

**Community-based Monitoring of Pollutants in the Gulf of California, implemented by  
Centro de Investigación en Alimentación y Desarrollo, A.C. (CIAD A.C.)**

## **Project Summary - Part I. Description**

### **Participating organizations and geographic location(s) of the project:**

The project was carried out at two locations on the central and southern Gulf of California (Kino and Tobari Bay) in Sonora, Mexico. Participating organizations are Community and Biodiversity A.C. (Cobi), *Comisión Nacional de Areas Naturales Protegidas-Islands del Golfo de California* (Conanp) and *Grupo de Monitoreo Submarino y Análisis de Cambio Climático, S.C. de R.L. de C.V. (Buzos de Bahía de Kino)*.

### **Problem statement: Why was the project carried out?**

More than any other segment of the population, small coastal communities depend on marine resources for food because they are relatively isolated and consume the fish and other products they catch on a daily basis. However, globally dispersed contaminants, such as mercury and organochlorine pesticides, can be present in high concentrations in fishery products, and due to the high proportion of fish in the diets of the local population, reference doses (a maximum recommended mercury (Hg) intake of 0.5 µg/day) can exceed health limits at these small coastal communities.

### **General description of the project: What was done?**

The main activities of the project were the training of fishermen from two coastal communities (Kino Bay and Tobari Bay in the State of Sonora) for the collection of abiotic and biotic samples and to monitor water temperature. Another important activity was the analysis of samples for organochlorine pesticides, metals (mercury, lead, cadmium, copper and zinc) and polycyclic aromatic hydrocarbons (PAHs). As part of the analysis, members of these small coastal communities completed a questionnaire on food consumption, which allowed CIAD A.C. to calculate the risks from fish consumption.

### **Brief description of outcomes and follow-up: What did the project achieve?**

Results indicate the presence of mercury in two species of fish (amberjack and skates) at concentrations that exceed the Mexican health department regulation. Fish and shellfish consumption in coastal communities was higher than in the rest of the country and consumption of some of these species, could have potential health effects in the population. We recommend continuing the project with workshops at the communities where we would present the best options (selection of fish and shellfish species) for the people to regulate their fish consumption safely. The products of the project are a comprehensive report (Annex 1), a Powerpoint presentation for the group of participating divers, and a three-page document for the public. For information regarding this project, contact Dr. Jaqueline García at CIAD-Guaymas, tel: 011-52-622-2252826, E-mail: [jaqueline@ciad.mx](mailto:jaqueline@ciad.mx)

## **Project Summary - Part II. Analysis**

### **Successes**

The project successfully involved members of the community in monitoring their marine food intake and collecting data about sea water temperatures. In turn, they received information about the concentrations of persistent contaminants and the possible health risks imposed by their marine resources diet.

We presented the results of the project to the divers involved in the project, and they were very excited about the information we collected with their help. Their overall opinion is that they like the project and that they want to continue to be involved in the project, they even asked us to analyze other organisms that they consume more often. We were pleased to inform them that at Tobarí Bay, we will continue monitoring biotic and abiotic parameters, with the support of Conanp, and the same group of trained divers will be collecting the information and samples, we also have an undergraduate student from the community who will be doing his thesis on this project.

### **Challenges**

The challenge of this project is to find effective means of informing people in the community about alternative fish and seafood readily available to them that can replace some of the fish they consume as part of their regular diet, such as skates and amberjacks, which may expose them to high concentrations of mercury and also present possible elevated health risks to a particular sector of the community (pregnant women). CIAD would also like to engage government institutions in this process. It is likely that saying some fish have high concentrations of mercury, fishermen will be afraid it will affect the fishery they depend on for their livelihoods, and further affect the economy of these communities. CIAD is considering alternate, interactive means of informing the members of the community (e.g., theatre plays, workshops) as a means of explaining which fish are more suitable to eat and which should be avoided; however, we would like to see a government program address these issues.

### **Lessons Learned**

The lessons learned are that the majority of the women from the small coastal communities we visited live in poverty and have limited possibility for a varied diet. In addition, some of the inexpensive fish to which they have access have levels of mercury that could possibly affect their health if consumed often and over extended periods of time. Therefore, actions should be taken to increase their access to different or complementary sources of food to ensure a healthy diet.

### **What's next?**

CIAC A.C. would like to organize nutrition workshops in these coastal communities. However, we know that fish consumption guidelines can only be issued by government agencies, in this case by Senasica (*Servicio Nacional de Sanidad, Inocuidad y Calidad Alimentaria*), which depends on Sagarpa (*Secretaría de Agricultura, Ganadería Desarrollo Rural, Pesca y Alimentación*), and/or from the Health Department (*Secretaría de Salud*).