

5 Socio-Cultural Considerations of Fish Consumption

5.1 Introduction

This chapter discusses several different ethnic and other groups of people who either consume more fish than others, consume different parts of fish, or who may fish more contaminated waters. Included below are discussions on Asian-Americans, Native Americans, subsistence anglers, and low-income, urban anglers (including African-American and Latino anglers)¹. These groups have special behaviors in regard to fish consumption that should be considered in evaluating risks and benefits of fish consumption. Fish advisories can impact social, cultural, religious, and/or economic aspects of life that may affect an individual or group's health and well being. A framework for evaluating risks and benefits of fish consumption needs to consider these impacts.

Food, as an important part of a culture, serves economic, social, aesthetic, ceremonial, and religious functions. Food is used to solidify social ties. Specific foods are often seen as having special nutritional or medicinal qualities, such as the belief that the consumption of oysters improves libido. Foods often serve as social class or status markers. Foods are important gift items. Specific foods, and methods of food preparation, are frequently part of one's cultural identity.

Patterns of food consumption are often very resistant to change. When new immigrants arrive in the U.S. (or elsewhere), many aspects of cultural identity change rather quickly. It is common for country-of-origin language fluency to be lost by the second or third generation in immigrant families, for example. However, along with religious practices, food habits are among the most resistant to change. They often act in a powerful way to build and/or maintain cultural identity. The use of food to maintain cultural identity is of particular importance for ethnic groups for whom the consumption of fish is a long-standing tradition.

Fish, as an important cultural resource, may contribute to community well being and cohesiveness. Fish may hold a prominent place in religious and social ceremonies and rituals. Fishing activity often involves the intergenerational transfer of knowledge, and may contribute to sharing and social bonding within the family and community. For some, the consumption of self-caught fish is an important means of augmenting family food supplies; it has important economic impacts. In isolated, rural communities, alternate food sources may not be readily available. In poorer communities, families may lack sufficient income to purchase alternate foods. For some ethnic groups, especially certain Native American communities, fish hold

¹ These group designations are not mutually exclusive, but rather refer to dominant cultural identity (in the case of the first two) or socioeconomic and residence status (in the case of the last two). "Asian-American/Pacific Islander," as used here, also includes individuals who trace their ancestry to the indigenous peoples of Australia and New Zealand. "Native American," as used here, includes all indigenous peoples of the Americas, including the Inuit. Subsistence anglers are considered to be those who fish primarily to meet or supplement household food needs. Low-income, urban anglers are included because these form a special at-risk population. The small amount of research data discovered regarding Latino and African-American fishing and consumption behavior is included in the section on low income, urban anglers. "Latino," as used here, refers to individuals whose primary language is Spanish or Portuguese and/or to those individuals who trace their ancestry to predominantly Spanish or Portuguese-speaking populations.

important cultural meaning and are inextricably linked to traditional religious and cosmological concepts regarding the place of humans within local ecosystems and the health of the environment. If fish foods are culturally revered, it may be difficult to conceive of these foods as "hazardous," particularly if immediate negative health effects are not perceived to occur. Certain ethnic groups may also have special concern with the preservation of fishery resources for future generations and with questions of social inequality (environmental justice) in regard to these.

Fish advisories, especially if they result in rapid culture change, or loss of cultural identity, in a community, can have numerous catastrophic effects. These may include loss of self-esteem, loss of social solidarity (sense of community), loss of culturally meaningful social activities, a switch to less healthy foods, worsened economic conditions, and increases in violence and substance abuse. Consequently, it is not uncommon for individuals in such communities to resist changing their consumption habits. Some, especially those living in isolated locations with limited incomes, may have few if any viable options to consuming locally procured fish.

Certain ethnic groups are also subject to special health concerns. Many individuals of Asian, African, and Native American ancestry are lactose intolerant, so dairy products are not viable alternate protein sources. African-Americans have a higher rate of heart disease than the general population. Switching from fish to meats with a high-fat content would be deleterious for many of these people. Many Native American communities suffer from exceptionally high rates of diabetes and obesity. Reduced fish consumption could exacerbate these problems. Chapter 2 discusses possible health benefits of consuming fish, although most studies have not been conducted to determine differences between sub-populations of the U.S., or other groups.

Because foods, and fish in particular, are incorporated into a complex of socio-cultural phenomena, changes in eating habits often have multiple, complex (and sometimes unforeseen) consequences within a particular family, community, or ethnic group. For this reason, special consideration should be given to subcultural groups known to have special behaviors in regard to fish consumption. In the U.S., these include Asian-Americans, Native Americans, subsistence anglers, and low-income, urban anglers (including African-American and Latino anglers).

5.2 Asian-Americans and Fish

While the designation, "Asian-American," encompasses a diverse range of particular ethnic populations, several studies have delineated general fish consumption characteristics that distinguish this group from the majority U.S. population. Allen *et al.* (1996), as part of a general study of fishing behavior and fish consumption in the Santa Monica Bay area of California, found that Asian-Americans (including Pacific Islanders) exhibited higher rates of fish consumption, and were more likely than other ethnic groups to eat whole (gutted) fish. Rockfishes and chub mackerel were the most preferred finfish. Asian-Americans were also found to consume a greater variety of species and to consume more fish body parts than other groups.

In a recent study of San Francisco Bay fishing for food activities (Wong, 1997), the majority of anglers (70%) were persons of color. Asian-American males were most numerous. The average rate of fishing activity increased with age. An estimated 90% of respondents consumed more

than the recommended amounts of fish from the Bay. Commonly consumed species included perch, striped bass, white croaker, salmon, and smelt, often cooked whole with the skin on. Crab was the most common shellfish consumed. Many respondents were unaware of current fish advisories. On average, Asian-Americans consumed approximately three times the recommended quantities of fish recommended by the current advisories.

A similar study focused upon Asian-Americans and Pacific Islanders in the Puget Sound area of Washington State (Nakano, 1996). Recent immigrants (first or second generation) were found to be most at risk because they are most likely to practice seafood collection, preparation, and consumption habits closely resembling those in their native countries. The majority of these individuals do not speak English well, experience high levels of trauma or stress (many came to the U.S. as refugees), and cannot compete well in the U.S. job market. They are limited in obtaining adequate access to environmental health-related educational materials and environmental protection. Many new immigrants identify fishing and self-collection of seafood as ways to maintain activities familiar to them from their native lands. These activities provide a sense of cultural continuity. Seafood harvesting may be regarded as a coping mechanism to ease the oftentimes painful and difficult transition into U.S. society and culture.

Nakano (1996) found that the Asian-Americans and Pacific Islanders they studied had a preference for a wide range of seafood, including species likely to experience higher levels of contamination, especially shellfish, bottom feeders like catfish and sole, and sea cucumber. The consumption of fish heads, internal organs, skin, and cooking water is common among some Asian-Americans. There is also a clear cultural preference for some body parts that are known to have higher contaminant concentrations, such as crab hepatopancreas.

Hutchison and Kraft (1994), studying Hmong consumers in the Midwest, found that fishing was predominantly a male activity. Hmong tend to consume the more easily caught species, and those that do not require expensive tackle to catch, especially white bass, perch, and, to a lesser extent, trout. They did not, however, fish for carp or catfish, species otherwise commonly caught by other lower income anglers. While the researchers state that Hmong fishing (in the Midwest) is primarily "recreational," 90% of fish caught were consumed, and consumption rates were above the norm for this part of the country.

In Laos, fishing is a common, learned activity used to supplement the family diet. This conception of fishing is, according to Hutchison and Kraft (1994), carried over to the U.S. Hmong and consumption probably exceeds state guidelines. White bass may be preferred because they are most analogous to species common in Laos, unlike walleye and other spiny-rayed fish.

Story and Harris (1989), studying Cambodian and Hmong residents in the U.S., observed that fish foods serve as a link with the past, ease the shock of entering a new culture, and provide a means to maintain ethnic identity. Consumption of fish, however, was much less than in respondents' Asian homelands, with red meats (especially beefsteak) being the preferred substitute foods.

5.3 Native Americans and Fish

In Native American communities, tribal (ethnic) identity includes culture, religion, and place. Traditional tribal cultural practices have evolved over long periods of time in tandem with sustainable associations between humans and other species and their environment. Breaking the links between an indigenous people and their environment negatively impacts the culture and religion of these people. Tribal identity is often inseparable from place. Full and safe access to places and their resources is often necessary to preserve cultural values (Harper, 1997).

In many Native American communities, the perceived sacredness or purity of a place and its resources is extremely important. Environmental contaminants and the existence of health advisories may harm this sacredness or purity, making a place and its resources impure. This negatively impacts cultural, religious, and aesthetic beliefs, sentiments, and values. In many Native American cultures, personal identity or sense of self is derived more from group identification than may be true for European-Americans. Native American group identity is generally very strongly associated with place. Negative impacts upon the resource base of an indigenous community are likely to have considerable negative impact upon individual identity and self-worth.

The use of traditional foods can help "boost a lagging cultural morale" (Kuhnlein, 1989, p. 102). Traditional foods can provide nutrients otherwise lacking in the diet of impoverished peoples. In general, Native Americans are the poorest ethnic group in U.S. society. They may not have the means to acquire healthy alternative foods. Many Native Americans have only seasonal employment; the off-season procurement of traditional foods (like fish) can help families and communities economically (Kuhnlein, 1989).

Taste, availability, and harvest time help to determine the particular fish species preferred in Native American communities. Peoples of the Northwest Coast, for example, make considerable use of ooligan or candlefish (*Thaleichthys pacificus*). Coastal inhabitants relish this oily food. It is especially rich in retinol and tocopherol. The fish seasonally migrates up particular coastal streams in large numbers, making it a very efficient food source. Large quantities can be caught with relatively little effort. The same is true of the many salmon species native to this region. In fact, the native peoples of the Northwest are among the most fish-dependent populations in North America.

According to Berkes (1990), in those Native American communities highly dependent on fish as a food source, there often exists extensive local traditional knowledge regarding the distributions and life cycles of particular fish species. A reduction in fishing activities may endanger such valuable bodies of knowledge. For many indigenous communities, fishing is "a critical economic activity, not an incidental cultural remnant from the past" (Berkes, 1990, p. 41).

Even when fishing for subsistence purposes is no longer the norm, fish may still serve important, beneficial social functions. Among the Chippewa of Wisconsin, for example, spring spearfishing for walleye is an important communal activity. The fishing is done primarily by men. The season is short (2-3 weeks), but highly productive. Traditional feasts are held, and the

widespread sharing of the catch is an important social activity during this time of the year, helping to increase social cohesion and cooperation (Peterson *et al.*, 1994).

In several Canadian Native communities, especially among the Cree people, advisories to suspend the consumption of fish from certain bodies of water (due to high methylmercury levels) resulted in serious negative sociocultural and health-related impacts. Increased levels of diabetes, obesity, community and family violence, alcoholism, drug abuse, and suicide have been reported. The social and cultural disruption that followed the advisories seems to have had more deleterious impacts than would the continued consumption of locally-procured fish (Wheatley and Paradis, 1996).

5.4 Subsistence Fishing

In some rural areas of the country, and especially in a large portion of Alaska, fishing for subsistence purposes is quite common. What has been termed the "mixed subsistence-market economy" is important in many rural communities. Subsistence fishing and other subsistence activities may be important domestic (family-based) economic activities. This style of life, in which part of a household's needs is met via subsistence activities, is highly valued in rural Alaska (Wolfe and Walker, 1987). A subsistence-based lifestyle has positive impacts upon an individual's self-definition, and sense of self-determination (Egeland *et al.*, 1998)

In Alaska, fish is a primary food staple throughout the state. Salmon species constitute the majority of fish caught and consumed, but others, including arctic grayling, herring, flounder, pike, smelt, whitefish, and cod, make substantial contributions to local diets as well (Egeland *et al.*, 1998). In a survey of Alaskan Native American communities, it was found that 30-45% of calories consumed came from local, self-procured food sources. In Alaska, fish consumption is six times the national average; the majority of protein consumed is derived from local fish sources. Social aspects of sharing the fish harvest are very important. Traditional harvesting activities provide meaningful work, promote self-reliance, help maintain social bonds, provide economic benefits, enhance cultural identity, and help to sustain the intergenerational transfer of local knowledge (Egeland *et al.*, 1998).

5.5 Low-Income, Urban Anglers

A number of recent studies have focused attention upon the fishing and consumption behavior of low-income, urban anglers because this group may be at higher risk of exposure to fish-borne contaminants. West (1992), studying fishing along the Detroit River, found that "non-white" anglers (in this case, mostly African-American anglers) were more likely to view fishing as a food source than were "white" anglers. They were also more likely to eat species with higher contaminant levels, such as white bass and sheepshead.

Belton *et al.*, (1986) observed finfishing and crabbing activities in the New York City area. Most anglers were older (over 50), employed in blue-collar jobs or service occupations, and "white." One-third were retired. The most common species sought by these anglers were snapper (juvenile bluefish) and blue crab. These were both among those species contaminated above FDA tolerance levels. Other species caught included fluke, bluefish, striped bass, and

flounder. Most anglers, nearly 60%, reported eating some of their catch, and many shared with families, friends, and neighbors. Most often consumed species included blue crab, flounder, fluke, and snapper, followed by striped bass and bluefish. Most respondents had consumed fish from these (polluted) waters for 10 years or more. Crabs were most often boiled, finfish mostly fried. No respondents reported eating the crab hepatopancreas and crab cooking water was always discarded.

In terms of local risk perception, two-thirds of the anglers interviewed thought that their catch was totally safe. About one-fifth saw their catch as slightly polluted but not harmful. Those who considered their catch fairly polluted said that the fish would, nonetheless, not hurt them, or that they rarely ate the fish. Most acknowledged that the local waters are polluted. However, some thought that crabs could rid themselves of pollutants. Others said that the finfish had moved in from cleaner waters. Thus, most anglers were able to explain away the risk (Belton *et al.*, 1986).

Belton *et al.* (1986) also found that there seemed to be much misunderstanding and/or ignorance of local fish advisories. One-quarter of the anglers felt that they could effectively assess the safety of consuming particular animals based upon visual inspection, observation of the animal's behavior, smell, and taste. Many felt that washing, cleaning, and/or cooking could make the fish safe to consume. Approximately one-half said that if you eat fish and one or two days later are not sick, then the fish was safe to consume.

Burger *et al.* (1993) reported results of surveys in the New York City area. They found that most anglers equated unsafe fish with lesions, discoloration, or odor, not with undetected chemical contaminants. A majority of subjects in the study were African-American or Latino. Most believed that designated contaminated sites were actually safe, and that the fish caught in these places were safe to eat. Possible reasons cited for the widespread ignoring (or ignorance) of health advisories include a low literacy rate among the subject population, language problems (for Latino anglers), and the inadequate dissemination of health advisory information. Burger *et al.* (1993) posited that people underestimate risks associated with voluntary, necessary, and/or familiar hazards, and overestimate risks from involuntary, unusual, and/or unexpected hazards.

In a similar study, also in the greater New York City area, May and Burger (1996) found that anglers underestimated the risks of consuming self-caught fish because this was an enjoyable, voluntary, familiar activity. They observed a common optimistic bias. While an individual angler might acknowledge that a hazard existed, she or he would feel that she or he had a less than average chance of experiencing the hazard. There was a common mistrust of government sources of information, and, faced with uncertain risks, many chose to ignore the risks.

The May and Burger (1996) study involved more African-American respondents. Most respondents consumed fish fried, and frequently whole. Crabs were generally boiled. There was a common belief that fish are less contaminated than the waters in which they live. Crabs were also believed to be able to filter out pollutants. Most anglers admitted that they fished even though they were aware of the local health warnings. Many preferred self-caught fish because they were fresher than those purchased in stores.

Burger and Gochfeld (1991) examined fishing at a lagoon with high methylmercury levels near San Juan, Puerto Rico. They discovered that only one person had reported sickness from eating locally caught fish. Almost all of the anglers questioned were aware of the mercury problem. Most felt, however, that there was not any serious pollution in the particular places on the lagoon where they fished. Crab, tarpon (*Megalops atlanticus*), and *Tilapia mossambica* were most commonly caught. In general, Puerto Ricans fish more, for more of the year, and consume more fish than U.S. mainland residents. Fish heads and crab hepatopancreas are more often consumed. Fish and crab are frequently prepared in stews and soups, so essentially all body parts are consumed.

In Michigan, Smith and Thompson (1989) witnessed persistent angling occurring in the face of strong warnings to avoid a contaminated portion of the Tittibawassee River. Most anglers were low-income, blue-collar, and unemployed or underemployed. Just over two-thirds had completed high school. Most were aware of health concerns, but fished and consumed fish from the river regardless. Some respondents cited no adverse health impacts from past consumption of locally caught fish. Others expressed fatalistic sentiments. According to Smith and Thompson, reasons for noncompliance with the posted advisories include possible denial of recognized truths, fatalism, and alienation. Information overload, in the form of so much negative news in the mass media, may also have resulted in anglers ignoring one more piece of "bad" news about their river. For these anglers, fishing in the local river constituted one of the few recreational outlets that they had and that they could afford. A general distrust of government authorities may also contribute to noncompliance with fish consumption advisories.

5.6 Conclusions and Research Needs

In using the framework outlined in this report, it is important to consider how socio-cultural factors impact the relative risks and benefits of fish consumption. This should include not only consideration of health-related risks and benefits, but also those related to the economic, social, and cultural well being of particular communities. Among isolated and/or lower-income groups, fish may represent an important economic resource, and a source of needed high-quality protein, that is not easily replaced. For others, especially certain Native American and Asian-American communities, fish may have special cultural and/or religious significance. In such communities, advisories designed to limit consumption of fish may have unforeseen detrimental socio-cultural impacts. These potential consequences need to be considered when assessing the risk and benefits of fish consumption.

A participatory approach to incorporating socio-cultural factors into frameworks for assessing the risks and benefits of fish consumption in local communities or among specific target populations needs to be adopted by risk managers. Socio-cultural risks and benefits are ultimately based upon shared community values, and these can be best understood by actively including members of affected groups in the planning process.

For example, Harper and Harris (Harper, 1999) are developing a process to estimate cultural consequences of contamination to specific locations or resources. In addition, they are also working on a universal harm scale, which could be used to help normalize the severity of

disparate risks. This work has not yet been published, but ultimately might be very useful in conjunction with the framework we propose in the next chapter.

While considerable scientific attention has focused on the biological health risks and benefits of fish consumption, a relative paucity of concomitant research has been conducted examining concurrent sociocultural risks and benefits. As delineated in this chapter, for a number of specific human populations, fish serve important social, cultural, religious, economic, and aesthetic functions. Fish are integrally positioned within a matrix of shared beliefs, norms, and behaviors. The more central the position of fish within the social fabric of a community, the greater the number of these social interconnections.

As the relative importance of fish, fishing, and fish consumption behaviors varies markedly among the many ethnic and socioeconomic groups comprising the larger U.S. population, there is a clear need for more comprehensive, comparative analysis of the sociocultural risks and benefits of fish consumption. More quantitative information needs to be amassed on specific consumption behaviors, with the aim of more productively combining sociocultural data with biological data in developing risk assessments and consequent risk management strategies.

There is a need for more detailed empirical data differentiating specific ethnic populations within larger culture groups, for example, data on the consumption behaviors of Japanese-Americans as compared to Chinese-Americans, in contrast to data only on Asian Americans in general. The development of measurement tools (typologies, scales, indices) that will allow for better comparisons of various sociocultural groups should be a high priority in future research. These might lead to the eventual development of a theoretical model for better predicting the outcomes of advisories on specific human populations. There is also a definite need for more research on environmental justice issues in regard to fish consumption, and on the relationship between fish consumption and group sovereignty issues, especially in regard to Native American communities. A related concern that has received only limited attention to date is the influence of past government relations on the current acceptance of advisories, and other risk management communication, by specific ethnic and socioeconomic groups.

5.7 References

- Allen, M.J., P.V. Velez, D.W. Diehl, *et al.* 1996. Demographic variability in seafood consumption rates among recreational anglers of Santa Monica Bay, in 1991-1992. *Fisheries Bulletin* 94(4): 597-610.
- Belton, T., R. Roundy, and N. Weinstein. 1986. Urban fishermen: managing the risks of toxic exposure. *Environment*. 28(9): 19-20, 30-37.
- Berkes, F. 1990. Native subsistence fisheries: a synthesis of harvest studies in Canada. *Arctic*. 43(1): 35-42.
- Burger, J. and M. Gochfeld. 1991. Fishing a Superfund site: dissonance and risk perception of environmental hazards by fishermen in Puerto Rico. *Risk Anal.* 11(2): 269-277.

Burger, J., K. Staine, and M. Gochfeld. 1993. Fishing in contaminated waters: knowledge and risk perception of hazards by fishermen in New York City. *J. Toxicol. Environ. Health.* 39: 95-105.

Egeland, G.M., L.A. Feyk, and J.P. Middaugh. 1998. The use of traditional foods in a healthy diet in Alaska: risks in perspective. Section of Epidemiology, Alaska Division of Public Health & Social Services. Anchorage, Alaska.

Harper, B.L. 1997. Incorporating tribal cultural interests and treaty-reserved rights in risk management. *In: Fundamentals of Risk Analysis and Risk Management.* V. Molak, ed. CRC Lewis Publishers. Boca Raton, FL:

Harper, B.L. 1999. Personal communication with Michael Dourson. *TERA.* June.

Hutchison, R. and C.E. Kraft. 1994. Hmong fishing activity and fish consumption. *Journal of Great Lakes Research.* 20 (2): 471-478.

Kuhnlein, H.V. 1989. Factors influencing use of traditional foods among the Nuxalk people. *J. Can. Diet. Assoc.* 50(2): 102-106.

May, H. and J. Burger. 1996. Fishing in a polluted estuary: fishing behavior, fish consumption, and potential risk. *Risk Anal.* 16 (4): 459-471.

Nakano, C. 1996. Asian and Pacific Islander seafood consumption study: exposure information obtained through a community-centered approach. Seattle, WA. U.S. EPA. EPA 910/R-96-007.

Peterson, D.E., M.S. Kanarek, M.A. Kuykendall, *et al.* 1994. Fish consumption patterns and blood mercury levels in Wisconsin Chippewa Indians. *Arch. Environ. Health.* 49 (1): 53-58.

Smith, B.F. and W.N. Thompson. 1989. Environmental sociology: fishermen of the Tittabawassee. *Environment.* 26(5): 5, 43.

Story, M. and L.J. Harris. 1989. Food habits and dietary change of Southeast Asian refugee families living in the United States. *J. Am. Diet. Assoc.* 89 (6): 800-803.

West, P.C. 1992. Invitation to poison? Detroit minorities and toxic fish consumption from the Detroit River. *In: Race and the Incidence of Environmental Hazards.* B. Bryant, P. Mohai, eds. Westview Press. p 96-99.

Wheatley, B. and S. Paradis. 1996. Balancing human exposure, risk and reality: questions raised by the Canadian Aboriginal Methylmercury Program. *Neurotoxicology.* 17(1): 241-250.

Wolfe, R.J. and R.J. Walker. 1987. Subsistence economies in Alaska: productivity, geography, and development impacts. *Arctic Anthropol.* 24(2): 56-81.

Wong, K. 1997. Fishing for food in San Francisco: part II, with an analysis of the Bay Protection & Toxic Cleanup Program. San Francisco Bay Association. Oakland, CA. 40 p.