

Title

**Case Studies of Community-Based Fish Consumption Advisories
at Three Michigan Great Lakes Areas of Concern**

Prepared for

Great Lakes Sport Fish Consortium
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BACKGROUND

Public health advisories regarding consumption of contaminated fish are a form of risk communication with complicating factors; the material (fish tissue) containing the chemical contamination is a healthy food source; some local fishers depend upon fish for sustenance; advisories can vary based upon gender, age, and health status. Connelly and Knuth (1998) report that audience-oriented risk communication, although requiring more creativity, results in better message delivery. They found that using cajoling language and providing qualitative choices using both text and graphics to be effective in communicating safe fish consumption choices. Additionally, Connelly and Knuth (1998) suggest segmenting the audience based on information needs.

An audience-oriented communication requires that the characteristics of the audience be incorporated into the communication process. One approach is to work with partners that reside and interact with the target audience. Michigan Department of Community Health's Division of Environmental Health has initiated a process called Community-Based Fish Consumption Advisory (CBFCA). CBFCA process is used in a community near a water body that has significant, persistent chemical contamination that accumulates in edible portions of fish. The concept is to find local partners that have an interest in community health, local fish consumption, or the water body. Partners that already communicate with the local population on other community issues are important to the CBFCA process. The CBFCA process relies on local partner input for the communication strategy, design of communication materials, and ultimately the implementation of that strategy. The expectation is that people who work with a local population and live in that region will be better able to characterize target audiences, thus making the communication strategy and associated materials more audience-oriented.

The objective of this grant was to implement the CBFCA process at three Great Lakes Areas of Concern (AOCs) that have significant fish consumption advisories yet very different populations. The three Michigan Great Lakes Areas of Concern were Manistique River, Saginaw River/Bay, and Detroit River. These AOCs are located within communities that vary greatly in population size (Manistique City = 3,583; City of Saginaw = 61,799; City of Detroit = 900,000) and racial diversity (Manistique City = White 87%, African-American 4%, Native American 5%, Asian 1%, Other 3%; City of Saginaw = White 47%, African-American 43%, Native American 0.5%, Asian 0.3%, Other 6%; City of Detroit = White 12%, African-American 82%, Native American 0.3%, Asian 1%, Other 3%).

The funding request for these three projects combined was a total of \$10,000.

METHODS

CBFCA process is designed to allow local partners to determine the communication approach and outputs from the process. Given that the process is driven by partner input, each implemented CBFCA differs in the actions taken.

The basic approach to a CBFCA typically include the following steps:

1. Identify a community that has a population that eats local fish and a water body with numerous fish consumption advisories.
2. Identify potential partners that may have an interest in quality of life in their community, public health, local fish consumption, fishing, or the local water body.
3. Contact partners and invite them to an initial meeting to discuss CBFCA's and form a partners working group.
4. Host partner meetings either in person or by conference call to do the following:
 - a. Discuss the characteristics of those fishing and/or eating fish from local waters as well as experiences of partners communicating with the local population on other community issues.
 - b. Identify messages that need to be communicated.
 - c. Discuss strategy for communicating the identified messages.
 - d. Design and print outreach materials needed for the communication strategy.
5. Implement communication strategy

Three river AOC locations were chosen (Manistique River, Saginaw River, Detroit River) that run through three cities (Manistique City, City of Saginaw, Detroit) of varying size. Fishing and fish consumption in these populations is a popular activity with many people^{1,2,3}. Partner identification and CBFCA implementation varied between each location and is described in each case study description.

CASE STUDIES

Manistique River AOC

Background

The Manistique River flows southwest through Schoolcraft County in Michigan's central Upper Peninsula, discharging into Lake Michigan at Manistique. The AOC is the last 1.7 miles of the river, from the dam to the mouth of the harbor at Lake Michigan. This section of the river has substantial construction resulting in artificial islands used for

¹ Madison, George and Roger N. Lockwood. 2004. Manistique River assessment. Fisheries Special Report 31. Michigan Department of Natural Resources. Lansing, Michigan.

² Kalkirtz V, Martinez M, and Teague A. 2008. Environmental Justice and Fish Consumption Advisories on the Detroit River Area of Concern. A practicum for Masters of Science, University of Michigan, School of Natural Resources and Environment

³ Michigan Department of Community Health. 2007. Fish consumption survey of people fishing and eating fish from the Saginaw Bay Watershed. Lansing, MI.

lumbering in the late 1800s, harbor breakwaters in 1913, and completion of the dam and logging flume in the 1920s.

Like many rivers, the AOC portion of the Manistique River has been damaged by various waste disposal practices from sawmills, a paper mill, and small industries. During the 1950s a biological survey of the river documented heavy accumulations of wood fibers, bark, and wood splinters. In the 1960s kerosene, used as a foam depressant in the pulp de-inking process, was routinely released into the river. During the 1970s a film of oil and extensive concentrations of bark and paper fibers were documented in the river. Current uses include receiving the wastewater discharges from Manistique Papers, Inc. and the City of Manistique Wastewater Treatment Plant. Recreational uses are mainly boating, sightseeing, and fishing. This AOC is contaminated with polychlorinated biphenyls (PCBs) and heavy metals. The PCB contamination has resulted in a range of fish consumption advisories.

Partner Collaboration, Project Design, and Implementation

On June 5, 2008 the Michigan Department of Environmental Quality (MDEQ) convened the Manistique River AOC Public Advisory Council (PAC) and announced the meeting in local newspaper. In addition to PAC members, Luce-Mackinac-Alger-Schoolcraft Health Department, City of Manistique, Michigan Sea Grant Extension, Manistique Pioneer Tribune, Chippewa Ottawa Resource Authority, U.S Fish and Wildlife Service, US EPA and the MDCH attended the meeting. MDCH gave an overview of the fish consumption advisory and presented a range of options and available funding. From this meeting, the group agreed to participate in a fish consumption advisory project and review materials and plans. E-mail was used to share draft materials and solicit comments. The group decided to produce signs for common fishing area along the Manistique River and a brochure to be used by local health departments, WIC clinic, and a local hospital. On September 5, 2008, a second meeting was held to present the final draft products for public approval and discuss the printing and placement of materials.

A subgroup of members conducted a community-wide children's event to raise awareness about the fish advisory. In September and October 2008, they conducted a student art contest during which students would draw pictures that represented fish or fish consumption from the Manistique River. The winning picture was used in a poster about the fish consumption advisory.

Saginaw River and Bay AOC

Background

The Saginaw River and Bay Watershed (SBW) has greater than a 100-year history of extensive chemical and industrial manufacturing. In the past, many chemicals either escaped or were released from the manufacturing facilities and entered the local water bodies (e.g., Pine River, Tittabawassee River, Saginaw River, and Saginaw Bay). Some of the chemicals (e.g., dioxins, polychlorinated biphenyls (PCBs), and dichloro-diphenyl-

trichloroethane (DDT)) can be classified as persistent, bioaccumulative, and toxic (PBT). Dioxins, PCBs, and DDT, along with other PBT chemicals have been documented at elevated levels in edible portions of fish from the Pine River, Tittabawassee River, Saginaw River, and Saginaw Bay. Due to the health risks associated with exposure to these chemicals, MDCH has issued public health advisories on eating fish from these waters.

Bay and Saginaw Counties have a combined population of 320,200. It is estimated that between 20,600 to 43,000 residences within Bay and Saginaw Counties eat fish from local contaminated water bodies. In June 2007, MDCH published a report documenting residents' fish consumption patterns in the Saginaw River and Bay Watershed. The study included interviews of 1,088 people fishing the Tittabawassee River, Saginaw River, Shiawassee River and Saginaw Bay. The study documented extensive fish consumption from contaminated waters including periodic consumption of the most contaminated fish species (carp, catfish, and white bass). Around 80% of the fish consumers that were interviewed fed these fish to all family members including children. Additionally, the study demonstrated that these fish consumers were more likely to be from low-education and low-income households. Racial and ethnic differences were also found; 48% of minorities were not aware that problems existed with eating the local fish compared to only 12% of whites.

Further, the MDCH study found that urban low-income or minority individuals are likely some of the most highly exposed individuals in the area. Based on the 2000 U.S. census, the city of Saginaw (59,000 people) is 53% minority with 28.5% of Saginaw residents living in poverty (three times the state average). The median household income in Saginaw (\$26,485) is 40% below the state median. Bay City (35,000 people) is mainly white with 14.6% of its population in poverty and an annual household income of \$30,425 (32% below the state median). Additionally, Michigan has some of the highest unemployment rates in the country, leaving many people with few options to meet essential needs such as food. Many people supplement their store-purchased food with locally harvested fish and wild game since they are available at low to no cost and are convenient. This study provided evidence that increased fish consumption advisory education is needed to protect public health, especially for children, low-income populations, and minority populations.

Partner Collaboration

The Saginaw River and Bay AOC CBFCA effort provided a unique opportunity for a more involved partner collaboration including program evaluation. The original search for partners was conducted in two ways. The first was in partnership with the Saginaw Bay Watershed Initiative Network, a local non-profit organization. Through that partnership the following organization collaborated on an initial CBFCA project: Michigan Department of Natural Resources (MDNR), Saginaw County Public Health Department (SCPHD), Michigan United Conservation Club, Bay County Health Department, the General Motors Company, Lone Tree Council, Mid-Michigan Health Department, Michigan Department of Environmental Quality, the Dow Chemical Company. Secondly, MDCH competitively acquired a small grant through which MDCH

was able offer mini-grants to local non-profits willing to partner with MDCH on fish consumption issues. From the mini-grant process we identified three local non-profits, of which MDCH has established an ongoing partnership with the First Ward Community Center (FWCC) beyond that first mini-grant.

Previously, these partners collaborated on generating a package of outreach materials about the local fish and game advisories and a survey of people eating fish from local waters. For the current case study, MDCH partnered with FWCC, to conduct a community event in the City of Saginaw that would target information to low-income or minority fishers.

Product Design and Implementation

Based on survey of local fishers, it was observed that people who fished from the shoreline were likely to know less about the fish advisory. Further, minorities, women and people of lesser means who fished the river were also far less likely to be aware that a fish advisory existed

(http://www.michigan.gov/documents/mdch/FCS_Final_rpt_061407_199288_7.pdf).

FWCC proposed hosting a community event and calling it *Fish Smart-Eat Smart*. The event involved, fishing and fish identification games for children and adults. Booths about efforts to clean up the Saginaw River, the fish consumption advisory, local environmental public health issues, and other health-fair type information. During the event a virtual fishing game was played with the audience to allow them a chance to use the Saginaw River fish consumption advisory. Over 200 tickets were collected at the event, representing over 200 people attending the event.

Program Evaluation Results

The 2008 *Fish Smart-Eat Smart* event had over 200 city of Saginaw residents attend with 174 individuals completing an event program evaluation. Of the completed surveys, approximately 50% go fishing with around 30% stating they eat fish from the Saginaw River and Bay. Catfish (54%) was the favorite freshwater fish (and one of the most contaminated) by the majority of people responding followed by crappie (8.4%), yellow perch (7.8%), walleye (5.8%), and bass (4.5%). Catfish results are similar to the MDCH (2007) fish consumption survey report which found that 62% of non-whites fishing the Saginaw River, Saginaw Bay, or Tittabawassee River reported eating catfish from those waters. The MDCH report found higher percentages of people eating smallmouth bass (22%), crappie (19%), white bass (16%), walleye (9%), and carp (7%). Of the 174 attendees completing surveys, 60% of respondents recognized that catfish were not to be eaten from the waters of concern; 64% of respondents correctly identified carp; and 40% of respondents correctly identified white bass. About 25-30% mis-identified yellow perch and walleye as the most contaminated fish species. The program evaluation suggests this method is good at reaching the more vulnerable populations; however, there is room for improving communication at *Fish Smart-Eat Smart* events.

Detroit River AOC

Background

The city of Detroit is made up of an ethnically diverse, urban population. Over 80% of the population is African American. It has one of the highest unemployment rates in the country. The focus of this project is on the chemical contamination of the Detroit River. While the Detroit River contains high levels of PCBs and dioxins, it also serves as a source of food and sport to many residents of the city. Donna Kashian, a partner from Wayne State University, presented a recent study to the stakeholder group which found that the Detroit River has a large population of urban anglers. There is a mix of sport and sustenance anglers; however, the sustenance anglers are primarily low-income, African American individuals who are fishing for some of the most contaminated fish species, catfish. Some species of fish from the Detroit River are highly contaminated and should not be eaten in any amount (catfish, carp), and others have eating restrictions but can be eaten occasionally (bass, perch, etc.). The goal of this project is to provide education and outreach to the Detroit population, particularly the African American sustenance anglers and their families, on eating the lesser contaminated fish species and properly trimming and cooking their fish to remove some of the chemical contamination.

We worked with a group of partners from the Detroit area to design and implement a fish advisory communication plan that is specifically tailored to the residents of Detroit. After several meetings, we designed a set of products and an outreach strategy that will educate fish consumers on the contamination issues and provide information on healthier options to meet their fish consumption needs.

Partner Collaboration

List of Partners

Detroiters Working for Environmental Justice (DWEJ)
Detroit Department of Health and Wellness Promotion
DTE Energy Company
Friends of the Detroit River
Michigan Department of Natural Resources (MDNR)
Michigan State University (MSU) Extension
Michigan State University Sea Grant
Michigan Department of Community Health (MDCH)
University of Toledo
Wayne County Health Department
Wayne State University

Product Design and Implementation

Description of Meetings

February 4, 2009: An introductory meeting was held with potential stakeholders in the Detroit area to assess interest in the project and to brainstorm potential products and strategies for outreach. Kory Groetsch, MDCH, gave an overview presentation of the

Michigan fish consumption advisory and the contamination issues in the Detroit River. Donna Kashian, Wayne State University, presented the “Fish Consumption and Environmental Justice on the Detroit River” study, which demonstrated that low-income, low-education African Americans are more likely to catch and eat the more contaminated fish from the Detroit River. Susan Manente, MDCH, gave an overview of finished products from other Michigan community-based fish consumption advisories, and led a brainstorming session for products and outreach for the Detroit project. A list of committed stakeholders was developed.

March 2, 2009: A second meeting was held with the Detroit stakeholders to refine the fish consumption messages, intended final products, and outreach strategies. The stakeholders wanted to emphasize a positive message about fishing in the Detroit River, and it was necessary that the materials use simple language, due to the lower education levels of the most at-risk population. The group decided on several products that would be drafted by MDCH and edited by the group: a Detroit River fish advisory sign to be placed in 25-30 locations along the river, a brochure for families on eating safe fish, a flyer with the specific Detroit River fish consumption advice, and a flyer on better locations for catching catfish.

March 16, 2009: MDCH met with MSU Sea Grant to discuss Sea Grant’s ability to aid in the design of the materials, particularly the sign and the catfish flyer. Sea Grant has access to and expertise in design software, and had agreed to help make edits to the materials in conjunction with MDCH and the stakeholder group. Sea Grant also has experience with designing similar types of materials and can add valuable input to the overall project as a stakeholder.

June 8, 2009: The purpose of this meeting was to start finalizing plans for completing the materials and getting them distributed. Donna Kashian, Wayne State University, also announced that she has \$4,000 in extra funding that will be contributed to this project. The extra funds will be used for printing the signs. The group viewed the latest drafts of materials and collectively made comments and edits which were incorporated by MDCH and Sea Grant afterwards. Plans for installation and distribution were discussed and subcommittees formed to complete the planned projects.

The majority of edits to materials and discussion among stakeholders was done by phone and email.

Projects

Community Event- Detroit River Days: MDCH, along with several other stakeholders in this project, staffed booth displays at Detroit River Days, held June 19-21, 2009. Hundreds of fisherman and citizens of Detroit received fishing information, brochures, factsheets, and health education at the MDCH booth. People who approached the booth were also asked to fill out a comment card and provide feedback on the Detroit River fish consumption sign. Fish cleaning demonstrations were held 4 times per day over the

weekend. These demonstrations drew small crowds of people (15-20 people) and allowed for a captive audience to discuss the appropriate fat removal methods, benefit to removing unwanted contaminants, and the Detroit River fish consumption advisory. A summary of the comments received was provided to the stakeholder group at a later date, and several suggestions were incorporated into the revision of the sign. Over 500 people were provided materials and engaged in conversation over three days.

Signage-Detroit River fish consumption advisory sign: A 16x22 inch sign was created, and will be posted in 25-30 locations along the Detroit River. The sign contains information about the health benefits of eating fish, as well as a statement about the risk of chemical contamination and resulting health problems. It also has a diagram of the types of fish that are caught in the river and their relative level of contamination. Trimming and cooking information and better locations for catching catfish are also included. At the time of this report, each sign location was being visited and the exact location and posting methods being determined. The signs will be installed by a group of volunteers, and they will be monitored/maintained by a non-profit community organization (*Friends of the Detroit River*).

Brochure-Eat Safe Fish for Detroit Families: This trifold brochure contains information about the health benefits of eating fish, as well as a statement about the risk of chemical contamination and resulting health problems. The brochure also has the trim and cook information, and the diagram of the types of fish that are caught in the Detroit River and their relative level of contamination. A one-page double-sided flyer titled *Eating Fish from the Detroit River* contains the specific Detroit River fish consumption advice for the most at-risk population (women and children) and the less restrictive advice for the general population. It also has information about trimming and cooking fish, contact information for MDCH, and a reminder to always use the Michigan Family Fish Consumption Guide for all waters in Michigan. Also, a one-page double-sided flyer called *Best Spots for Catfish in the Detroit Area* includes a map of the best locations to catch catfish in the Detroit area. It also contains specific information about accessing each waterbody (such as driving directions, fees, boat/shore access, etc.).

The MDNR Fish Division has agreed to mail the flyers as fishermen call to request them. This flyer is listed on the river signs. The MDNR contact information is provided with the catfish locations on all of the Detroit River fish consumption signs. Also, the partners will be distributing these materials through their regular programs to the community.