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Reduction of Environmental Impact from Tropical Shrimp Trawling, through the introduction of By-catch
Reduction Technologies and Change of Management
(EP/GLO/201/GEF)

Colombia

Progress report to the project coordinator

EP/GLO/201/GEF

April 20-July 20 2004





**REDUCTION OF ENVIRONMENTAL IMPACT FROM
TROPICAL SHRIMP TRAWLING, THROUGH THE
INTRODUCTION OF BY-CATCH REDUCTION
TECHNOLOGIES AND CHANGE OF MANAGEMENT**

EP/GLO/201/GEF

**Progress Report of Colombia No. 1 Presented to
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Vinculado al Ministerio de Ambiente, Vivienda y Desarrollo Territorial

REPORT OUTLINE

Initial activities of this Project executed by INVEMAR included an up-dated design for the programme since May 2003 in terms of: I) re-compilation of existing background data; II) meetings with the previous National Coordinator, previous fishery researchers, and with representatives of the fishing industry and managers on both coasts Atlantic and Pacific; and III) submitting to a national agency (Colombian Institute for the Science and Technology Advance: COLCIENCIAS) a proposal for complementary funding for project. These activities left results as follows: I) elaboration of the Colombian LOA; II) willing of different representatives on both coast Atlantic and Pacific to participate actively in the Project; III) visit of Dr. Thiele and Mr. Aguilar (Consultant) to Colombia in August 2003 in order to assist in the preparation of the up-dated national work-plan and the related LOA; IV) grant of the project submitted to COLCIENCIAS to be executed on the Pacific coast. Additionally, researches of the Magdalena University obtained funds of COLCIENCIAS to perform a very similar project on the Atlantic coast. In this sense, INVEMAR and Magdalena University made an agreement to join efforts and share experiences, materials and equipments, such the successful of the project is accomplished with complementary funding.

Activities addressed in this report involve those carried out since April 20, when the first payment was made to INVEMAR by FAO, such as mentioned on the Colombian LOA. Results obtained include: I) elaboration of the LOA final version, which was signed in March 2004; II) starting of the COLCIENCIAS project, thus recruitment and contracting of personnel (2 professionals and 2 students to make thesis) have been carried out with funds of FAO and COLCIENCIAS to the Pacific coast; III) elaboration of the work plan 2004, including activities until the first quarter of 2006; IV) constitution of the National Steering Committee with participation of the managers, fishers industrial and researches; and V) workshops with representatives of the Atlantic and Pacific fishing sectors in order to prepare the sampling of the fishing technology of shrimp-trawling fleet on both Colombian coasts. This report will be focus on the last two results as follows:

- National Steering Committee (NSC). After several meetings with representatives of fishing in Colombia, where explications and discussions were carried out about nature and execution of the project EP/GLO/201/GEF, the NSC was established. This committee (see file attached: NSC-COL.zip) is integrated by the shrimp-trawling sector (ACODIARPE in the Pacific coast, and CARTAPESCA and FLAMINGOMAR in the Atlantic coast), the government agency charged of fishing (Colombian Institute for Rural Developing = INCODER), the government agency charged of giving support to the science and technology (COLCIENCIAS), and the academic and research sector (INVEMAR, Magdalena University, Centro Náutico Pesquero del SENA). The NSC document emphasise that many institutions in Colombia are involved and encouraged to carry out the project on both Atlantic and

Pacific coasts. Complementary funding getting by such Colombian institutions is approximately US\$ 331.000, so three times the funds allocated by FAO to the project (US\$ 100.000).

- Fishing technology of shrimp-trawling fleet. Colombia has jurisdiction on both, Atlantic and Pacific Oceans, and fishery resources are harvested mainly in coastal waters (Figure 1). Fisheries are basically artisanal, even though industrial fishing has increased since the 50s, based on high priced species in the international market, such as shrimps. Shrimp fishery represents a source of food and employment and generates important incomes to fisher and export earnings for the country. It has been developed by private initiative, with little state support in economic, scientific, technical and management terms. In consequence, fishing technology of shrimp-trawling fleet is empirical based on equipment and fishing gears without technical evaluation and adaptation to fishery and environmental conditions either. Status of shrimp resource linked to the legal context shows that the fishery is state property, however it are becoming increasingly limited, catch has begun to drop, and stocks are heavily depleted. Among the reasons explaining this fact are the poor schemes of management based on weak scientific knowledge and institutional framework constraints (lack of enforcement), moreover the accumulated impact of trawl fleet few renew during 50 years.

The above scenery has encouraged that the impact of shrimp trawling fisheries on living marine resources is addressed, through of introducing technological innovations in the fishing gears that modify their selectivity. In this regard, information about fishing technology of shrimp-trawling fleet is very relevant to introduce and assess changes in trawl nets.

Pacific coast: Technical characteristics of the shrimp trawl fleet were gathered through of a census carried out in Buenaventura port. Information collected includes interviews with fishers and managers. The size of the fleet officially authorised decreased between 1990 (104 vessels) and 2004 (47 vessels). Total fleet has Colombian registration and 90% of their vessels are 20 years old. The fishery is allocated to harvest shallow water shrimps (23 vessels), depth water shrimps (17 vessels) and combined fishing (7 vessels). The type of vessels used are called “tangoneros” with steel hull, 13.8 to 22.8 m (mode = 20 m) at length, tangones of 12 m in average and catch hold capacity of 30 m³. The most frequent range of engine power is 200-400 HP of trade-mark Caterpillar and Cummins with Twin disc. All fleet use mechanically-powered winch trade-mark Stroudsburg and Mc Elroy Hoist, whereas the electric equipment involves radar, radio, GPS and echo-sounder. Trawl nets are of “Flat” type, manufactured in polyethylene or polyamide, with 60’ to 80’ (mode = 75’) of headrope, mesh size 2” in the body net and 1¾” in the codend, and can use otterboards of 8½’ x 46”. The Colombian Law obligates the use of TED (turtle excluder device) on trawl shrimp nets since 1994. Variable cost by fishing trip (30 days) account US \$16.307 in average, which make up 75% of the operation costs, whereas the by-catch constitute 40% of the total revenues. Fishing technology between vessels allocated on shallow waters and those allocated on depth waters,

differ by the number of net sections, length of the trawl wires and frozen system on board. More details see file attached: Pacific Coast Col Report.doc.



Figure 1. Principal shrimp fishing ports on both Pacific and Atlantic coast in Colombia.

Atlantic coast: The technical characteristics of the shrimp trawl fleet operating in the Colombian Caribbean Sea, between Cartagena and Tolú were registered. There are 53 officially authorized vessels, 56.6% of them have Colombian registration and the 43.4% foreign one. The oldest vessels are 27 years old and the newest ones began

operations in 1991. The vessels are 13.2 through 24.8 m long, being 21.3 m the modal length. The more common engine power is Caterpillar and Cummins 450 H.P. with Twin Disc reducer of 5.9:1.0 ratios. 41 vessels have steel hull, 11 glass fiber hulls and 1 ferro-cement hull. The Mc. Elroys Hoist 505 is the most common mechanically-powered winch (45.3%), followed by the Rice Model R800D (37.7%). Only 7 vessels from Tolú Port have Hydraulically-powered Winches. Trawl nets have "Japanese" (56%) and the "Corean" (43.4%) models with 42' and 37' of headrope respectively, and can use otterboards of 8'x 36" or 9'x36". The fleet operates between 12 and 45 fathoms depth, characterised by hard-sandy bottoms north to Cartagena and sandy-muddy bottoms south to Cartagena. More details see file attached: Atlantic Coast Col Report, which was elaborated by researches of Magdalena University.

Comparison between Pacific and Atlantic fleets: The main difference is that vessels of the Atlantic fleet use 4 trawl nets, whereas Pacific fleets use 2 nets. Trawl nets on the Pacific coast are bigger than nets on the Atlantic coast; however the sweep area by both fleets is similar. Model of the trawl nets are different among coasts and the fishery on the Pacific coast has modified some technical characteristics of the shrimp trawl fleet to operate in depth waters additional to shallow waters. Number of vessels officially authorised to operate are similar among coasts, but on the Atlantic there are foreign vessels additional to National ones.