriculture and industry. Some of those incentives and benefits include low rates for water, low rates for leasing government land and various possible forms of tax exemption. Since aquaculture has the same objective as agriculture, the production of food, we are proposing that the same or similar benefits and incentives be provided to worthy aquaculture endeavors.

A very important advantage of aquaculture ventures in Puerto Rico is the ease in the accessibility to the continental U.S. market since no trade barriers exist between Puerto Rico and the mainland.

In spite of the "tight money" situation and high rates of interest, CODREMAR has already offered financial aid to one aquaculture firm. Two other enterprises are presently under consideration for possible financing. It should also be noted that CODREMAR recently gave or endorsed loans to small scale commercial fishermen and to a large scale commercial fishing operation. The loans to fishermen were negotiated with the Puerto Rico Agriculture Credit Corporation and the Puerto Rico Government Development Bank. The Farmer Home Administration guaranteed one of those loans.

CODREMAR is prepared to assist the potential investor by coordinating with government agencies, other entities or financial institutions in gathering pertinent information to aid in the decision-making process of investing in an aquaculture enterprise.